

## Adaptive Co-Management: Lessons from Coastal Cambodia\*

Melissa Marschke<sup>†</sup> and  
Kim Nong<sup>‡</sup>

**ABSTRACT** - *This paper focuses on how community-based management is unfolding in coastal Cambodia through the facilitation of a donor-funded, Cambodian-led government research team. Coastal communities in Peam Krasaop Wildlife Sanctuary illustrate the strong potential for community-government partnerships. Several lessons are highlighted: community-based management requires support from the provincial and national level; facilitation between stakeholders is important; and experimentation is an essential component of management. Creative models of community-based management, emerging despite the absence of a legal framework, may be best described as systems of adaptive co-management combining the elements of trial and error, learning-by-doing, and the sharing of management responsibility.*

**RÉSUMÉ** - *Cet article porte sur l'utilisation de plus en plus répandue de la gestion communautaire dans la région côtière du Cambodge grâce au travail de facilitation d'une équipe de chercheurs du gouvernement cambodgien subventionnée par un donateur. Les collectivités côtières de la réserve faunique de Peam Krasaop démontrent tout le potentiel des partenariats gouvernement/collectivités. L'article souligne les principales leçons découlant de cette initiative : l'appui essentiel des autorités provinciales et nationales; l'importance de la présence d'un facilitateur auprès des intervenants; et l'expérimentation comme composante essentielle de la gestion communautaire. Les modèles de gestion communautaire novateurs qui se développent malgré l'absence de cadre juridique, peuvent être décrits comme des systèmes de co-gestion adaptative qui combinent à la fois les principes d'apprentissage par tâtonnements, par la pratique et par le partage des responsabilités de la gestion.*

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† Melissa Marschke worked as a consultant for IDRC between 1999 and 2002 with the Participatory Management of Mangrove Resources (PMMR) team in Cambodia. She is currently pursuing her PhD at the Natural Resources Institute, University of Manitoba. Her research interests include sustainable livelihoods, community-based natural resource management (CBNRM), and participation and decision-making in CBNRM. She can be reached at <mjmarschkeca@yahoo.com>.

‡ Kim Nong is the Chief of the Wetlands, Watershed, and Coastal Zone Office, Department of Natural Conservation and Protection in Cambodia's Ministry of Environment. He is the Team Leader of the PMMR project. His research interests include CBNRM, co-management, and decentralization. He can be reached at <pmmr@online.com.kh>.

## INTRODUCTION

Community-based natural resource management (CBNRM) advocates have claimed that "CBNRM offers the best prospect for meeting conservation objectives while improving the position of impoverished rural communities who have been denied the fundamental right to substantive participation in decisions that impact on their well-being and livelihoods" (Li 2002, 265). Donor agencies (for example, the World Bank, IDRC, CIDA, the Worldwide Fund for Nature) have been supporting community-based projects throughout Asia (Agrawal and Gibson 1999), based on the assumption that resource users are in a better position to manage the resources upon which they depend (Li 2002). However, a crucial question arises: Can CBNRM be created through development initiatives or government intervention, in partnership with communities?

The commons literature<sup>1</sup> indicates that local institutions can, in fact, be built by creating a suitable institutional environment. Village-level management of Japanese coastal fisheries is enabled, for example, through the Japanese central government's *Fisheries Law* (Berkes, Colding, and Folke 2001). CBNRM can also be built through working with and developing local institutions, as in mangrove management in St. Lucia, the West Indies (Smith and Berkes 1993). Many studies of rural commons indicate that community-based organization emerges all the time; people are constantly self-organizing. Ostrom (1992) talks about "crafting" institutions from the elements of "institutional capital" that exist in a given society. Although this body of literature is rich with examples of local resource management institutions (Ruddle 1994), little analysis can be found of how CBNRM comes about through development practice and learning-by-doing. This paper reflects upon how community-based management is emerging within coastal Cambodia.

Community-based management can be seen as an adaptive approach to resource management. Some development agencies deal with CBNRM as if there were only one prescription and as if communities were self contained. In reality, however, community-based management proceeds through trial and error, and with a great deal of interaction among scales of management. As Cash and Moser (2000, 113) put it, "events or phenomena at one scale influence phenomena at other scales." In the case of resource use, this is in fact expected because common property resource use arrangements almost always occur within a broader context (Steins, Edwards, and Roling 2000). In these cross-scale interactions, learning-by-doing is often the norm. Such adaptive management tends to be an iterative process, based on feedback learning, and embodies a simple imperative: "policies are experiments; learn from them" (Lee 1993, 9).

The Cambodian case study is interesting in that it reflects neither established co-management (for example, Pomeroy and Berkes 1997), nor community-based management (for example, Ostrom 1992; Ostrom et al. 2002). Thus, it corresponds better with cases from Indonesia (Tsing 1999; Armitage 2003). The historical and political context of Cambodian participatory management is particularly significant (Brosius, Tsing, and Zerner 1998). This case illustrates how community-based systems of management can be established to work in collaboration with government agencies at various levels, with international NGOs, and with donor agencies. Although community-based projects in Cambodia fall under a CBNRM label (hence CBNRM or community-based management is referred to throughout the body of this paper), this particular case may be best described as a system of "adaptive co-management" (Gadgil et al. 2000).

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1. Commons literature, also known as common property theory, looks at property rights regimes, that is, who has access to natural resources.

Adaptive co-management may be referred to as “a process by which institutional arrangements and ecological knowledge are tested and revised in a dynamic, ongoing, self-organized process of trial-and-error” (Folke and Environmental 2002, 20). In the Cambodian case, these adaptive co-management systems have the elements of learning, as well as cross-scale governance. Using the terminology of Young (2002) and Ostrom et al. (2002), these cross-scale linkages have been horizontal (across geographic space) and vertical (across levels of governance), illustrating the broader context of community-based management.

Community-based management in the Cambodian context can be used as an example of an adaptive management approach, because it has been based on feedback learning in the absence of long-established government management practices. Although technical agencies such as the Department of Fisheries and the Ministry of Environment “officially” manage coastal resources, in reality little attention has been paid to isolated coastal communities because of civil conflicts and capacity issues. Communities themselves are in flux: most villagers migrated into the study area after the Khmer Rouge. Communities tend not to be cohesive, and local institutional development is limited (Agrawal and Gibson 1999; Brosius, Tsing, and Zerner 1998). In the absence of set structures and frameworks, however, there has been room for some experimentation and learning-by-doing in the area of resource management. More generally, and in Cambodian society as a whole, such experimentation provides new opportunities for reorganization. It is within this context that donor agencies began providing support to resource management institutions.

The Participatory Management of Mangrove Resources (PMMR) project is one of several donor-funded projects in the coastal area, working in Koh Kong province, Cambodia. This paper examines the community-based management approach that this project team has taken,<sup>2</sup> highlighting some of the lessons learned and challenges faced after four years. The paper traces the unfolding of this community-based management process, and it is argued that this is one model of community-based management that may be adapted, learned from, and used in other parts of Cambodia. Following a description of the Cambodian coastal context, the paper turns to the project experience with learning about CBNRM, including the issue of resource decline. Some of the actions taken by the project team and local villagers have been taking place in a legal vacuum. The paper therefore examines the challenges of local and cross-scale resource management in the absence of a legal framework.

## I. RESOURCES AND THE PROJECT TEAM

Continued access to fishery and forestry resources represents insurance against agricultural risks, providing livelihood security for Cambodian households with little or no land. For example, 90% of the population meets its fuel needs from forest and flooded forest products (charcoal and firewood); local fisheries resources contribute towards much of the daily protein requirements and provide food security for rural people (Ahmed et al. 1998). Access to these resources is declining.<sup>3</sup> Cambodia's once rich natural resource base is depleting as Cambodia makes the transition to a market-based economy: in the past ten years, fishery and forestry resources have been rapidly exhausted (see

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2. Both authors have been extensively involved with PMMR, and this reflects their joint learning of CBNRM in the Cambodian context.

3. Not all rural households have access to common property resources depending upon where a village/household is located. Fisheries and forestry resources fall under a mix of property rights regimes: community controlled; open-access (for example, coastal fishing areas; non-fishing lot areas); state owned (for example, protected areas); and private ownership (for example, forest concessions; fishing lots).

Ramamurthy et al. 2001; Kato 1999; Global Witness 1998). The illegal “grabbing” of land, forest, and water areas by those with “power”<sup>4</sup> reduces the range of options available to rural households. In response to this rapid over-exploitation, donor agencies and some government departments have begun looking at potential resource management partnerships.

The PMMR project began research in December 1997,<sup>5</sup> working with local communities to better understand livelihood and management issues in one protected area. This team, funded by Canada’s International Development Research Centre, is composed of government staff at the national and provincial levels from various technical departments. The lead institution is the Ministry of Environment;<sup>6</sup> the provincial team is interdepartmental, coming from the Department of Environment, the Department of Fisheries, the Department of Rural Development and the Department of Women’s Affairs (figure 1).

Although this research project is coordinated by project members in the Ministry of Environment, as the project team’s understanding of CBNRM has grown, more partners have become engaged in this process. New government counterparts, for example, included one member from the provincial Department of Women’s Affairs and one member from the national Department of Fisheries. Community members, with facilitation from PMMR, have formed their own village-level institutions and are integral to this research process. This adaptive management or “learning and doing” approach is central to PMMR’s work.

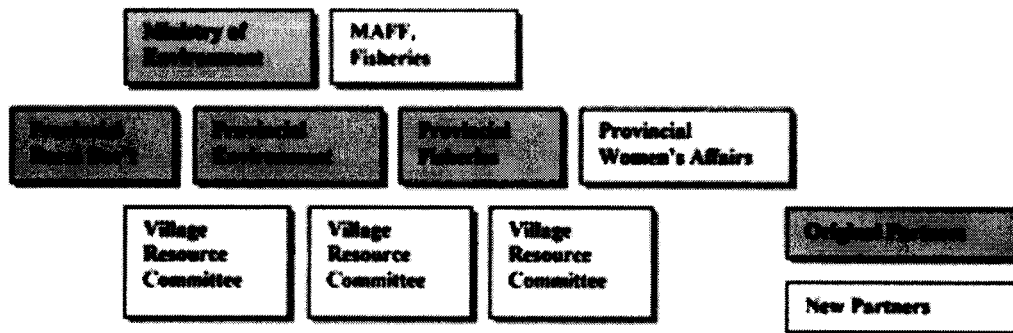


Figure 1: Adaptive Co-Management, the Evolving Structure of PMMR

PMMR plays a coordinating role with other technical institutions, both formally (staff) and informally (workshops, study tours). National and provincial institutions are connected to the newly created Village Resource Management Committees.

4. In Cambodia, “power” is an important and particularly-understood concept. It represents those with money, connections, and friends-in-high-places. It has been suggested that Cambodian social relations take place within an authoritarian, hierarchical construct (see Legerwood 1998; Larsson 1996; Legerwood, Ebiara, and Mortland 1994; Ebiara 1968).

5. This project will be funded until late 2003. This is a relatively long time for donor funding, since many funding cycles are two years.

6. The Ministry of Environment has the mandate to protect and conserve Cambodia’s 23 protected areas. To date, little is known about the ecosystems and the people living within most of these areas.

## II. THE CAMBODIAN COASTAL CONTEXT

The focal point of PMMR's work is in one protected area: Peam Krasaop Wildlife Sanctuary located in southwestern Cambodia. Peam Krasaop Wildlife Sanctuary boasts a unique mangrove ecosystem consisting of 23,750 hectares, and spans three administrative districts with around 10,000 people living within its borders. PMMR has focused on five villages within this area. Peam Krasaop Wildlife Sanctuary and Koh Kapik Ramsar Site (overlapping boundaries) in Koh Kong province have some of the best remaining examples of mangrove forests in the Gulf of Thailand, as many other areas have been cleared for intensive shrimp aquaculture, large-scale charcoal production, and other purposes.

Koh Kong province is isolated from other parts of Cambodia and relatively unpopulated. Until mid-2002, western Koh Kong province, where the PMMR works, could only be accessed via boat. After the catastrophic Khmer Rouge regime, some villagers, faced with landlessness in other parts of Cambodia, migrated into Koh Kong hoping to earn a living from the lush resources found in the coastal area. Very few people who lived in this area prior to the Khmer Rouge returned; many "escaped" to Thailand or did not return to Koh Kong (Marschke 1999). Some have called this area the "wild west" of Cambodia because of the frontier feel and abundance of illegal activities found in Koh Kong. The area is favourable for fishery and other resources; Cambodians continue to be lured to the area in the hopes of making a profit. Most resources from Peam Krasaop Wildlife Sanctuary, including aquatic resources, logs, and illegally produced mangrove charcoal, are sold to the Thai market. Unfortunately, resources have been rapidly depleted, and the profitable opportunities (from illegal logging, charcoal production, and now-defunct shrimp farming) once found in Peam Krasaop Wildlife Sanctuary are limited to rich business people (local and Thai) (Marschke 2000).

Villagers live in Peam Krasaop Wildlife Sanctuary for a variety of reasons: as long-term residents, for resource extraction opportunities, for fishing opportunities, for government work (navy, military, police, government officials), or following family to the area. Some in-migrants consider this area their home, whereas others plan to return to their birth province. The main income generation opportunities stem from fishing (legal and illegal), charcoal production (illegal), farming, marketing (local or regional), and selling one's labour. Most villagers are engaged in a diverse number of subsistence and market-based livelihood activities and practice some form of fishing (trawling, crab trapping/netting, green mussel culture, oyster digging). PMMR, after four years of working in this area, is just beginning to understand the multiple, complex factors that households face within the area and some of the coping strategies that households engage in.

As environmental awareness has increased, there has been a growing demand from both villagers and government authorities to work towards measures that will protect the mangrove resources of Peam Krasaop Wildlife Sanctuary. Considering that many "power" players benefit from resource extraction and exploitation, it is risky for community members and some government counterparts to actively engage in CBNRM-type initiatives. Yet, this movement is growing and community-based processes are being fostered with time.

### III. LEARNING ABOUT CBNRM

We've started organizing ourselves: some people in our village understand this . . . Taking control of our resources is a new process for us.

—a fisher, Peam Krasaop Wildlife Sanctuary<sup>7</sup>

Community-based management is relatively new within Cambodia.<sup>8</sup> For PMMR team members, reading about CBNRM or other community-based management initiatives in Asia held little meaning until time was spent in the field working with local communities and thinking more about the Cambodian context. For PMMR, CBNRM is seen as: (a) a participatory approach that enables researchers to work with different partners to facilitate an understanding of environmental issues affecting coastal communities; (b) a way to link different villagers and different government levels together to work on planning and management of natural resources; and (c) an opportunity for partners to plan livelihood options together. Enabling practical experiences to inform theory is helpful in this context, since other models of CBNRM or community-based management found in Southeast Asia may not be appropriate within Cambodia.

Although this was perhaps not a conscious strategy, PMMR spent the first few years learning about different coastal issues, hearing different perspectives, and creating forums that allowed people to exchange ideas on resource management. Capacity building, on various aspects of community-based management, has included national, regional, and international trainings; fostering an understanding of the field situation; trying out different ideas; and incorporating an active reflection process into PMMR learning. For local communities and other government officials (PMMR is never only targeting one level), various study tours to other CBNRM projects and cross-exchange visits have been facilitated. For example, PMMR facilitated one workshop between 50 villagers and three project teams working on community-based management, enabling both project staff and villagers to learn from each others' experiences. At the village-level, different activities are supported, for example, holding environmental education workshops, facilitating meetings, and experimenting with small-scale aquaculture projects. This understanding of CBNRM has evolved through extensive capacity building and training opportunities, experimentation, and learning-by-doing.

When PMMR began working on community-based management, team members felt that they could learn from field visits and exposure to other community-based projects in Cambodia and the region. Study tours were arranged for PMMR and a few villagers to visit different project sites in Thailand, Vietnam, and the Philippines. These networking opportunities and exposure to different models played a significant role in shaping PMMR's and villagers' initial ideas on CBNRM and in getting field activities started. One villager noted: "I didn't realize that what we were doing to protect the mangroves is also being done in other parts of Cambodia. Perhaps we can teach other villages in our area what we are doing and what others are doing" (Marschke 2000). Villagers learn best from each other, and facilitating cross-exchanges has been useful for both villagers and PMMR team members.

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7. From an interview the author had with a local fisher in Koh Sralao village, Koh Kong province, Cambodia on 16 June 2001.

8. Government control over resources seems to be prevalent since French colonial times. Generally, communities have been reluctant to take an active role in resource management, fearing government repercussions. Notwithstanding, there is a growing movement for community-based management from villagers themselves, with support from government actors, in response to rapid resource declines and inefficient government responses to such declines.

With the benefit of hindsight, the PMMR team realizes that while study tours and exchanges are one way to learn, perhaps “doing something” is the best approach of all. That is, although exchange visits are useful, workshops encourage networking and reading books helps, the most exciting opportunities have been through participating in a learning process with key community members. Researching with villagers how mangrove resources declined and which areas were considered most degraded, for example, led to a greater mutual understanding of where to begin mangrove replanting activities. As one PMMR member commented, “it is far more important to facilitate a process that lets villagers learn for themselves. They know how to solve many local problems, it is a matter of supporting this and of getting government officials to support this and to also learn from this.”<sup>9</sup> Taking time to research local issues and to foster joint problem-solving opportunities has engaged both villagers and PMMR team members.

#### IV. UNDERSTANDING RESOURCE DECLINE

Initial research enabled PMMR and villagers to learn together to better understand changes in local resources. Since 1993 fishery resources have significantly declined; figure 2 illustrates how villagers have interpreted changes in resources between 1980 and 1998. For example, resources are affected by population growth (net in-migration), mangrove cutting for shrimp farming and charcoal production, the use of modern fishing gear, and illegal fishing activities within Peam Krasaop Wildlife Sanctuary. As the population has increased, so too has the number of fishers in the area. Fishers comment that since 1990, when trade with Thailand began more extensively, intensive charcoal production and the use of illegal fishing gear (that is, cyanide fishing and illegal trawls and push nets) began. “Illegal activities really increased in the 1990s. After a few years, we noticed that there were less fish and mangroves in our area,” noted one fisher.<sup>10</sup> Villagers have noticed a gradual decline in their mangrove and aquatic resources.

Most people in Peam Krasaop Wildlife Sanctuary no longer fish merely for subsistence purposes — as compared to the early 1980s when several communities grew and processed narcotics and fishing was a secondary activity. Crab fishing has always been done in the area; although many households continue to use crab traps or nets, other fishing gear is also used. During the rainy season, women and children, particularly, glean mangrove roots for snails and clams. Villagers have become increasingly aware that mangrove deforestation activities for fuel wood and charcoal production affects fishing activities.

Along with a declining resource base, there has been an increase in illegal fishing activities. Local fishers, unable to compete with larger, more expensive fishing gear through small-scale fishing, started operating small trawlers and push nets in shallow waters. With an increased demand on the fishery (and an increase in overall catch by larger boats), poor families find themselves in a difficult situation, noting that the standard of living in their coastal communities has decreased relative to the situation five years ago (Marschke 2000). Consequently, conflicts within fishing communities have risen. For example, one fisher uses crab traps or gill nets and another uses trawls or push nets within the same area. The trawler and motorized push nets often destroy small scale fishing gear. Generally, larger fishing gear is owned by “outsiders” — although it is hard to pinpoint exactly who constitutes “outsiders” given the mobility of fishers.

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9. From an interview the author had with a PMMR team member in Phnom Penh, Cambodia on 7 August 2002.

10. From a meeting the author had with local fishers in Koh Kang village, Koh Kong province, Cambodia on 17 December 2001.

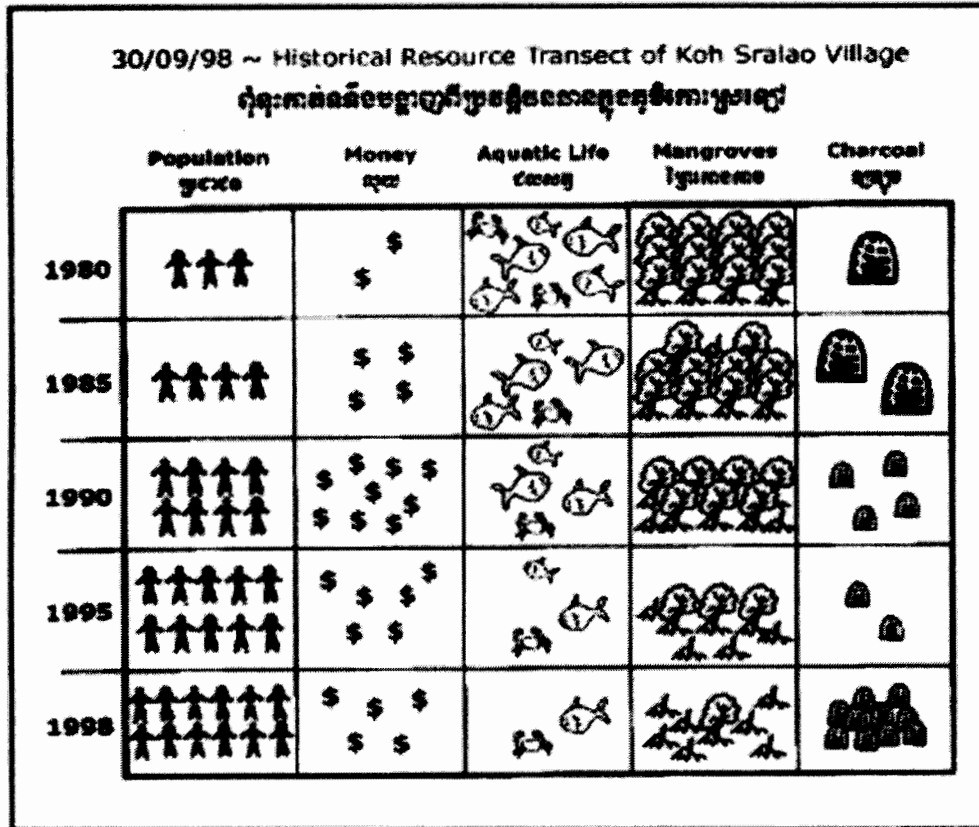


Figure 2: Historical Transect of Koh Sralao Village

Groups worked together to form these historical transects, and then met in a larger group to discuss their findings together. This was how one group of people perceived the changes in their resources over an eighteen-year period.

Another indication of how significantly resources are perceived to be declining is through examining money-lending patterns. Most villagers in coastal communities borrow money for fishing gear from a middle person in exchange for selling their fish products at a reduced market rate. This system has been in place in these communities since the early 1980s (given the in-migration to this area, it is difficult to know what happened prior to the Khmer Rouge regime). For example, in one village of around 300 families there are six middle persons. The poorest households have never had access to these middle persons, however, most other villagers have. The middle persons, for the first time, are refusing to lend out more money after the rainy season because villagers are not able to repay their loans. That is, middle persons claim that they will continue to buy fish products from those who have borrowed money from them but are no longer able to lend money. Both middle persons and local fishers are concerned, and it remains to be seen how this process will unfold.

It is possible that the combination of an active environmental awareness program — that is, meetings, networking opportunities, livelihood experiments, environmental education activities, and study tours — coupled with a better understanding of dramatic resource declines gave villagers the incentive to begin a problem-solving process. After several years of engagement, both villagers and PMMR began to see possibilities for local resource management, given sufficient government



support (both provincial and national) for the process. Although villagers recognize that they cannot solve larger-scale issues such as illegal fishing from Thailand or Vietnam, they see the vital role that they can play in local resource management, especially in and around their community.

## V. PROCESS: GOING FROM PLANNING TO ACTION

Communities want to come up with real activities such as patrolling, mangrove replanting, and to try other alternative livelihoods. We saw that when we stopped doing charcoal kilns, the mangrove forests started re-growing.

—a fisher, Peam Krasaop Wildlife Sanctuary<sup>11</sup>

PMMR initially facilitated a community-based management process within two villages. Within each village, a working committee composed of interested villagers, representatives for each section of the village, and key informants was formed. Over a half-year period, village committees met to discuss key resource management issues affecting their village and to design management regulations. After careful consideration of different management options and who would be affected by such regulations, draft management plans were formed. From here, a formal election process took place within each village to vote for Village Management Committees (between three to nine members per committee, depending on the size of the village) and to decide whether or not to accept the draft regulations (these regulations were supported at the village level).

Once Village Management Committees were elected, PMMR facilitated a series of village-level workshops to (1) facilitate a discussion on the management plans in more detail; and (2) focus on drafting action plans for issues that the committees had prioritized. For example, one committee was concerned with mangrove degradation and wanted to do mangrove replanting. The action plan detailed how to involve more villagers and how to bring local media to this event. In total, eight hectares were replanted, nearly all villagers participated in the mangrove replanting, and the video footage was shown nationally! Other action plans created by Village Management Committees include patrolling activities, environmental education activities, and home gardening, specifically with women. Creating action plans, initially, that are less controversial is one way for the Village Management Committees to gain village-wide support.

PMMR and the Village Management Committees have found that while villagers often agree with the concept of CBNRM of co-management (sharing resource management responsibility), translating these ideas into action is more challenging. Some villagers find it difficult to plan — that is, it is hard to envision what local management could look like. Also, while people might agree with the idea of management, when the reality becomes clearer — for example, regulations such as changing net sizes — villagers become somewhat hesitant, as management regulations will affect them directly. Hence, strong leadership from within Village Management Committees and facilitation (sometimes from outsiders) is an integral part of negotiating local management.

It takes time to develop realistic goals and actions. Facilitators need to be very clear about local issues and have some understanding about the resources to help facilitate the community to make better-informed decisions. That is, only when facilitators are able to understand how a resource works in combination with being able to facilitate within the community can a meaningful dialogue take place. The Village Management Committees, initially, tended to be very enthusiastic and strict;

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11. From an interview the author had with a local fisher in Koh Sralao village, Koh Kong province, Cambodia on 16 June 2001.

when the challenges of implementation were realized, some of the actions were revisited and renegotiated. For example, net mesh sizes needed to be renegotiated. This is when another level of learning takes place, as Village Management Committees think through their own solutions to local issues. This takes significant trial and error until an effective solution is found. As an outside facilitator, PMMR realized just how important it was to allow a process to continue and evolve so that villagers would begin to experiment and to adapt ideas. Flexibility needs to be built into facilitation processes to allow for learning and adaptation.

Conflicts at the community level do occur, and without facilitation or conflict-resolution skills, problem-solving can be challenging. For example, in Koh Sralao village one high-ranking villager opposed the work of the Village Management Committee, because they were threatened by the village support that the Village Management Committee was gaining. When the Village Management Committee felt that they could not solve this problem by themselves, they asked PMMR to help facilitate a conflict-resolution process. After several meetings with the individual, it was decided not to take the allegations and threats too seriously. However, this example highlights the need for conflict resolution skills, especially when new systems are being introduced that may appear threatening to others.

Although an analysis of the differing approaches of the Village Management Committees is not within the scope of this paper, what is primarily apparent is villager enthusiasm for "doing something." Villagers are now approaching PMMR with different projects and ideas, and PMMR is getting requests from other villages to help facilitate a similar process. The Village Management Committees are keen to continue trying different options — for instance, expanding home gardening activities — and are considering fish- and chicken-raising activities. What is important, from PMMR's perspective, is helping villagers to clearly articulate and write out goals and plans, in addition to supporting local initiatives. Moreover, translating these lessons to a wider audience — that is, provincial and national-level policy-makers — may enable the emerging models of community-based management to influence or serve as learning sites for policy formulation.

## VI. ABSENCE OF A LEGAL FRAMEWORK

The community organizing the work that PMMR and villagers are engaged in is taking place without formal policy support: there is no legislation that gives communities the "right" to manage local resources. However, there is significant informal support from within the Ministry of Environment and at the provincial government level for CBNRM. For instance, after community resource management guidelines are supported at a village-level PMMR begins a facilitation process with the Provincial Governor and the Minister of Environment. When the appropriate signatures are obtained endorsing community regulations and guidelines, the Village Management Committees are able to focus on their activities. Although (a) the influence of PMMR, (b) the fact that these communities fall under Ministry of Environment mandate, and (c) the fact that these communities are isolated are factors that contribute to why support has been found for CBNRM; the project illustrates that community-driven models of CBNRM, in partnership with government, can be created and learned from even in the absence of relevant legislation.

"In the Cambodian context, many laws that are presently being enforced are outdated, in parts or as a whole, and do not reflect the real current situation" (Smith 2001, 49). Many new laws and sub-decrees are in draft stage or sitting at the national level waiting for approval. Specific legislation supporting CBNRM is pending; both sub-decrees in fisheries and forestry have sought to give communities the right to manage their resources, although internal departmental friction over what

this may mean has meant that both sub-decrees have yet to be passed (this debate has been ongoing). While some policy-makers in Phnom Penh are working on this legislation, not everyone at the national, provincial, or local level is particularly comfortable with community-based management initiatives. A local official or a governor may want to support community-based management, but without a clear legal mandate or policy for this, can be reluctant to act.

Even if there was a law explicitly stating local people's "right" to manage and control their resources, how this would then be interpreted at the provincial, district, and local levels is open to debate. For these reasons, it is important, where possible, to gain informal support for community-based processes to illustrate the strengths of such an approach and to bring policy-makers on side. In the absence of a legal framework, PMMR has used informal methods to engage policy-makers and garner support for local-level activities. For example, PMMR created a community fisheries manual<sup>12</sup> based on project experiences that has since been adapted and revised by the Department of Fisheries. Other informal methods include field visits, group dinners, informal discussions, and networking. Attention needs to be given to drawing policy-makers (provincial, national, and international) into the field to see just what a difference local participation can make.

Perhaps there are some benefits to not yet having a legal framework for CBNRM programs in Cambodia. Projects have not been constrained by particular models of CBNRM, and a lot of experimentation has resulted. Policy makers and CBNRM advocates can learn from and reflect upon other experiences in Southeast Asia, especially in the policy arena. Communities do need formal recognition of their "rights" to manage resources; however, policy-makers need to be cautious about defining these "rights" too narrowly.

## DISCUSSION AND CONCLUSION

Our group [Village Management Committee] has been quite active, working to protect our environment. We now need to involve more villagers in all our activities so that all families will understand the importance of protecting our environment so that our children can also fish.

—a fisher, Peam Krasaop Wildlife Sanctuary<sup>13</sup>

Many families migrated into Peam Krasaop Wildlife Sanctuary hoping to cash in on lucrative resource extraction opportunities. However, these opportunities no longer exist because (a) government has started to enforce rules that prohibit access to mangroves to make charcoal and (b) significant resource declines have occurred. In response, some of the families have migrated out of the area; even for those remaining in the area, it has become increasingly difficult to make a living. PMMR has been facilitating a community-based process that enables villagers to control and manage their own resources, subject to signed permission from the Minister of Environment but not under a formal delegation of power.

Some villagers recognize the importance of household and community input into resource management. The newly formed Village Management Committees illustrate this. Members of these

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12. This manual stemmed from a workshop given on community-based management facilitated with a Filipino counterpart. The workshop was then built upon by PMMR and turned into a field manual on fisheries management for practitioners. Policy-makers in Phnom Penh have since used this manual as a resource for understanding community-based management; as appropriate legislation is being drafted. As well, a Community Fisheries Working Group was formed, linking actors together to design follow-up trainings on resource management planning.

13. From a workshop the author held with local fishers in Koh Sralao village, Koh Kong province, Cambodia on 23 August 2002.

committees are working within their village or with the project team to share a community perspective on resource management with other villages, and with provincial and national government members. In the case of some management activities, such as mangrove replanting, the vast majority of families participated. In the case of other management activities, such as patrolling, only a dozen or so families (out of 300) were willing to take on the risk of violence in dealing with people or groups who may have more power.

On the balance, there has been significant learning in the experience of community-based management. Such an active dialogue enables individuals and teams to discover what the possibilities of change can mean (Friedman 1973). Significant learning opportunities have taken place for the project team and the government departments that they work with, as well as for villagers and for other participants engaged in this community-based management process. Attitudes have shifted within the research team itself from being outside experts to appreciating and learning with local villagers; they have become adaptive co-managers. The policy context within Cambodia has also shifted in recent years: as of 2002 there were an estimated 162 community fishery sites and 237 community forestry sites in Cambodia (McKenney and Prom 2002). The bulk of these committees are new and their effectiveness has yet to be evaluated.

The research team, after four years of engagement in community-based management, has a richer understanding of what local-level management can look like within the Cambodian context. One of the lessons of the research project is that community-based management does not only take place at the community-level: provincial and national support is integral to this process. Villagers are willing to continue their efforts, but only if government is supportive. In a more general sense, community-based management is not only addressing resource management problems but also broader governance issues in terms of the villagers' ability to participate in decision-making.

In this Cambodian case, cross-scale interactions include vertical linkages from the local level to the provincial and national levels (Young 2002). Horizontal linkages also exist: one set of these linkages involves communities within the coastal area (and more recently throughout Cambodia); a second set consists of cross-sectoral horizontal linkages involving different government departments. Engaging various actors involved in resource management, from both an institutional and resource-user perspective, is one potential resource management strategy. Both "bottom-up" and "top-down" strategies are needed to successfully bridge knowledge gaps and to bring different players together.

A second lesson of the research project is that relationships take time to build, especially amongst different institutions that do not often collaborate. Simply engaging actors in one-time workshops or study tours is not enough: creating forums that foster a consistent dialogue helps build relationships. In this sense, the community fisheries manual initially prepared by PMMR provided a means to engage national-level actors consistently (trainings and workshops, field implementation). Finding solutions is challenging; only when people begin to listen to and learn from each other can potential solutions emerge (Chambers 1997; Friedman 1987). In this regard, the Cambodian case study supports the findings of other adaptive co-management cases that building trust is a fundamentally important process (Gadgil et al. 2003; Armitage 2003).

Facilitation skills are central in fostering community-based processes (at the village level) and in feeding these lessons into a wider context. For example, when conflict in the village arises over different management regulations, facilitation is key to continuing such activities and to solving the issue. Management committees often start out with great enthusiasm only to falter when conflict ensues. Villagers need to be supported in this process, helping them to draft and execute realistic action

plans and to tackle realistic problems. That is, it may make more sense to stop illegal activity near the community rather than to try to stop illegal fishing from Thailand. Starting small enables management committees and communities to define their role in community-based management and to further consider what issues they need outside support on.

A third lesson from this research project, therefore, is that Village Management Committees need support and facilitation. A key lesson is not to assume that all people will be good facilitators or will support a participatory research process. As one PMMR team member expressed “participatory research is a bit like medicine: it depends on how the doctor administers this medicine. If a facilitator is good then the process will be effective, if the facilitator is not so strong then the process will not be so useful” (Brzeski, Graham, and Newkirk 2001, 43). Thus, it is important to build upon individual strengths, and recognize that some people are better at working with villagers and others are better at working with policy-makers.

As Li (2002, 265) states, CBNRM is often characterized as an attempt to “return to communities the right to control their resources and their fundamental futures.” However, communities are not homogeneous and are not isolated entities (Li 2002; Allison and Ellis 2001). Therefore, CBNRM and the simplification that this term embodies, may not be the most appropriate label for the process that is unfolding in Cambodia. This is not to suggest that community is not an integral part of resource management; however, it should be recognized that community management is part of a broader process of learning and adapting that includes government actors. Perhaps “adaptive co-management” better captures the essence of the process that is unfolding in coastal Cambodia, although labels of any sort, while they can help people to understand concepts, can also be limiting.

An adaptive management approach favours action, since experience is the key to learning (Mitchell 2002). As suggested by Rondilinni (cited by Mitchell 2002, 75), “the complexity, uncertainty, lack of control, inability to predict behaviour, inability to predetermine outcomes, and inadequate knowledge about the most appropriate ways of promoting economic and social development, in reality, [make] all development projects and programs experiments.” One of the advantages of Cambodia as a setting for an adaptive co-management process is the absence of a well-established, rigid management system, which allows such experiments to take place. However, as these experiments mature, and community-based processes are established, it will eventually become important to have a legal framework and a suitable institutional environment that enables local-level controls within a cross-scale setting.

## REFERENCES

- Agrawal, A. and C. Gibson (1999) “Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation,” *World Development* 27(2), 629–50.
- Ahmed, M., N. Hap, V. Ly, and M. Tiongco (1998) *Socio-Economic Assessment of Freshwater Capture Fisheries of Cambodia: Report on a Household Survey*, Phnom Penh, Cambodia: Mekong River Commission.
- Allison, E. and F. Ellis (2001) “The Livelihoods Approach and Management of Small-Scale Fisheries,” *Marine Policy* 25, 377–88.
- Armitage, D.R. (2003) “Traditional Agroecological Knowledge, Adaptive Management and the Socio-Politics of Conservation in Central Sulawesi, Indonesia,” *Environmental Conservation* 30(1), 79–90.
- Berkes, F., J. Colding, and C. Folke, eds. (2001) *Navigating Social-Ecological Systems*, Cambridge: Cambridge University Press.
- Brosius, J.P., A.L. Tsing, and C. Zerner (1998) “Representing Communities: Histories and Politics of Community-Based Natural Resource Management,” *Society and Natural Resources* 11, 157–68.
- Brzeski, V., J. Graham, and G. Newkirk (2001) *Participatory Research and CBCRM: In Context*, Ottawa: International Development Research Centre.

- Cash, D. and S. Moser (2000) "Linking Global and Local Scales: Designing Dynamic Assessment and Management Processes," *Global Environmental Change* 10, 109–20.
- Chambers, R. (1997) *Whose Reality Counts? Putting the First Last*, Bath: Bath Press.
- Ebihara, M. (1968) *Svay, a Khmer Village in Cambodia*, PhD dissertation, Columbia University, New York.
- Folke, C. and the Environmental Advisory Council to the Swedish Government (2002) "Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations," working paper, Environmental Advisory Council, Stockholm.
- Friedman, J. (1987) *Planning in the Public Domain: From Knowledge to Action*, Princeton, NJ: Princeton University Press.
- (1973) *Retracting America: A Theory of Transactive Planning*, Garden City, NY: Anchor Press/Doubleday.
- Gadgil, M., P. Olsson, F. Berkes, and C. Folke (2003) "Exploring the Role of Local Ecological Knowledge in Ecosystem Management: Three Case Studies," in F. Berkes, J. Colding, and C. Folke, eds., *Navigating Social-Ecological Systems*, Cambridge, UK: Cambridge University Press, 1307–17.
- Gadgil, M., P.R. Rao Seshagiri, G. Utkarsh, P. Pramod, A. Chhatre, and members of the People's Biodiversity Initiative (2000) "New Meanings for Old Knowledge: The People's Biodiversity Registers Program," *Ecological Applications* 10(5), 1307–17.
- Global Witness (1998) *Going Places . . . Cambodia's Future on the Move*, London: Global Witness.
- Kato, E. (1999) "Poor People Can't Do Rice: A Case Study of Poverty and Landlessness in Kampong Reap Village, Takeo Province Case Study 3," in *Where Has All the Land Gone? Land Rights and Access in Cambodia*, Phnom Penh, Cambodia: Oxfam GB.
- Larsson, K. (1996) *Country Gender Profile Cambodia*, Stockholm: Asia Department, Swedish International Development Agency.
- Lee, K.N. (1993) *Compass and Gyroscope: Integrating Science and Politics for the Environment*, Washington, DC: Island Press.
- Legerwood, J. (1998) "Rural Development in Cambodia: The View from the Village," in F. Brown and D. Timberman, eds., *Cambodia and the International Community: The Quest for Peace, Development and Democracy*, Singapore: Asia Press, 127–48.
- Legerwood, J., M. Ebihara and C. Mortland, eds. (1994) *Cambodian Culture Since 1975: Homeland and Exile*, Ithaca, NY: Cornell University Press.
- Li, T. (2002) "Engaging Simplifications: Community-Based Resource Management, Market Process and State Agendas in Upland Southeast Asia," *World Development* 30(2), 265–83.
- Marschke, M. (1999) "Using Local Environmental Knowledge: A Case Study of Mangrove Resource Management Practices in Peam Krasaop Wildlife Sanctuary, Cambodia," Masters of Environmental Studies thesis, School for Resource and Environmental Studies, Dalhousie University, Halifax.
- Marschke, M., ed. (2000) "Mangrove Meanderings: Learning from Life in Peam Krasaop Wildlife Sanctuary," *Technical Report of Participatory Management of Mangrove Resources*, Phnom Penh, Cambodia: International Development Research Centre.
- McKenney, B. and T. Prom (2002) "Natural Resources and Rural Livelihoods in Cambodia: A Baseline Assessment," Working Paper No. 23, Cambodia Development Resource Institute, Phnom Penh, Cambodia.
- Mitchell, B., ed. (2002) *Resource and Environmental Management* (2<sup>nd</sup> ed.), Toronto: Prentice Hall.
- Ostrom, E. (1992) "Community and the Endogenous Solution of Commons Problems," *Journal of Theoretical Politics* 92(1), 343–51.
- Ostrom, E., T. Dietz, N. Dolsak, P. Stern, S. Stovich, and E. Weber, eds. (2002) *The Drama of the Commons*, Washington, DC: National Academies Press.
- Pomeroy, R. and F. Berkes (1997) "Two to Tango: The Role of Government in Fisheries Co-Management," *Marine Policy* 21, 465–80.
- Ramamurthy, B., S. Boreak, P. Ronnas, and S. Hach (2001) "Cambodia 1999–2000: Land, Labour and Rural Livelihood in Focus," CDRI Working Paper No. 21, Cambodia Development Resource Institute, Phnom Penh, Cambodia.
- Ruddle, K. (1994) "Local Knowledge in the Future Management of Inshore Tropical Marine Resource and Environments," *Nature and Resources* 30(1), 28–37.

- Smith, A. and F. Berkes (1993) "Community-Based Use of Mangrove Resources in St. Lucia," *International Journal of Environmental Studies* 43, 123–31.
- Smith, J., ed. (2001) *Biodiversity, the Life of Cambodia: Cambodian Biodiversity Status Report 2001*, Phnom Penh, Cambodia: SVA Printing House.
- Steins, N., V. Edwards, and N. Roling (2000) "Re-Designed Principles for CPR Theory," *The Common Property Resource Digest* 53, June, 1–3.
- Tsing, A. (1999) "Becoming a Tribal Elder, and Other Green Development Fantasies," in T.M. Li, ed., *Transforming the Indonesian Uplands: Marginality, Power and Production*, Amsterdam: Harwood Academic Publishers, 159–202.
- Young, O. (2002) *The Institutional Dimensions of Environmental Change: Fit, Interplay and Scale*, Cambridge, MA: MIT Press.