

Promoting Co-management in Inland Fisheries: Experience of Lao PDR

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Lao People's Democratic Republic, in short Lao PDR, is a mountainous land-locked country located in the Lower Mekong River Basin in Southeast Asia, and endowed with rich and abundant natural water resources as well as man-made water bodies. These inland water resources have great potentials for the development of capture fisheries and aquaculture if properly managed and developed in a sustainable manner. Of the country's land area of 236,800 km², about 87.7% or 207,674 km² drains into the Mekong River contributing about 35.0% of the Lower Mekong River's discharge, while another 12.3% in the north-eastern area drains to the north of Viet Nam into rivers that flow to the Gulf of Tonkin in South China Sea. Against the backdrop of such scenario, the Department of Livestock and Fisheries of Lao PDR with support from development partners started in early 1980s the promotion of community-based fisheries management, and later on, fisheries co-management for the different types of water bodies throughout the country, such as rivers, reservoirs, community ponds, and small-scale natural wetlands. The progress of such development is summarized in this article which is based on the paper presented by the author during the Experts Meeting on Cooperation on Fisheries, Aquatic Resources and Wetlands: 20-year Lessons Learnt organized by SEAFDEC in Phnom Penh, Cambodia in November 2014.

The population of Lao PDR was estimated in 2014 at 6.8 million, 75-80% of whom still live in rural lifestyle. In 2005, ADB (2008) estimated that about 33% of the country's total population lived below the poverty line. Nevertheless, the people of Lao PDR, especially those in rural communities, still rely heavily on aquatic resources, *i.e.* fish and other aquatic animals, as their most reliable sources of animal protein. The country's fisheries depend on its water ecosystems consisting mainly of rivers and streams, hydropower and irrigation reservoirs, diversion weirs, small water bodies, floodplains, and wet-season rice fields. The country's water resources for capture fisheries estimated at more than 1.2 million ha (Phonvisay, 2013) are capable of producing fish that could earn the country about US\$150.0 million per year. The country's average consumption of inland fish is about 24.5 kg/capita/year while other aquatic animals account for about 4.1 kg/capita/year and marine products around 0.4 kg/capita/year. Thus, the country's total consumption of fish is estimated at 29.0 kg/capita/year (Phonvisay, 2013), most of which are domestically produced.

Lao PDR has diverse ecosystem and aquatic species, of which more than 480 freshwater fish species have been identified that include 22 exotics while more species are still being discovered from time to time (Phonvisay, 2013). Other aquatic animals comprise about 37 amphibians, 7 species of crabs and 10 species of shrimps that have been recorded, but these records are believed to cover only 15% of the estimated total. Utilized mainly for human consumption, most of these aquatic species are produced through inland capture fisheries and aquaculture.

Moving from Community-based Fisheries Management to Fisheries Co-management

In early 80s, the Government of Lao PDR decentralized the management of the country's natural resources to local authorities and communities based on the so-called "Community-based Natural Resources Management (CBNRM)" approach. CBNRM was first adopted in the country's forestry sector through the establishment of "community forestry" at the national level, where land and forest were allocated to local communities for them to manage and use as their own. The irrigation sector also adopted a community-based approach for the management of the country's irrigation plans and facilities by establishing



Map of Lao PDR

the “water users’ groups” mainly comprising the farmers’ groups coming from the local communities. Likewise, the fisheries sector also fostered the same approach through the promotion of community-based fisheries management. About two decades later, the Mekong River Commission (MRC) - Fisheries Programme introduced the concept of “fisheries co-management” in four countries of the Lower Mekong Basin including Lao PDR. Specifically, the project on management of reservoir and river fisheries was carried out in two phases, *i.e.* Management of Reservoir Fisheries in the Lower Mekong Basin (MRF): Phase 1 from 1995 to 2000, and subsequently, the Component on Management of Reservoir and River Fisheries in the Lower Mekong Basin (MRRF): Phase 2 implemented from 2000 to 2010. In the course of the implementation of MRF and MRRF, various constraints were identified that hinder the development of sustainable inland fisheries in the country.

Confirmed through a Participatory Rural Appraisal (PRA) survey, such constraints included: inadequate local organization structure for the management of fisheries at the community level; overfishing and illegal fishing; non-regulated fish trading that led to depletion of the fish stocks; and destruction of critical fish habitats that consequently led to declining daily fish catch. Moreover, fishery regulations were not in place while the local fishery authorities did not have sufficient capacity to manage and control the fishery resources. In order to address such concerns, the central and local fishery authorities of Lao PDR, namely: the Department of Livestock and Fisheries (DLF), Provincial Agriculture and Forestry Office (PAFO), and District Agriculture and Forestry Office (DAFO) facilitated the development of fisheries co-management in target reservoirs and fishing communities through the conduct of case studies, taking into consideration the lessons learned from the MRF and MRRF. These case studies were carried out in a hydropower reservoir (Nam Ngum 1), irrigation reservoirs (Nam Houm, Nam Souang, Huay Siet, and Pak Peung), and in fishing communities located along the Mekong River in Khong District, Champasak Province.

The shift toward a more holistic view of aquatic resources management undertaken by the Government of Lao PDR has until recently been based mainly on the regulatory framework within the natural resources and environment sector, such as the Forestry Law, Environment Protection Law, Water Resources Law, and the Conservation of Wildlife and Aquatic Animals Law. It was only after July 2009 when the country’s new Fishery Law was enacted that fisheries management was brought within one cohesive framework. Specifically, the Fishery Law provides a framework for implementing, managing, monitoring and inspecting capture fisheries and aquaculture. It aims to promote aquaculture, conserve and protect fisheries resources for sustainable development, and ensure the availability of fish and other aquatic animals (OAAs) for food security. The law also promotes community-

based fisheries management and control measures, such as establishing conservation zones and community ponds and crafting fishing regulations, and providing for the protection of aquatic resources and ecosystems through various measures. Nevertheless, implementation of the new Fishery Law will continue to be a challenge as it would require training, monitoring and research, as well as support to community-based fisheries management. Nonetheless, given the importance of fish and OAAs to the people of Lao PDR as source of food and income, there is a need to improve fisheries management and aquaculture development based on water resource ecosystems and socio-economic conditions of the rural areas. This therefore calls for a holistic approach of incorporating fisheries in an integrated water catchment and basin management as stipulated in the new Fishery Law.

Institutional and Legal Frameworks

In the new Fishery Law No. 03/NA: 2009 of Lao PDR, Article 6 stipulates the Basic Principles of Fisheries. Specifically, Article 6 (4) stipulates that “Establishment and protection of conservation zones for aquatic species and of their habitats, and food sources are to create the best conditions for their growth and proliferation and are aimed at maintaining the ecosystem balance;” while Article 6(5) specifies that “Conservation, protection, development, exploitation of aquatic fauna, the management and inspection of fisheries shall be in conformity with international treaties to which the Lao PDR is a party.” Moreover, the Fishery Law also promotes two types of fisheries models: Family and Commercial Fisheries (**Box 1**).

Box 1. Provisions in Fishery Law that promote Family and Commercial Fisheries

Article 14: Family fisheries include aquaculture, conservation, protection, development, catching and exploitation of aquatic fauna in a specific body of water in conformity with laws and regulations primarily for use in the daily lives of the families.

Article 15: Commercial fisheries model includes the aquaculture, propagation, capture and processing of fish and other aquatic fauna for trading and distribution and includes the conservation and protection of aquatic fauna.

Although people in Lao PDR have always been involved in fishing since ancient times, the fishery sector of Lao PDR is a relatively new sector compared with other sectors within the Ministry of Agriculture and Forestry (MAF). In the early 1990s, a technical division called the “Division for Extension of Fish Culture and Raising of Small Animals” was established under the Department of Livestock and Veterinary (DLV). However, upon recognizing the increasing importance of fisheries and aquaculture for the livelihood of local people, the Government of Lao PDR renamed the DLV in 1996 into the Department of Livestock and Fisheries (DLF) and established under this Department is the “Fisheries Division”. After the establishment of the “Nam Xouang

Box 2. Authorities responsible for fisheries development and management in Lao PDR

Ministry of Agriculture and Forestry (MAF)

- **Department of Livestock and Fisheries (DLF)** under the MAF has the following roles and responsibilities with regard to fisheries development and management:
 1. Formulate national strategies, policies and legal frameworks for fisheries for submission to the Government for consideration and future elaboration for inclusion in national programs and projects for country-wide management of fisheries;
 2. Disseminate and provide country-wide training on the policies, regulations and laws related to fisheries activities in order to raise public awareness and gain public support of and respect for the preservation of aquatic fauna resources;
 3. Provide guidance, monitoring and evaluation of the implementation of fisheries activities under DLF supervision throughout the country;
 4. Develop, train and upgrade the personnel involved in the management of fisheries;
 5. Consider commercial fisheries operations in terms of managing the varieties of aquatic fauna and to submit proposals to the Government regarding the specific fish species which require protection;
 6. Create and improve information systems, the recording of the documents and licenses of commercial fishery operations, and the various documents related to the Fisheries Management Committees for specific water bodies;
 7. Coordinate with other sectors and local authorities with respect to activities related to fisheries, including publicity campaigns and active search for domestic and international funding for the conservation, protection, development and the use of aquatic fauna;
 8. Liaise and cooperate with other regional and international organizations on matters relating to fisheries; and
 9. Provide regular summaries and reports on the outcomes of fisheries activities to the Government.
- **Division of Fisheries (DOF)** of the DLF has a central role of fulfilling the overall management of the fisheries in the country and its organizational structure is divided into three sections, namely: Fishery Resources Management, Aquaculture Management, and Fishery Inspection.
- **Provincial Livestock and Fisheries Section (PLFS)** under the Provincial Agriculture and Forestry Office (PAFO) has the following roles and responsibilities:
 1. Disseminate strategic plans, policies, orders and legal frameworks related to fisheries, first as detailed workplans and projects, and then the details of their implementation;
 2. Disseminate and provide training on the policies and legal frameworks of fisheries for the people in order to improve their understanding of, commitment to and participation in the strict implementation;
 3. Provide guidance, and conduct monitoring and evaluation of the work related to fisheries operations of the District Agriculture and Forestry Offices (DAFOs);
 4. Provide comments on the cancellation or suspension of commercial fisheries operations within their areas of authority;
 5. Provide technical guidance and support to the Fisheries Management Committees (FMCs) of specific water bodies, fishermen's groups and individuals engaged in fisheries activities within their areas of responsibility;
 6. Coordinate with other relevant sectors on fisheries operations within their areas of authority;
 7. Create and improve information systems, recording of the operating licenses of commercial fisheries, and various documents related to Fisheries Management Committees (FMCs) of specific water bodies within their areas of responsibility;
 8. Mount publicity campaigns and actively search for domestic and international funding sources for fisheries related work;
 9. Liaise and cooperate with regional and international organizations on fisheries in keeping with the objectives as identified by senior management; and
 10. Provide regular summaries and reports on the outputs and outcomes of the implementation of fisheries activities to the Ministry of Agriculture and Forestry and the capital, provincial administrative authorities.
- **District Livestock and Fisheries Unit (DLFU)** under the District Agriculture and Forestry Office (DAFO) has the following roles and responsibilities:
 1. Manage the implementation of the workplans, projects, agreements, orders, declarations and advisories of the Ministry of Agriculture and Forestry and the Provincial Agriculture and Forestry Offices;
 2. Disseminate the policies and legal frameworks related to fisheries activities to the people in order to improve their understanding of, commitment to and participation in their strict implementation;
 3. Provide guidance, encouragement, follow up and facilitation to the Fisheries Management Committees for specific water bodies in the formulation of fisheries regulations within their areas of jurisdiction;
 4. Provide comments on the cancellation or suspension of commercial fisheries operations within their areas of jurisdiction;
 5. Provide technical guidance and support to the Fisheries Management Committees for specific water bodies, fishermen's groups and individuals engaged in fisheries activities within their areas of jurisdiction; and
 6. Provide regular summaries and reports on the outputs and outcomes of the implementation of fisheries activities in the district to the Provincial Agriculture and Forestry Offices and the municipal, district administrative authorities.

Aquaculture Development Center" (NADC) in 2001 with support from Japan International Cooperation Agency (JICA), many government fish stations in almost all 17 provinces and in Vientiane Municipality were established or improved. For

the first time, the DLF developed a policy framework for fisheries development in Lao PDR (Phonvisay, 1996) which included four priority areas, namely: (1) aquaculture and floodplain management; (2) reservoir fisheries management;

(3) aquatic resources assessment and management; and (4) post-harvest fishery technologies and regulations.

In 1999 however, MAF restructured the technical departments and separated the fishery sector into three main technical departments to be responsible for fisheries and aquaculture management, research and extension. These are: (1) DLF responsible for fisheries management; (2) National Agriculture and Forestry Research Institute (NAFRI) for research; and (3) National Agriculture and Forestry Extension Service (NAFES) for extension (mainly aquaculture extension) which was renamed later as the Department of Agriculture Extension and Cooperatives (DAEC). Meanwhile, the Living Aquatic Resources Research Center (LARReC) was also established under NAFRI for the main purpose of conducting research on capture fisheries and aquaculture.

The Lao Fishery Law, which was declared in force through a presidential decree in July 2009, specifies the principles, regulations and measures governing the organization, implementation, management, and inspection of works in fisheries; promotion of aquaculture, conservation, protection, development and sustainable exploitation of aquatic fauna, aiming to ensure the provision of fish and other aquatic fauna as food source for all people of Lao PDR; and protection of the environment for the economic development of the nation.

As stipulated in Article 43 of the Fishery Law, the Ministry of Agriculture and Forestry (MAF) with the DLF as its technical fishery department, is the central line agency responsible for fisheries management in coordination with other relevant sectors and local administrative authorities. The authorities responsible for the management of fisheries in Lao PDR are outlined in **Box 2**, while the organization structure of MAF of Lao PDR is shown as **Fig. 1**. In addition, **Fisheries Management Committees (FMCs)** have also been established for specific water bodies (*e.g.* rivers, reservoirs, community ponds, wetlands). In Article 43 of the Fishery Law of Lao PDR, FMCs serve as local fisheries management organizations at the community level with corresponding roles and responsibilities, while Articles 50, 51 and 52 stipulate

in details the procedures for the establishment, organization structure, rights and duties of FMCs (**Box 3**). Moreover, Article 48 promotes the establishment of **Fishermen’s Associations (FAs)** and **Fishermen’s Cooperatives (FCs)**. However, the rules and principles governing the management, operations, rights and responsibilities of FAs and FCs still need to be defined in terms of their specific regulations. Furthermore, Article 53 promotes the establishment of **Village Fisheries Regulations (Box 4)**.

Promotion of Fisheries Co-management

The status of implementation of community-based fisheries resources management in Lao PDR could be gleaned from the results of implementation of three case studies. These are: (1) Establishment of Fishing Cooperatives at Nam Ngum 1; (2) Establishment of Fishermen’s Association at Nam Theun 2; and (3) Establishment of RFMCs and VFMCs.

Case Study 1: Establishment of fishing cooperatives at Nam Ngum 1

Constructed during 1968-1971 mainly for generation of hydropower, the Nam Ngum Reservoir (Nam Ngum 1) is located in Vientiane Province with an area of 477 km², mean depth of 19 m, and catchment area of 8,640 km². Of the 16,660 people living along the Reservoir Basin, 3,450 are local fishers about 50% of whom are full-time fishers (Mattson *et al.*, 2000). Fishing cooperatives were organized at this Reservoir from 1979 to 1983 but were discontinued when support from the development projects was phased out, and also due to communities’ minimum participation and inadequate experience on cooperative management and administration (Phounsavath, 1998). Later, seven fishing cooperatives were established by government technical staff of the “Nam Ngum Reservoir Management and Development Project” (NRMDP) and local authorities with financial support from fisheries community development projects, *i.e.* the Interim Mekong Committee (1978-1983 and 1988-1992), and MRC (1995-2003). As a national project, NRMDP was officially established by MAF but later renamed as the Nam Ngum Reservoir Fisheries Management Center (NNRFMC) and placed under the administration of PAFO of Vientiane Province. This time around constraints were still encountered including among others, the absence of priority strategies for community development; minimum level of participation from local fishers; lack of legal framework and incentives for organizing the fishers; failure to establish self-sustaining fishing cooperatives; changing regulations and practices of fish market management, fish prices and taxation system by local provincial authorities; and inadequate investment for the basic infrastructures and facilities in local fishing communities.

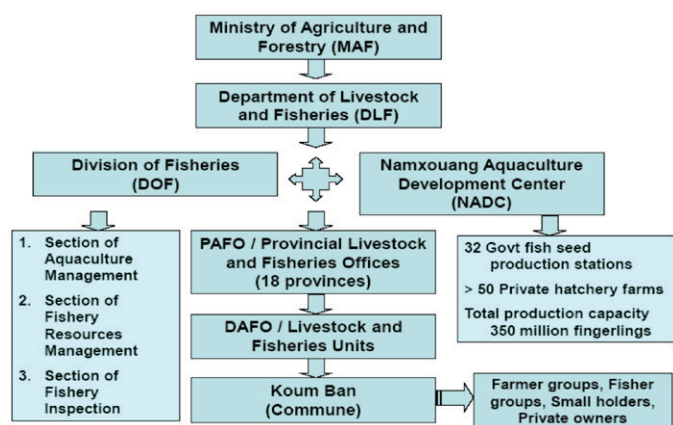
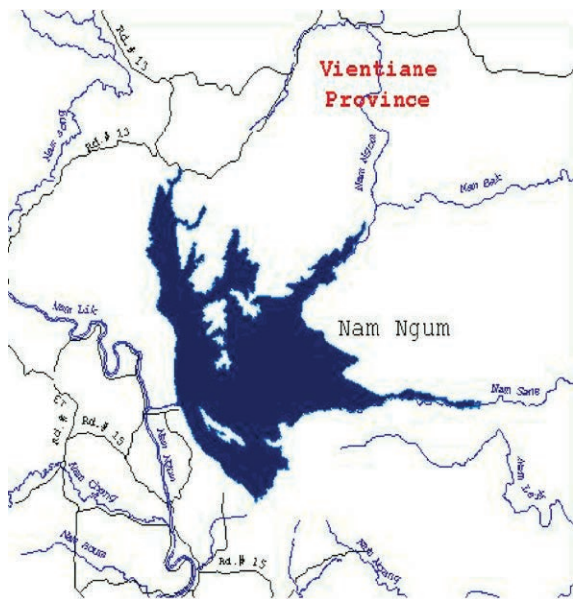


Fig. 1. Organization Structure of the Fishery Sector in Lao PDR



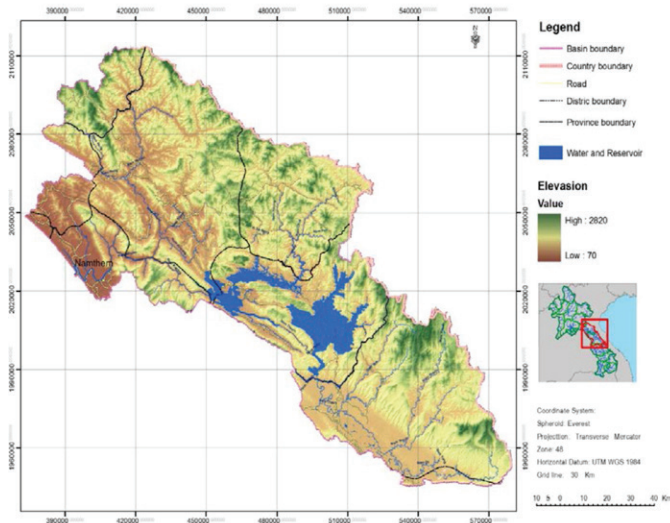
Nam Ngum River Basin
Source: Phounsavath (2014)

In an effort therefore to address such concerns, the PAFO of Vientiane Province developed a five-year strategic plan (2011-2015) for the overall management and development of Nam Ngum 1 Reservoir covering nine (9) action plans. These are: (1) management of fisheries; (2) management of conservation areas for aquatic animals and wildlife; (3) establishment of village network for fisheries management and extension; (4) conservation and reproduction of endangered indigenous fish species; (5) promotion of fish processing products; (6) fish culture extension (culture in cages/pens); (7) reduction of shifting cultivation through alternative livelihood alternatives; (8) protection of bank erosion and the environment; and (9) monitoring/data collection on the ecological changes of the reservoir limnology.

Case Study 2: Establishment of fishermen's association at Nam Theun 2

The Nam Theun River Basin located in Khammouane Province has a catchment area of 14,813 km² and length of about 353 km with about 142,466 people living along its River Basin. Large numbers of fish species (between 70 to 100 species) have been recorded in the Basin, depending on the season and yearly occurrence and capability of enumerators to identify the species. Sioudom (2013) reported that of the more than 70 fish species, 11 were new to fisheries science. The Nam Theun 1 Reservoir is one of the largest dams in Lao PDR for hydropower generation with a reservoir area of about 280 km² and catchment area of 14,072 km², and a total energy generating capacity is about 600 mega watts (MW). Moreover, Nam Theun 2 Reservoir, also a hydropower dam has reservoir area of 450 km² and catchment area of 3,475 km², and total generating energy of 1,075 MW.

The first fishermen's association for the Nam Theun 2 Reservoir was officially organized in July 2009 through an official agreement of the Governor of Nakai District who was also the Vice-chair of the Nam Theun 2 RMC (Ref. No 207 dated 9 July 2009). Consisting of 16 Village Fisher's Groups (VFGs), this fishermen's association is supervised by the Nam Theun 2 Reservoir Management Committee (RMC) which was officially established through a Prime Minister's Decree (Ref. No 309 dated 27 April 2009). The RMC members are representatives from relevant key authorities such as DLFU of DAFO Nakai District, and responsible for supervising the fisheries management and development of Nam Theun 2 Reservoir.



Nam Theun River Basin
Source: Sioudom (2013)

Box 3. Establishment of the Fisheries Management Committees (FMCs)

Principles for Establishment of FMCs

FMCs shall include the participation of fishers, to ensure that effective management of fisheries resources is promoted through the involvement of the following government authorities:

1. District Governor and Municipal Head shall approve the request and appoint the committee as proposed by the village authority;
2. Provincial Governor and Capital Mayor shall approve requests and appointments of the Committee (In the event that the boundaries of the fisheries resource areas are in two districts or municipalities in the province, the action would be based on the proposal from relevant District Governors or Municipal Heads);
3. The Minister of Agriculture and Forestry shall approve and appoint the Committee, in the event that the boundaries of the fisheries resource areas are in two provinces, capitals or more based on the proposal of relevant Provincial Governors or Capital Mayors;
4. The decision of the District Governor, Municipal Head and Provincial Governor, the Capital Mayor shall keep the appointments of Fisheries Management Committee and transmit the information to relevant agriculture and forestry sectors for control and inspection.

Structure of FMCs

The structure of the Fisheries Management Committees (FMCs) shall comprise representatives from the various organizations as identified below:

1. Representatives from the village, district or provincial fisheries organizations;
2. Representatives from the fishermen's groups;
3. Representatives from village or district social organizations;
4. Village, District or Municipal Security Officers; and
5. Representatives from other relevant sectors as deemed necessary.

Rights and Duties of FMCs

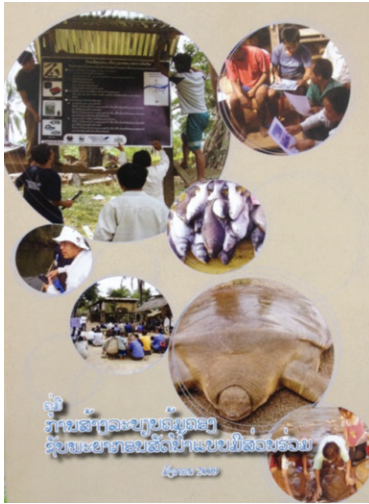
1. Prepare plans for the management and development of fisheries within their own water resource areas, namely: identified fisheries areas, conservation zones, protected areas, fish spawning grounds, areas for the expansion of fish species, fish release areas, and others;
2. Propose plans and regulations for the management of fisheries including the use of fishing gear and methods, seasons and prohibitions related to the catching or trapping of certain protected aquatic animals, and submit these to the municipal, district administration authorities for their consideration, approval and adoption;
3. Disseminate and publicize the fisheries management plans and regulations through posters and announcements in the mass media;
4. Protect the rights and benefits of the fishermen including settlement of disputes arising from the management of the water resource areas under their control;
5. Guide, follow up, and inspect the implementation of fisheries management regulations in the areas under their control;
6. Seek funding to support fisheries management and development in the water resources areas under their control;
7. Collect annual statistics related to fisheries, including the production, details of fishermen, fish conservation zones, and summaries and reports and submit these to the local authorities and the relevant sectors;
8. Exercise other rights and duties as assigned by the relevant sectors.

Case Study 3: Establishment of RFMCs and VFMCs

In 2000-2010, the MRC-Fisheries Programme supported the implementation of a pilot project to promote fisheries co-management in selected water bodies (reservoirs, rivers) by establishing local “*Fisheries Management Committees*” (FMCs). Four irrigation reservoirs in Vientiane and Bolikhamxay Provinces were selected as pilot areas for the establishment of “*Reservoir Fisheries Management Committees*” (RFMCs) whose members comprise representatives from village authorities (village headmen, village elders, village development committees, village security guards, among others), fishermen and women's groups. This project was jointly implemented by LARReC under NAFRI and DLF (PAFO and DAFO) as well as local district administrative authorities (District Governor's Office). The District Governors officially approve and declare in force the establishment of RFMCs, their roles and responsibilities, as well as fishery regulations for each specific reservoir. The DLFU staff (DAFO) plays a “facilitation role” in the

implementation process such as conducting field surveys, planning, implementation, monitoring, and evaluating each reservoir, and provides technical advice and support to the RFMCs that play the “implementation role”.

However, planning and decision-making as well as implementation of some management activities (*i.e.* setting up of fishery regulations, enforcement, patrolling, fish restocking, monitoring and evaluation, among others) are done through joint arrangements, *e.g.* Nam Houm and Nam Xouang Reservoirs (Vientiane Municipality), Huay Siet and Pak Peung (Bolikhamxay Province). In 2006-2010, “*Village Fisheries Management Committees*” (VFMCs) were established in five fishing villages located in Khong District, Champasak Province also known as the Siphandone Wetland Area. Located in the southern part of the country, this Wetland Area supports abundant fisheries in the Mekong River and its tributaries. The PAFO and DAFO facilitate and support the establishment and functions of the VFMCs.



In 2009, the DLF with support from WWF-Lao PDR developed the “Fisheries Co-management Guidelines” based on practical experiences and lessons learned from the Community Fisheries Project (ComFish Project) implemented in five pilot provinces (Bolikhamsay, Khammouane, Savannakhet, Xekong and Attapeu) and the Project for Aquatic Resources Management and Livelihood implemented in Xekong Province (ARL-Xekong). The guidelines focus on the participatory process for the development of village fishery regulations and formal procedures for approval and enforcement. In 2010, the MRC-Fisheries Programme also supported the development of a manual on fisheries co-management in reservoirs for Lao PDR but this manual has not been finalized yet due to budgetary constraints. This manual was based on the practical experiences and lessons learned from a project on “Reservoir Fisheries Management” implemented from 2000 to 2010 in four pilot reservoirs (Nam Houm, Nam Xouang, Huay Siet and Pak Peung).

Conclusion

Fisheries management in Lao PDR focuses on three aspects, namely: (1) management of people; (2) management of fish; and (3) management of fish habitats. **Management of people** entails organizing the local fishers, fishers’ groups and other key stakeholders into local fisheries management

bodies (*i.e.* FMCs) with clear roles and responsibilities, and officially approved by local authorities. Organizing the local fish traders and fish farmers could also be undertaken, if necessary. Development of specific fishery regulations and enforcement system (*e.g.* patrolling/ monitoring system) is a pre-requisite, while promotion of alternative livelihood is encouraged to improve the well-being of local fishing communities. **Management of fish** involves all activities related to management of fish stocks such as catch and stock enhancement. This could include artificial fish seed production, nursing and restocking of fish fingerlings in closed water bodies such as reservoirs or community ponds to increase fish production.

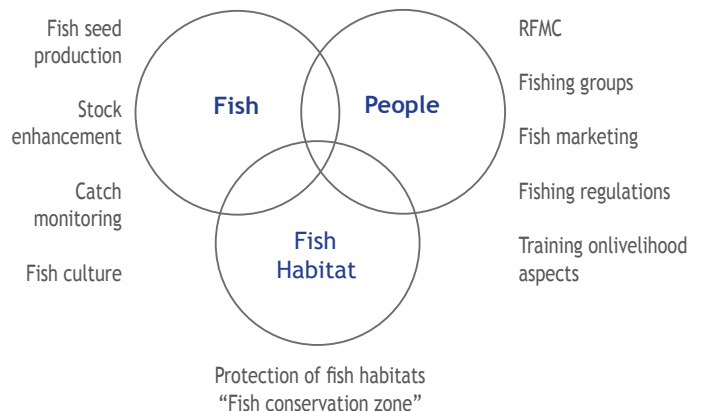
Promotion of aquaculture especially fish culture in cage and pen is encouraged not only to increase fish production but also to create additional household income. **Management of fish habitats** implies the implementation of activities that aim to improve critical fish habitats, especially the spawning grounds and dry-season refuges. A successful approach that is being promoted in both natural and man-made water bodies in Lao PDR is the establishment of “Fish Conservation Zones” (FCZs). In addition, the establishment of specific fishery regulations such as closed-season and closed-area are commonly practiced to protect important fish habitats especially at the onset of the spawning season (wet season). Regular monitoring and patrolling of the FCZs are also carried out to protect the natural fish stocks in the various water bodies. From the practical experiences gained, the key **entry points** for the development of community-based fisheries management and/or fisheries co-management at the community level for the different types of water bodies in Lao PDR could be classified into three aspects as shown in **Box 5**.

Way Forward

The development of the country’s aquatic resources should be mainstreamed in the development plans of the Government, considering that it is a key component in ensuring food security for the rural people, as well as providing them with additional income and employment opportunities. R&D on the development of interlinked strategic frameworks of

Box 4. Article 53 of Fishery Law promoting Village Fisheries Regulations

- At the village level, management of fisheries operations shall be regulated through the issuance of regulations governing fishing in certain designated areas, mainly set aside as conservation, protection and development areas, and the use of fisheries resources as established by the village authority in consultation with the FMCs for a specific water body, villages, neighboring communities, in coordination with the Village Agriculture and Forestry Unit or the district or municipal Agriculture Forestry Offices in the event that the regulations apply to many villages within a single district.
- The village fisheries regulations come into force after endorsement by the District Governor and the Municipal Head



Box 5. Entry points for the development of community-based fisheries management or fisheries co-management

Community ponds: could be both natural or man-made or small- to medium-size reservoir. The culture system could follow “culture-based fisheries” considering some forms of fish stock enhancement and other management measures. The most common management activities could include: establishment of VFMCs, development of village fishery regulations, conduct of training on fish seed production (artificial fish breeding/nursing in hapa), fish stocking, and so on.

Reservoir fisheries: As artificial man-made water bodies, reservoirs could be for hydropower or irrigation. The management activities could include: establishment of RFMCs, development of fishery regulations, enforcement activities (*i.e.* patrolling), establishment of FCZs (*e.g.* permanent or seasonal closed areas), promotion of fish culture in cages and/or pens, training on fish seed production, fish stocking, fish processing, fish marketing, collection of catch data and/or fish landing data.

River fisheries: Practiced in the Mekong River mainstream and its tributaries, this small-scale traditional and subsistence fisheries, is multiple-species and multiple-gear which is extremely difficult to manage due to the multitude of scattered fishing grounds that are highly dependent on seasonality based on hydrology and climate. The management activities could include: establishment of VFMCs, development of village fishery regulations, establishment of FCZs (*e.g.* permanent or seasonal closed areas), enforcement activities (*i.e.* patrolling), promotion of fish culture in cage, conduct of training on fish seed production, fish stocking, fish processing, fish market, collection of catch data and/or fish landing data, and so on.

resource assessment and management of capture fisheries should be carried out in parallel with the promotion of sustainable inland aquaculture. Such effort would require a well-balanced development of aquaculture, fisheries and the aquatic environments which in turn, requires the conduct of research and surveys of each sub-sector, technical development, and training at all levels, with the involvement of relevant agencies. Since there is still room for improvement of the fisheries management and aquaculture development based on water resource ecosystems and socio-economic conditions of the rural areas, the fisheries sector should be better-incorporated in an integrated water catchment and basin management system. Where appropriate, decentralization of fisheries management and co-management measures could be applied, to ensure the participation by and empowerment of local fishing communities and other primary stakeholders in implementing the management measures.

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