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Co-management of small-scale fishery in the Tonle Sap Lake, Cambodia

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ABSTRACT

In Cambodia, fishery co-management is an important process to transfer authority and ownership to the communities along the Tonle Sap Lake to manage fishery. This paper aims to determine why the co-management of small-scale fishery has not been implemented satisfactorily in the Tonle Sap Lake of Cambodia. The research was primarily based on a household survey among 404 households for quantitative data, equally divided between the Cham (202 households) and Khmer (202 households). Participatory process was also applied to collect qualitative data from key stakeholders. We found that limited interaction among the involved stakeholders, i.e., unequal distribution of authority and resources co-management, has impeded implementation. The engagement of fisherfolk was influenced by dependence on fishery, law enforcement, and events organized by the communities. While the Khmer had better opportunities to participate in planning at the provincial and district levels, the Cham were only engaged in local development activities initiated by their people. However, the latter evinced a higher rate of satisfaction due to their access to fishery resources and to a large quantity of fishing gear. In the future, efforts should be made to: (1) improve resource and authority sharing among all key stakeholders; (2) urgently resolve issues pertinent to capacity building, insufficient budgets for commune councils (CoCs) and community fishery (CFi); and (3) urge law enforcement regarding illegal fishing.

1. Introduction

For more than two decades, fishery co-management has been applied in the Tonle Sap Lake area, Cambodia. Now its fisheries are managed under a regime of community fishery (CFi). The fisherfolk are eligible to access, use and manage all fisheries in accordance with the CFi area. However, the involvement and partnership of all stakeholders in the co-management process are not yet clearly defined. In 1995, the Food and Agricultural Organization (FAO) introduced the co-management concept in the form of a Participatory Natural Resources Management Program in Siem Reap Province, Cambodia. Three years later, Oxfam Community Aid Abroad established community fisheries (CFs) in Pursat Province, Cambodia. In 2001, a widespread co-management approach was adopted (Resurreccion, 2008). However, fishery co-management has been hampered (i) by an increased trend towards decentralization (Ribot, 2002); and (ii) by dilemmas attributable to top-down governance (Driessen et al., 2012).

According to Pech and Sunada (2008), many conflicts have occurred involving lot owners and small-scale fisherfolk who have been pressured to relinquish their fishing grounds to local management. With regards of the Tonle Sap Lake, the implications of fishery

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co-management evolved in two stages of the national policy reforms. In 2001, the Royal Government of Cambodia (RGoC) initially transferred $5.00 \times 10^5 \text{ hm}^2$ or 56% of the large-scale commercial lot owners' grounds to small-scale subsistence fisherfolk. During the second reform in March 2012, the Ministry of Agriculture, Forestry and Fisheries (MAFF) cancelled all fishing lots nationwide and handed them over to local communities for usage, management and conservation. Prior to the second reform, the Tonle Sap Lake accommodated three fishery scales, i.e., large, medium and small-scale fishing (Hap et al., 2006). Co-management has been fully applied through the establishment of CFI. By 2016, there were 516 CFs nationwide and 207 CFs (or 40% of the national total) had been established in the Tonle Sap Lake area (MAFF, 2016).

Although 90% of the local people depend upon small-scale and subsistence fishing for their food security (Hap et al., 2006), the fisherfolk have found little opportunity to participate in management. Subject to traditional overlapping and conflicting institutional arrangements, fishery management today is overshadowed by the government's fishery-associated dominant views (Pech and Sunada, 2008). Ratner (2006) argued that legal authorities and the rights and accountability of the fishery officials were required to strengthen the effectiveness of CFI, whereas Nuon and Gallardo (2011) expressed optimism regarding the CFI's operation to reduce illegal fishing. At the macro-level, fishery management helps to increase economic, environmental and legal conditions. However, economic productivity at the individual level remains inconclusive (Elliott et al., 2020).

To date, scholarly work on fishery management in the Tonle Sap Lake area has mainly focused upon the following aspects: governance and participation (Béné and Neiland, 2006; Sneddon and Fox, 2007; Sok et al., 2014), women's participation (Resurreccion, 2006), institutional arrangements (Keskinen and Varis, 2012), social capital building (Sultana and Thompson, 2004), and enhancement of resources through integrated resource management (Lambters, 2006). In the case of small-scale fishery, co-management is arguably more feasible given that it creates smaller group sizes and homogeneity of communities for collective actions (Olson, 1965). A study of the co-management in the Tonle Sap Lake revealed that fishery management is constrained by lack of linkage among state agencies, community fishery and Non-Governmental Organizations (NGOs) when it comes to implementing relevant regulations, policies and plans (Sok et al., 2012). In this paper, we try to determine why stakeholders from national to local levels have been unable to interact successfully in general, and to identify the major factors influencing the fisherfolk's degree of participation in fishery management. In addition, the Cham and Khmer fisherfolk's perceptions regarding participation in and satisfaction with both the planning process and implementation of regulations will be addressed. Finally, some future solutions will be suggested.

2. Revisiting co-management in the development world: towards an analytical framework

In the 1990s, the concept of co-management was introduced to recognize the significance of the roles and responsibilities transferred by the state to the communities for natural resource management (Lewins et al., 2014). The introduction of a centralized system has been proven a challenge for authorities with very limited legitimacy to enforce regulations (Sen and Nielsen, 1996). This top-down approach has failed to manage fishery stocks effectively (Jentoft, 1989). Co-management is designed to integrate coordination and participation of government and key stakeholders at various levels (Carlsson and Berkes, 2005). While the establishment of co-management has been time consuming (Kooiman, 2003), it has tasked local engagement with the managing of resource crises (de Oliveira, 2013).

According to Berkes (1994), co-management is a sharing of responsibilities and decision-making between the fisherfolk and the state-based management authorities. Moreover, co-management provides an opportunity to incorporate small-scale fisherfolk and other stakeholders in management (Noble, 2000). In the Cambodian context, co-management through the establishment of CFI has created a partnership arrangement in which the community, government and NGOs share both the responsibility and authority for fishery management (MAFF, 2018). Similarly, Viner et al. (2006) defined 'co-management is being implemented through the creation of community fisheries; these involve management partnerships between a community of local resource users and the provincial office of fisheries (POF), usually supported by a non-governmental organization (NGO)'. This definition is adopted in this study because it is developed specifically for fishery management in Cambodia.

Most of the developing countries influenced by international donors have introduced co-management reform in the interests of sustainable management (Knowx and Meinzen-Dick, 2001). The government holds the strong perception that fisherfolk are able to formulate locally acceptable regulations designed to fight overfishing trends (Ferguson and Derman, 2000). In Costa Rica of Central American, the centralized management has been proved ineffective due to high rate of overexploitation; and the application of co-management for exclusive access is an alternative (Lozano and Heinen, 2016). Additionally, participatory approaches to conservation have failed because the work is mainly focused upon overall project goals rather than the means for achieving real issues (Campbell and Vainio-Mattila, 2003).

In contrary, community-based conservation programs in Nepal were managed under the direction of NGOs and tended to perform well because they fostered capacity building, local income generation, benefit-sharing and more favorable attitudes (Baral and Stern, 2011). Decentralized conservation programs tend to be successful if governments legislate to promote empowerment, participation and incentives structures (Baral and Heinen, 2007). Stern and Baird (2015) identified four types of trust (dispositional, rational, affinitive and systems-based) that contributes to play a role among networks of people and organizations to govern, debate and interact in decision-making processes for natural resource management.

A well-known common-property researcher argues that self-organization is possible if collective action is shared (Ostrom, 1990). To avoid dependence on government, Pomeroy and Berkes (1997) proposed establishing community co-management. Evans et al. (2011) advocated financial investment in fishery co-management after conducting the requisite assessments. The first comprehensive global assessment revealed that leadership is a key factor in successful co-management (Gutiérrez et al., 2011). Moreover, scholars have emphasized the importance of co-management in social relationships (Pinkerton, 1989), citing the involvement of fisherfolk in key decisions regarding fishing rights (Jentoft et al., 1998). Successful fishery co-management variously requires: (1) an appropriate

institutional framework for governance (Baland and Platteau, 1996); (2) a high degree of local control (Pinkerton, 1994); and (3) solid relationships among human actors and informal arrangements (Pinkerton, 1989). Key elements of co-management consist of a degree of power-sharing (Béné and Nieland, 2006), participation and involvement (Nunan et al., 2012; Smith, 2012), coordinating institutions (Noble, 2002), empowerment and community benefits (Napier et al., 2005).

Co-management involves empowering and the sharing of rights, roles and responsibilities of state agents, communities and interested stakeholders (Berkes et al., 1991; Sen and Nielsen, 1996; Castro and Nielsen, 2001; Pomeroy, 2004; Béné, 2009). Co-sharing tasks between community and government makes co-management more effective than relying solely on state regulation (Carlsson and Berkes, 2005). Geoghegan and Renard (2002) maintained that while it is not essential for stakeholders to participate in management, their views and interests are essential features of co-management. d'Armengola et al. (2018) argued that although co-management has put considerable emphasis upon technical solutions to fisheries' management problems, it plays little attention to the socio-political factors of local representatives.

In addition, fishery co-management has been impeded by the following factors: (i) insufficient attention to practice (Wilson, 2003; Lewins et al., 2014; Quimby and Levine, 2018); (ii) inflexibility (Jentoft, 2003); and (iii) vagueness of the relevant information (Bown et al., 2013). In the context of the Tonle Sap Lake, co-management has always been the sole responsibility of the government and is mainly carried out by NGOs. However, sustainability remains an issue due to shortages of internal financial and human resources. As a result, analyses of key stakeholders' participation in planning and regulation making, and engagement with fisherfolk have become key development agendas for supporting co-management in the Tonle Sap Lake.

3. Study area and methods

The Tonle Sap Lake in Cambodia is the largest freshwater lake in Southeast Asia. It varies in size from approximately 2.50×10^5 – 3.00×10^5 hm² during the dry season to approximately 1.00×10^6 – 1.30×10^6 hm² in the wet season (Kummu and Sarkkula, 2008). As Friend (2007) observed, the fishing industry has sustained Cambodians over the centuries, accounting for 75% of animal protein intake in a typical Cambodian diet (Ahmed, 2003). Cambodia claims to have the world's most productive inland fishery, largely based on production from the Tonle Sap Lake and Mekong River (Thoun and Chambers, 2006). Its annual catch is conservatively estimated at 4.00×10^5 t, approximately two-thirds of which comes from the Tonle Sap Lake (Hortle, 2007). Given its great freshwater ecosystems, the lake is extraordinarily highly productive: it sustains enormous fish production and transport (van Zalinge, 2002). According to Baran et al. (2007), the lake's fishery ranks the first in terms of productivity and the fourth in terms of catch size in the world. The Tonle Sap Lake is frequently considered 'the heart' of the Mekong River; and, almost half of all Cambodian people benefit from its rich resources (Bonheur, 2001).

The field work for this study was conducted in one of the five provinces of the Tonle Sap Lake, i.e., Kampong Chhnang Province, between November 2015 and April 2016. Additional interviews were conducted in March 2020 to facilitate collection of reliable

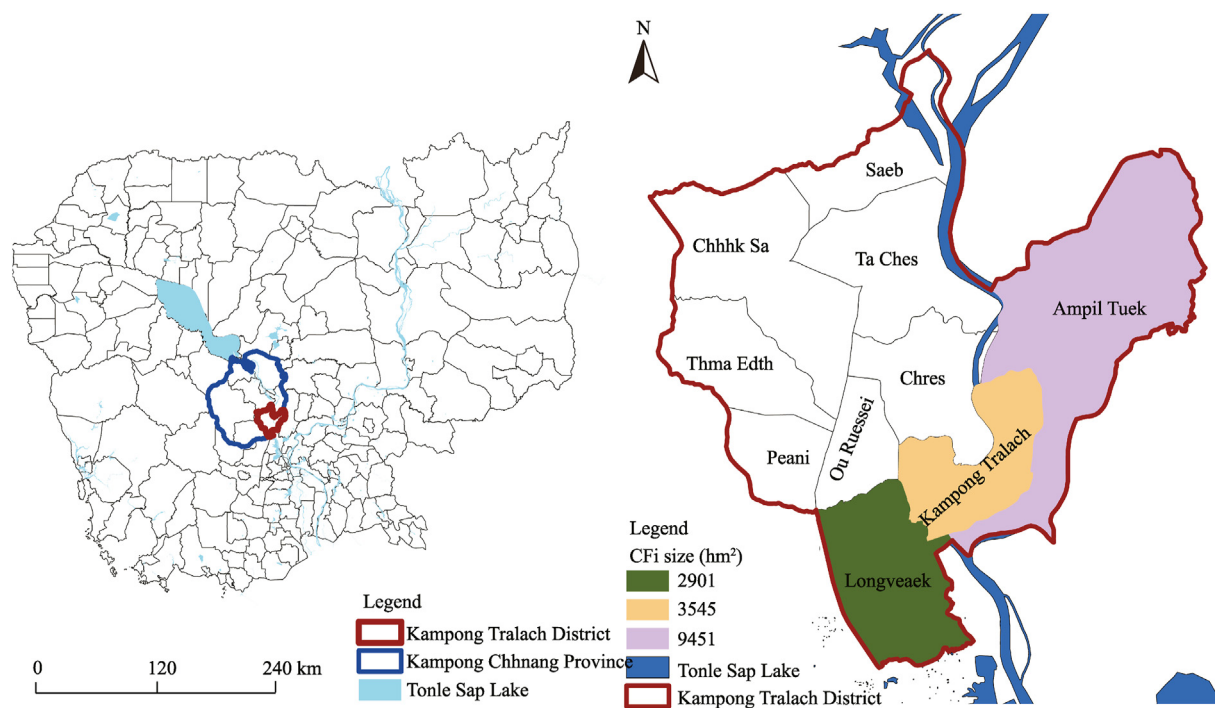


Fig. 1. Location of Kampong Tralach District in Kampong Chhnang Province, Cambodia (a), and distribution of the community fishery (CFI) in the Kompong Tralach District.