Learning from an EAFM Pilot Application: a case in Trapeang Ropov Village, Kampot Province, Cambodia

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The 1995 FAO Code of Conduct for Responsible Fisheries (CCRF) includes provisions that call for the promotion of an Ecosystem Approach to Fisheries Management (EAFM) (FAO, 1995). As signatory to the CCRF, the ASEAN Member States (AMSs) recognized that the promotion of EAFM concept is crucial in the region, and agreed to promote EAFM in the Southeast Asian region in accordance with the adopted the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security Towards 2020 "Fish for the People 2020" (SEAFDEC, 2011). Specifically, Resolution No. 6 encourages SEAFDEC and the AMSs to "*Implement effective management of fisheries through an ecosystem approach to fisheries that integrates habitat and fishery resource management aimed at increasing the social and economic benefits to all stakeholders, especially through delegating selected management functions to the local level and promoting co-management as a partnership between government and relevant stakeholders*," while Plan of Action (POA No. 8) directs SEAFDEC and the AMSs to "*Accelerate the development of fisheries management plans based on an ecosystem approach, as a basis for fisheries conservation and management*," and POA No. 10 to "*Establish and implement comprehensive policies for an ecosystem approach to fisheries management through effective systems – (i) to provide licenses to fish (boats, gear and people); (ii) for community fishing rights/rights-based fisheries; (iii) that provide for the development of supporting legal and institutional frameworks; (iv) that encourage institutional cooperation; and (v) that aid in streamlining co-management*." For the part of SEAFDEC, the EAFM concept had been promoted in different ways in several AMSs in collaboration with other regional and international organizations to enable the AMSs to boost the development of sustainable and responsible fisheries in their respective countries.

During 2013-2019, the SEAFDEC Training Department (SEAFDEC/TD) implemented the project "Human Resource Development for Sustainable Fisheries" to address the priority actions stipulated in the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, which received funding support from the Japanese Trust Fund (JTF). Under this Project, the EAFM concept had been piloted in selected AMSs (Weerawat and Worranut, 2019), and in 2017 the EAFM concept was introduced in Cambodia as one of the pilot sites of the Project. Upon completion of the activity in the pilot learning site in Cambodia, key achievements were attained. These include: 1) establishment of the EAFM core team; 2) integration of EAFM in the fishery management plans at community level; 3) enhanced capability of the EAFM core team to organize EAFM training courses; 4) strengthened capacity of the Fisheries Administration (FiA) officers and local fishers in advocating ecosystem conservation; and 5) broadened coverage of fisheries management, *i.e.* the ecosystem, stakeholders, alternative livelihoods, and governance.

The EAFM Concept

The Ecosystem Approach to Fisheries Management (EAFM) is a practical and participatory way to manage fisheries by continually striving to achieve a balance between the ecological and human well-being through good governance. FAO defines the Ecosystem Approach to Fisheries (EAF) as "an approach to fisheries management and development that strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic, and human components of the ecosystems and their interactions, and applying an integrated approach to management of fisheries within ecologically meaningful boundaries" (FAO, 2003).

EAF endeavors to plan, develop, and manage fisheries in a manner that addresses the multiple needs and desires of diverse stakeholders and the broader societies, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by the ecosystems (Garcia *et al*., 2003; FAO, 2003; FAO, 2012; Heenan *et al*., 2015). Effective and equitable management measures need to take into account good governance and ecosystem dynamics of which people are an important part (**Figure 1**). Furthermore, the practical implementation of an EAFM revolves around a cycle of five steps after the initial preparation phase (**Box 1**).

Box 1. Five steps in implementing the Ecosystem Approach to Fisheries Management

Step 1: Define the scope of the Fisheries Management Unit
Step 2: Identify and prioritize the goals
Step 3: Develop an EAFM plan
Step 4: Implement the plan
Step 5: Monitor, evaluate, and adapt the EAFM

Figure 1. The EAFM components

EAFM Pilot Learning Site

The fishers living in or near the fishing areas in Cambodia have organized themselves into Community Fisheries (CFi) and have voluntarily established the initiatives to achieve their objectives (**Box 2**). Since its establishment in 2000s through a Sub-Decree, the CFi served as a major factor in building trust and fostering cooperation in the communities. The FiA and Commune Councils have worked together for the establishment of the CFi as an organization and continued to support their ongoing activities (FAO, 2017).

The EAFM pilot learning site of the Project was a transboundary area between Trapeang Ropov in Kampot Province and Prey Nup 2 in Preah Sihanouk Province (**Figure 2**). In 2017, the two fishing villages combined had 2,991 families with 835 fishing households and 300 fishing boats. The fishers depend on the 5,952-ha fishing area with fishery resources that include fishes, blue swimming crabs, mangrove crabs, and blood cockles. Crab traps, mullet gill net, gill net, and push net are the major fishing gears used. The fishing area is also a habitat for endangered species such as dugong, sea turtles, and seahorses, and is also a tourist destination that had attracted the private sector for large-scale development.

Box 2. Objectives of the Community Fisheries (CFi) in Cambodia

- Management of inland fisheries and related ecosystems where the fishing lots have been cancelled
- Management of the fishery resources in sustainable and equitable manner
- Raising of the understanding and recognition of the benefits from fishery resources through participation in their protection and management
- Development and promotion of legal framework to establish community fisheries
- Improvement of the standards of living and reduction of poverty fishing communities

Figure 2. The Project's EAFM pilot learning site in the transboundary area between Trapeang Ropov in Kampot Province and Prey Nup 2 in Preah Sihanouk Province, Cambodia
Source: Google maps

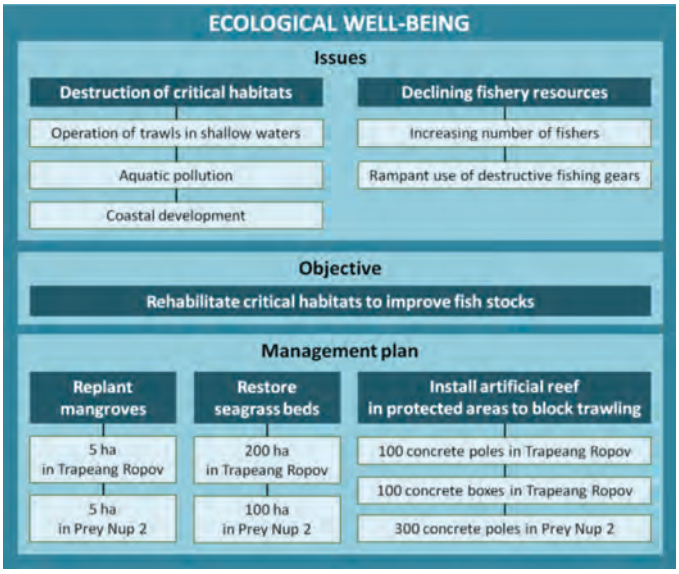
The CFi of Trapeang Ropov was established in 2002 along with the CFi of Prey Nup 2 to co-manage the transboundary fishery resources and coastal habitats including 698 ha of mangrove areas, 700 ha of seagrass beds, and 152 ha of blood cockle beds of which 15 ha had been allocated as conservation area. The Trapeang Ropov CFi is endowed with strong leaders who are actively involved in fisheries resource management activities and in complying with the fisheries regulations shared between the two neighboring coastal provinces.

Promotion of EAFM

Following the recommended steps in implementing the EAFM concept, SEAFDEC/TD in close collaboration with the FiA, organized several activities with the active involvement of the members of Trapeang Ropov CFi and representatives from other key stakeholders to consider the conditions of the EAFM pilot learning site. Based on the EAFM components, several issues were identified, the objectives of the pilot learning site were agreed upon, and management plans were developed for implementation.

Ecological well-being

Nonetheless, the EAFM pilot learning site had encountered multiple ecological issues including the destruction of critical habitats (*i.e.*, mangrove forests, seagrass beds, and coral reefs) as well as declining fishery resources. Therefore, the CFi of Trapeang Ropov exerted efforts to rehabilitate the habitats in order to increase the fish stocks. The management plan includes mangrove reforestation, seagrass restoration, and artificial reef installation.

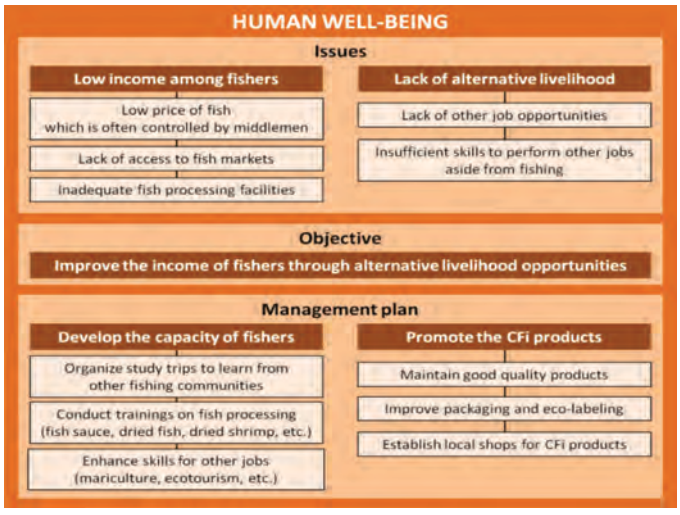


Planting mangroves is one of the ecotourism activities in Trapeang Ropov, Kampot Province, Cambodia

Planting of mangroves was included as one of the ecotourism activities in the EAFM pilot learning site. Mangrove seedlings were propagated by the CFi and sold to tourists while educating them on the ecological importance of mangroves. The CFi put up signs to demarcate the areas of seagrass beds to be restored as well as installed concrete poles and artificial reefs to prevent the encroachment of trawlers in the protected areas. Although no scientific study was conducted, the CFi reported that the stocks of fish and crabs in the area had considerably improved. The report also indicated that the average catch of fishers has recently increased from 60 kg to 80 kg for fish and from 10 kg to 30 kg for crabs.

Human well-being

Many households in Trapeang Ropov are solely dependent on fisheries, but they earn low income and there had been no alternative livelihood opportunities for them. To alleviate the condition of the local fishers and enhance the human well-being in the EAFM pilot learning site, alternative livelihood opportunities were offered by developing first their capacities and supporting them in the production of local fishery products. Thus, a livelihood peer-exchange trip to Thailand was organized by the Project on 10-14 September 2018, for the community leaders and representatives of Trapeang Ropov CFi to observe the fish sauce community enterprise in Rayong Province of Thailand.



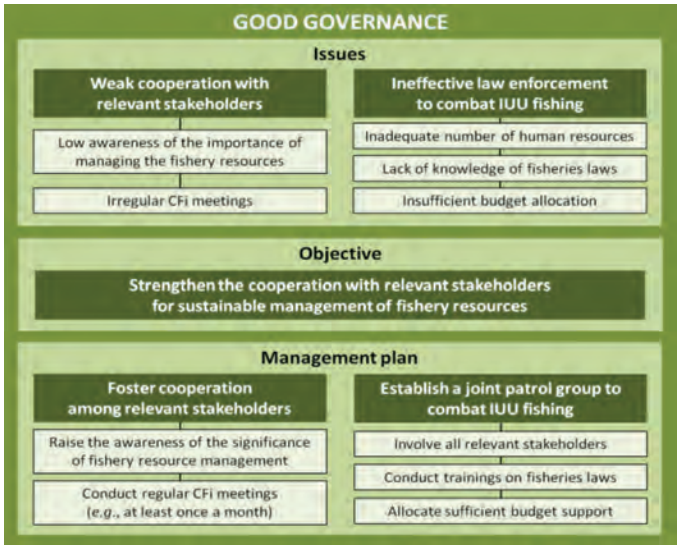
After the trip, the CFi members started their own fish sauce production as an alternative livelihood in the EAFM pilot learning site. Large ceramic jars were provided by the Project for the eight CFi members who committed to pursue the production of fish sauce, which has become a great success, and the product has become popular with high demand. This has inspired the CFi members to boost their production by maintaining good quality and improving the packaging and eco-labeling. A local shop had been established for selling CFi products, particularly fish sauce. In addition, other local fishers also ventured on the production of dried fish and dried shrimps while some became involved in the mariculture of sea bass. Furthermore, ecotourism also served as another livelihood option in the EAFM learning site. The ecotourism services that include selling of seafood, tour guiding, and providing taxi boats had provided additional income to the local people and the community as a whole. The local fishers also learned to sell their catch directly to customers. Thus, the marketing system that used to be fully dependent on the middlemen, had shifted to direct selling and serving the needs of tourists.

Fish sauce production trials at the Trapeang Ropov CFi

Good governance

While IUU fishing activities, particularly trawl fishing, had been prevalent in the waters of the EAFM learning site, the CFi of Trapeang Ropov took this as a challenge considering that the cooperation among relevant stakeholders had been inadequate to effectively manage the fishery resources while law enforcement to combat IUU fishing had been ineffective. To enable the CFi to execute good governance, they had to strengthen the cooperation among the relevant stakeholders in order to pursue sustainable fishery resource management effectively. Consequently, fostering cooperation among stakeholders and establishing an empowered joint patrol group had been considered their priority.

This led to the formation of the joint patrol group to combat IUU fishing in the EAFM learning site. The multi-stakeholder patrol group includes members from the two coastal provinces including the CFis of Trapeng Ropov and Prey Nup 2, Community Council, Fisheries Administration Cantonment



(FiAC), the navy, marine police, provincial government, among others, and regularly convenes quarterly meetings. The marine police, who under competent authority, are able to carry arms for the purpose of enforcing the law on combating IUU fishing, started to have better understanding both of the need for enforcement support of the CFi and their own contribution to it. Law enforcement by the marine police plays a very important role for the CFi, which does not have the capacity to support and perform arrests. Now, the CFi can seek the help of the police to arrest offenders, and the marine police and key stakeholders have established partnership in successfully combating IUU fishing.

Lessons learned from the pilot learning site

The lessons learned from the EAFM implementation at the pilot learning site centered mainly on the stakeholders' increased participation in resource management, achievements of the multiple objectives, and strengthening of the cooperation and coordination among the various stakeholders.

Increased participation of stakeholders

In the EAFM principle, "increased participation" implies the need for stakeholders to become involved together and work effectively in both planning and implementation of the EAFM plans and activities. At the start of the promotion of EAFM in Trapeang Ropov, the draft EAFM plan was prepared by FiA, FiAC, and CFi. Since other relevant stakeholders, especially the fisherfolk were not involved in the planning process, it was difficult for them to understand the EAFM concept, and subsequently, became reluctant to take part in the conduct of management actions. Thus, the EAFM implementation was carried out only by the CFi with support from FiA and FiAC.

Fisheries management could not be successfully accomplished with only one or two stakeholder groups involved, therefore it was necessary for the EAFM activity to expand and considered the engagement of stakeholders through focal points, who determine which stakeholder groups should be engaged in developing the management plans and then working actively for the implementation of the activities and monitoring the results. Several other agencies had been tapped to provide technical support to the EAFM activity in Trapeang Ropov, *e.g.* Fisheries Conservation Department, Department of Tourism, Department of Environment, provincial government, and the private sector.

Previously, national fisheries meetings did not involve the local communities but under the EAFM concept, the communities are now recognized as key partners in fisheries management. The increased participation of Trapeang Ropov CFi in managing the resources, conducting surveillance of illegal activities, and finding ways to improve their own livelihood has helped enhance ecological health and their human well-being. As the CFi members work together to rehabilitate the degraded ecosystems, the collective strength and social cohesion of the community had been reinforced and boosted.

Multiple objectives

Addressing "multiple objectives" takes into account the various agenda of different stakeholders and considers possible trade-offs. The EAFM principle also strives to balance the multiple, often conflicting, objectives relating to human and ecological well-being. However, competition among multiple objectives can occur not only between the ecological and human components, but also within the human component itself with different societal objectives. For example, there can be competing objectives between those who want to conserve resources for long-term sustainability and those who want to develop the site for economic gains, or between small-scale fishing community's well-being and large-scale coastal development in the CFi; or even the personal interests of those living inside and outside of the CFi.

Recognition of these multiple objectives is important when implementing an EAFM, and it is essential to fairly discuss and negotiate the trade-offs in a transparent way, taking the majority of the community as a whole into consideration. This is necessary as neither livelihood nor resource conditions could improve without good governance. Nevertheless, in the case of Trapeang Ropov, the most urgent EAFM component recognized was human well-being. The capacities and incomes of community members have been considered top priorities that need to be addressed first and foremost in order to get the community interested in working on the other two EAFM components.

Cooperation and coordination

In the EAFM principle, "cooperation and coordination" denotes voluntary but conscious and organized efforts of various stakeholder groups to work together to achieve the

EAFM objectives. Horizontal cooperation and coordination refer to efforts across sectors and agencies while vertical cooperation and coordination are across levels of government. While different FiA programs need to come together, the implementation of EAFM must also involve non-fisheries agencies and programs to better achieve the objectives of different EAFM components as well as to avoid any possible conflicts. These agencies include, for example, transportation, mining, environment, and tourism.

Considering that the responsibility of overseeing coordination should be that of a clearly designated party, the Community Fisheries Department (under FiA, FiAC, and CFi) had been identified by Trapaeng Ropov as most appropriate to coordinate and mentor other stakeholder groups through strengthened collaboration, on how to effectively manage and implement plans. Different groups need to understand the contributions they could make for the successful EAFM plan that could benefit them. Nonetheless, cooperation and collaboration from conservation organizations are necessary to sustaining the resources, and support through partnerships with the private sector could initiate livelihood development.

Conclusion and recommendations

The EAFM concept has been considered as a useful tool that provides a holistic framework in the planning process of fisheries management in Trapeang Ropov. The implementation of the actions of the EAFM plan, although still in early stages, has demonstrated improved human well-being, restored ecological health, and strengthened cooperation among fisheries stakeholders in the EAFM learning site. However, it is also necessary that the EAFM plan should be well communicated among the relevant stakeholders to raise their awareness and for them to support and improve the activities. To date, more activities still need to be implemented although adequate funding support would be necessary. The Government of Cambodia has committed to increase the budget support to CFis and to decentralize the CFis from national to sub-national level. The proposed amendment of the country's Fisheries Law, particularly restricting open access and imposing strict penalties for large-scale fisheries, would allow the CFis to effectively enforce the regulations for reducing IUU fishing activities in their communities. Furthermore, the EAFM plan of the Trapeang Ropov CFi would be continued and expanded to the neighboring CFis. Although each EAFM learning site is different in terms of the issues and opportunities, the lessons learned from Trapeang Ropov CFi would be useful for other countries in the region in applying the EAFM concept.

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