

Collective action and natural resource management in rural Cambodia

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Abstract

This paper is based on empirical research in rural Cambodia within the CAPRi project on “Collective Action and Property Rights for Poverty Reduction”. It assesses the relation between collective action and local level resource management. It furthermore explores what factors on village and household level influence the occurrence of collective action and its ability for sustainable resource management. The paper will also show, that missing law enforcement at local level will generate uncertainty and jeopardize efforts to coordinate for natural resource conservation as well as it weakens local resource rights arrangements.

In Cambodian rural areas natural resources contribute to multiple uses for income generation, ranging from collecting forest fruits for subsistence to additional income generation through logging. Mainly due to population pressure and succession schemes, arable land becomes scarce and forest and even fishing resources are turned into farmland by filling land into ponds. Given these facts pressure on the natural resource base is quite high and even increasing in Cambodia. Ongoing resource degradation increases the incentives for conservation. Whether natural resources are preserved depends on the ability of rural people to coordinate and act collectively in order to minimize free riding and inhibit outsiders to exploit the resource. In Cambodia, recent history of genocide and forced collectivisation destroyed much of the trust necessary for successful cooperation in institutions. In recent times, formal natural resource management institutions are often introduced by outsiders (NGOs or the Royal Government), whereas informal institutions at village level are initiated

by local authorities (village leader, Buddhist priests, village elderly, etc.). Given this, the paper focuses on the impact, resource scarcity and access to livelihood assets (human, social, physical, natural capital) has on the occurrence of collective action at household level and what roles external actors play in introducing or enforcing local use rights on village level.

Preliminary findings indicate that in Cambodian rural areas both, people with a high and a low asset base, face strong incentives to pursue individual profit maximization: People possessing few productive assets are less able to refrain from resource use in order to achieve food security. People with a strong asset base do not fear losses through punishment when free riding is detected. Uncertainties about access and use rights as well as unclear responsibilities aggravate excessive resource use in the Cambodian setting. As Cambodian society is rather hierarchically organized, local level leadership seems to play a crucial role in the quality of resource management. Additionally, the cases indicate that externally introduced institutions are less successful in sustainable resource management as collective action takes place in rather small groups, who exclude poorer, less powerful individuals. The paper will close with a discussion on the role external and local institutions play in the rural areas in Cambodia.

I. Introduction

Cambodia is one of the least developed countries situated in South-East Asia. The country consists mainly of low plains crossed by many rivers with the two most important being the Mekong River and the Tonle Sap. Seasonal rainfall varies from year to year as well as it affects different parts of the country differently. Droughts and floods are regular occurring in the country due to uneven and irregular rainfall. Cambodian area is covered to 58 percent by forest and **to three percent by water resources**. Around eighty percent of the Cambodian population lives in rural areas out of which 72,5 percent are employed in the agricultural sector¹. Agriculture accounts for 33,4 percent of the GDP (in 2002), growing at an under average growth rate. Furthermore, Cambodians living in rural areas account for nearly 90 percent of the overall countries' poor (World Bank, 1999).

¹ Employment in the agricultural sector includes employed persons as well as self employed and unpaid family workers. The share of people employed in overall Cambodia is 67,6 percent.

Natural resources play an important role in securing livelihoods for rural poor as they contribute to a larger share to those households' income (World Bank, 1999). They are able to “contribute to economic development and poverty reduction, but only if workable mechanisms were to exist that could ensure appropriate exploitability and sustainability” (Hach and Sothea, 2004, p. 8). The Royal Government of Cambodia does recognize the importance of natural resources as stated in the National Poverty Reduction Strategy Paper (NPRSP). Nevertheless resource degradation is severe in Cambodia through illegal fishing and logging activities (Van Acker, 1998). Incomplete regulation and enforcement were identified to be causes for resource degradation, as well as the dependence of poor people's pure survival on illegal resource uses and transformation from natural resources to farmland (Hach and Sothea, 2004). Forests and water bodies contribute to very different needs of rural people that are substitutes as well as they complement agricultural activities. Given the lack of alternative rural livelihoods, people in rural Cambodia are seeking to increase their land (not only land-poor and landless people but also persons with relatively high land possessions). With a rate of 2,4 percent population growth and traditional succession schemes demand for agricultural land is likely to increase the expected “effect is a ‘total harvest approach’ of unrestrained exploitation” (Van Acker, 1998, p.5).

In order to achieve sustainable resource uses collective management approaches were recognized as successful management schemes. Therefore it is important to take Cambodians recent history of civil war into account. In 1975 the Khmer Rouge overthrew the Government in the then already conflict shaken country and introduced an agrarian, totalitarian communism to a dimension not known before. The Khmer Rouge abolished private ownership, literally destroyed existing infrastructure and killed intellectuals, government employees and monks systematically. The cities were emptied and their former citizens were together with the rural people organized in brigades that had to provide forced labour under unbearable conditions. It is estimated that around two million² died during the Khmer Rouge regime either through systematic killings or as result of starvation, over-work and disease (Colletta and Cullen, 2000). In 1979 Vietnamese troops overcame the Khmer Rouge regime and even slow progress was made, violent conflict continued in different parts of the country and only after elections in 1993 (facilitated by the United Nations) Khmer Rouge accepted to

² More cautious estimates suggest that around 900.000 people, then one eighth of the population lost their lives during the four years of the Khmer Rouge Regime (Golzio, 2003).

turn in their weapons. Currently Cambodia is a peaceful country but the years of unrest left marks on Cambodia's physical and social capital and reconstruction process is still ongoing.

In the following chapters different factors on village and household level are investigated to achieve insights on what factors hinder or promote sustainable resource management and collective action at village level in rural Cambodia.

II. Natural resource management in rural Cambodia

The Royal Government of Cambodia (RGC) is recognizing the importance of the country's natural resources, for instance through prioritizing it in the National Poverty Reduction Strategy Paper (NPRSP). Natural resources such as forests and water bodies are, as the Land Law (2001) states, owned by the state, where not privatized by Land Law regulations and their management is executed by different governmental departments. The state is urged to hand over access rights to local communities. Where fishery or forestry communities are established by communes or villages, the Royal Government legalizes them, so natural resource management is handed over to the local people. The state also has the possibility to lend out forests and water bodies for economic purposes. These concessions are meant for economic exploitation and give exclusive rights on the resource to the concessionaire but also impose the responsibility to protect the resource. These concessions cause problems especially for neighbouring villages, as they are often given without knowledge what claims do exist on the considered land. Nevertheless, economic concessions are not subject of this discussion.

In rural Cambodia there exist different degrees of comprehension regarding the importance of natural resource protection as well as the protecting abilities differ. Many NGOs focussed on natural resource management aim to introduce management institutions to grant sustainable resource use. The study intends to explore, what factors influence successful natural resource management. Research sites are situated in central Cambodia, in the provinces of Kompong Thom and Kompong Cham, covering both major river basins: The Mekong River Basin and the Tonle Sap Basin. The four villages have access to different natural resources, which are situated at the village's area itself or are commonly used by the commune³ or neighbouring villages. They differ in accessibility, main income source, natural resource management

³ A commune consists of several villages and forms the next administrative level above the village level.

mechanisms in place and the degree they are supported by outsiders. Figure 1 gives an overview at the villages' characteristics. None of the villages has electricity or sanitation infrastructure but all have a school for primary education⁴.

The following paragraph will describe what kind of natural resource management exists in the different villages and whether they are successful in sustain the resource. It will be discussed, what factors might influence the success of local level natural resource management.

Province / Area	Village's Names	Main income source	Accessibility	Resources	NRM	degree of support
Kampong Thom, Tonle Sap Basin	Chrang Krohom	Rice and fruit cultivation	Hardly attainable	River, two lakes and forest	Forest Community under preparation Traditional management of water resources	NGO support
	Leuk	Rice cultivation, occasional work	Easily attainable	Forest and a lake	Village development Committee, Advise through village elderly	No support, NGOs strongly active on other areas
Kampong Cham, Mekong River Basin	Krarsang	Vegetable cultivation Occasional work	Relatively easy attainable	Forest	Forest community	Governmental and NGO support
	Svay Teap	Vegetable and rice cultivation	Hardly attainable	Forest, a lake and a small river	Village Leader and elderly design rules	No support

Figure 1. Village characteristics

Chrang Krohom

The village of Chrang Krohom uses water and forest resources for income generation. It has established a forest community, which is in place but until now lacks legal recognition. The goal of the forest committee is to protect the forest against overexploitation and, where necessary, to replant it. Water resources are traditionally managed by the villagers, where the Village Committee⁵ is developing strategies, when problems arise, for instance dam building against repeated flooding or putting restrictions on fishing gear against reduced fish stock.

⁴ The village of Svay Teap currently could not provide education to their villagers, as it is a self organized school and at the moment no teacher is available.

⁵ The Village Committee consists of the Village Leader, who is appointed by the government, the Vice Village Leader and some elderly people that are respected and trusted by most villagers.

Compliance with the rules is monitored by all villagers. Water resources management is meant to guarantee enough water for agricultural activity, but also intends keep the fish stock at sustainable levels for income generation during the dry season. Both institutions differ greatly in their success to meet the targets. Whereas water resources are very well managed and rules are accepted throughout the village, the forest is rapidly turning into cashew plantations and rice fields. The failure to manage forest resources has two reasons: At first, it is the source of income for the better off, as they started to grow cashew at the forest area. Now, the worse off are following and start with crops that are faster to harvest (e.g. rice or corn). There are already families establishing their household in the area to achieve better results. Secondly, village authorities complain there is no monitoring. The forest area is hard to access and the responsible department does not reach there. Without legal recognition local authorities do not feel to have the power to monitor the forest and there are also problems for local level authorities to take measures as the forest administratively belongs to another commune.

Leuk

The village of Leuk also uses water and forest resources, sharing them with two neighbouring villages. Both resources are traditionally managed by the village authorities from all three resource using villages. The area of the forest includes the lake, which is situated in the centre of the forest. The forest is used for religious activities. There are rules in place to keep the forest at its current size and plans are under way to even increase the quality of the resource base: Village leaders were discussing an enlargement of the lake to contribute additional income for subsistence (through fishing and as water reservoir for irrigation purposes). The obedience to the rules is monitored by all villagers. Even if occasionally rules are broken, the overall management of the resources is very well established and respected among the villagers. This might be due to the well organized and very active village leaders in Leuk and around. Marschke (2004) also points out natural resource institutions with history, i.e. with a long standing reputation to be successful. Nevertheless, thirty years ago Leuk was nearly surrounded by forests. Village elderly identified population growth as main reason for the conversion of forest into farmland. Thus, actual appreciation for the forest and the lake might be the result of severe problems out of degradation in the past. It might also be due to reduced population pressure, as the main part of the village population is engaged in migrant labour, leaving their villages for six months each year, sometimes longer. This, of course, results in a

fewer number of people dependent on the forest. As no major Problems with the resource were stated, the first explanation is assumed to be the most reliable.

Krarsang

The village of Krarsang has the special feature that more than fifty percent of the population settled down there only during the last five years. The forest used by villagers belongs to the commune and thus to several villages. At commune level there is a forest community in place which aims to protect the forest against illegal deforestation and to provide subsistence income for poor villagers. Decisions are made in the communities governing body and monitored by members who volunteer or are appointed to do so. In Krarsang natural resource management fails completely to meet these goals. There is a high occurrence of illegal deforestation and poorer people, who are mainly newcomer, do not have enough knowledge to use forest products for their livelihoods (except for extracting housing materials). Reason for failure can be found in low awareness for the need to protect natural resources. Whereas the members of the governing body do have an understanding about the tasks and goals of the association, most members do believe the forest community is to distribute land to their members. Another reason is low recognition of the committee's authority and its inability to enforce the committees' rules towards neighbouring administrative entities. The mechanism land is distributed to migrants might also contribute to the low appreciation of the forest resource: Parcels of the forest surrounding Krarsang were allocated and sold to migrants, so they could turn them into arable land.

Svay Teap

The village of Svay Teap uses water resources on the village's territory and shares access to a forest with one neighbouring village. The forest is also used for traditional festivities and religious purposes. The lake is used as fishing ground and as water reservoir. There is also a spring that was used as watering place for livestock. All resources are traditionally managed by the village leader and several respected village elder in the village committee. The rules prohibit to use certain fishing gear and to convert forest into arable land. As the resources are commonly used, villagers also do act collectively to protect the resource. Activities include cutting scrub in the forest and the excavation of the lake to keep it from being overgrown. Decisions when and how often these activities will be necessary are made among the village committee. The resources are well managed even though illegal fishing has been detected now and then. As in Leuk, the underlying factors for successful management are the village

committee's decisions, which are trusted by the villagers and the history of experience with natural resource management. This can be supported by the fact, that continuous learning is sought: Currently the villagers are trying to solve the problem of the spring's degradation. The problem emerged during the drought in 2005, when water became scarce and livestock watering hindered the water flow. As a result livestock is forbidden to enter the area and other means are considered to protect the spring as well. Successful management might also be supported by low accessibility, as outsiders do have difficulties to reach the resources.

The studies in the above villages indicate traditional natural resource management to be more successful than new, formalized institutions. It also suggests that missing law enforcement fosters overexploitation in areas, where traditional management systems are not in place. Still, the question remains what people brings to cooperate for resource protection. One factor for successful natural resource management is the ability of the users to coordinate and act collectively to protect the resource base. The next chapter will investigate, what factors on household level are effecting collective action in Cambodian rural areas.

III. Collective action in rural Cambodia

Collective action can be understood as coordination behavior of individuals to improve their collective well-being (Sandler, 1992). There are incentives for individuals to act collectively to secure rents from jointly owned resources. These incentives are additional revenues an individual receives when giving up the non-cooperative level and agree cooperatively to a level of extraction. Several types of collective action problems exist that have relevance for natural resource management, where the possibility for free riding is high⁶. Successful collective action will minimize free riding and keep outsiders from exploiting the resource. In this section, household characteristics are set in relation with the willingness to contribute for common goods or engage in associations that serve social purposes⁷.

Starting the research, it was assumed collective action in Cambodia would be at a very low level due to the recent history of civil war, genocide and forced collectivisation but findings in all four villages indicate there are many different areas, where collective efforts are made

⁶ Free riding occurs when one individual (or firm) benefits from the actions and efforts of another without paying for or sharing the costs.

⁷ The most common associations in Cambodia are the burial associations and rice banks. Both require cash or cash equivalent payments on a regular or irregular basis to serve their members under certain circumstances (e.g. the death of the household's head leads to payments for the widow).

to improve rural livelihoods. It coincides with the results Colletta and Cullen (2000) found in two villages in Kompong Speu. Collective activities in rural Cambodia range from spontaneous help after a house burnt down over bilateral livestock sharing and informal natural resource management up to formalized associations with rules in written form. In the village of Leuk, for instance around eighty per cent of the villagers are members of one or more of the four associations that can be found in the village, whereas no operating association is in place at Svay Teap. Figure 2 gives an selected overview over the different social activities on local level with their frequency in occurrence.

Village	Number of associations	Share of association-members	Help given to fellow villagers	Share of people working for the village
Chrang Krohom	At least 7	57,6 %	Often (52 %)	90,9 % (93,3 % required)
Leuk	4	83,3 %	Often (66 %)	33,3 % (0,0 % required)
Krarsang	2	64,0 %	Sometimes (62 %)	88,8 % (8,6 % required)
Svay Teap	1 (not operating)	50,0 %	Sometimes (70 %)	91,3 % (35,0 % required)

Figure 2. Social engagement at village level

The first factor to be investigated is, what impact land ownership has on peoples readiness to become member of an association. The results aggregated over all villages are displayed in Figure 3 and indicate that landless and land-poor are less likely to engage in formalized institutions for collective action.

		Land ownership		
		None to less than 1ha	Between 1 and 4ha	More than 1ha
Association membership	No member	36,6%	34,0%	50,0%
	Member in 1 association	51,2%	53,8%	0,0%
	Member in 2 associations	12,2%	26,4%	37,5%
	More than 2 associations	0,0%	3,8%	0,0%
	Sum	100%	100%	100%

Figure 3. Association Membership, Land Ownership relation

Most of the reasons given, not to become a member of an association, are mistrust and a lack of confidence. People often do not take part, when association leaders support a different political party or belong to another informal network of kinship and affinity. Illiterate or

poorer people frequently feel themselves as „only ordinary villagers“, who are not worth while taking part in associations, unless they are explicitly invited by association leaders. But there are also prohibitive high membership fees that are drawing out poorer people from participation. Households from migrants, living on the edge of the village, often lack information of existence or purposes of the association and thus do not become member of an association.

People owning middle-sized land parcels seem to be the ones strongest engaged in formalized associations. They are also more likely to engage in more than one association. Reasons can be found in the complementary services association provide for agricultural activities. Membership is also perceived as an instrument to gain higher reputation among the other villagers. Reasons to not become a member are associated on the one hand with no need of the associations' services or on the other hand with a high level of mistrust or missing knowledge of associations existence. In the village of Krarsang low engagement of middle-sized land owners in associations is due to the large amount of “newcomers” in the village as they generally purchase middle-sized land pieces but do not manage yet to integrate themselves to the village. Latter can be drawn from the fact that they have to engage in time consuming activities to turn their land arable. Only 38 percent of them are member of an association, whereas nearly 90 percent of the landless and land-poor occupy an association membership. Landless and land-poor households are mainly living in the “old” part of the village. In the village of Svay Teap no association is operating, even though a woman association is existing. Association leader assures that all village's woman are members, but most of the woman deny membership.

A similar picture, even though not as clear as in association membership, arises while looking at engagement in common village activities, such as street building, natural resource management or school construction. Figure 4 gives an overview over the relationship between land ownership and voluntary social work. What can be drawn out of the data is low engagement of landowners owning more than four hectares in voluntary social work. It is consistent with observations that they also stay away from obligatory community work by hiring poorer villagers to do the work instead.

		Land ownership		
		Less than 1ha	Between 1 and 4ha	More than 1ha
Voluntary social work for the village in the last year	Not working	30,0%	34,1%	66,7%
	Taking part in 1 activity	53,3%	38,6%	33,3%
	Taking part in 2 or more activities	16,7%	25,0%	0,0%
	Do not remember	0,0%	2,3%	0,0%
	Sum	100%	100%	100%

Figure 4. Social Work and Land ownership

Human capital was also assumed to have an influence at collective action on household level. For this reason it has been investigated, what impact the years spent in school have on villagers' membership in associations. Results from the four villages are shown in Figure 5. Together with the finding that nearly 60 percent of the illiterate households would like to become a member of at least one association, the proposition can be supported, that missing self confidence keeps people with lower human capital from engaging in institutionalized collective activities.

		Schooling			
		Illiterate & can read and write little	1 – 3 years	4 – 6 years	More than 6 years
Association membership	No member	71,4%	31,6%	25,9%	36,0%
	Member in 1 association	28,6%	52,6%	40,7%	24,0%
	Member in 2 associations	0,0%	15,8%	29,6%	32,0%
	More than 2 associations	0,0%	0,0%	3,8%	8,0%
	Sum	100%	100%	100%	100%

Figure 5. Schooling and Association membership

There was no clear trend found on whether human capital endowment does influence the participation in social work for common village purposes, even though illiterate people are more often taking part in required work for the village, such as street repairing and lake excavations. Higher educated are with 71,1 percent staying out of the required work, through buying themselves out or simply through staying away. Still, compared to the high share of not taking part in required social work, people with higher human capital endowment do engage in voluntary social work.

Findings indicate that collective decision making in rural Cambodia leaves out households with a low human capital base and few or no land possessions, as their self confidence is low and, where not explicitly included by authorities, participation in shaping the villages livelihoods will rarely occur. With regard to natural resource management, villagers with middle-sized land holdings are more likely to engage in management institutions as they depend to a certain degree on natural resources for their agricultural activities but do not need it to ensure food security with products extracted from those resources. Data also indicates that the people urgently depending on the resource are not taking part in resource management. This might lead to a failure in natural resource management, but surprisingly findings are very similar throughout the villages. This indicates that characteristics at village level are important to achieve sustainable natural resource management. As findings at household level do not differ among the villages, but success in natural resource management does the proposition is set that institutional settings at village level explains the differences in the success of natural resource management.

IV. Initiators of natural resource management

There are lots of governmental and non-governmental institutions involved in rural Development in Cambodia. These institutions can play a significant role in the success of local level resource management. They are able to support traditional mechanisms in place as well as they can introduce institutions for natural resource management. In the four researched villages different pictures can be drawn by examining external supporters in local level natural research management.

In all cases studied, the success of institutions, not only for natural resource management but also burial or cash associations, depends on leadership and how trustful the institutions are.. This relates as well to the will of group leaders to enforce rules and regulations of the institution as well as to the leaders understanding of the flow of work and the goal of the association. The village of Chrang Krohom is one of the examples, where many successful institutions exist with strong leadership. There is also a formal but legally not approved institution is in place for the management of forest resources. Members seek to register this institution with the Provincial Forest Administration in order to be able to enforce their interests legally against outsiders. Within this committee there is strong will to promote the rules. But the lack of legal recognition is weakening the confidence in the forest community.

In addition, the understanding of the goal differs among committee members, whereas some wish to protect the forest and secure its resource flows for the village, other members rather do understand the institution as instrument to adopt land from another administrative body. Latter people do not have a proper understanding for the importance of forest products but rather would like to turn it into arable land. The village had no support from outsiders to establish the rules, but there are several development agencies promoting crop diversification. High returns on cashew and watermelon production increased villagers incentive to plant these crops. As arable land became scarce, they extended the cultivated area to the forest.

In the village of Leuk there are several associations promoted by outsiders and village leader are very active in seeking support and consultation with specialized NGOs and development agencies. The village authorities' openness to new ideas with a strong commitment for the village might be part of the in the villages success to manage their resources. In contrast to Leuk, the village of Svay Teap has no experience with outside NGOs and only little with government development bodies. Nevertheless, they manage their resources carefully to achieve sustained use levels. Their traditional knowledge as well as the commitment of the village authorities to local people's concerns are part of the successful resource management.

The forest community in the village of Krarsang was established by an international NGO. As noted above, this community fails completely to meet the goals. This might be partially due to the low awareness of the need to protect forest resources. Income situation is the best among the studied villages: soy bean and cassava production guarantee secure income streams for a large share of the villagers. It is also likely that no village authority feels responsible for monitoring correct working of the forest community. Furthermore, forest guards regularly patrolling in the forest are not respected, as they do not have the power to enforce the communities law (e.g. to arrest illegal loggers). There still might be the chance to improve the forest community's performance, when long term assistance is given to raise awareness of the need for natural resource management.

V. Conclusions

The case studies indicate that traditional resource management institutions in place are much better suited to guarantee a resource's sustainable use. Formalized institutions that lack understanding for natural resource management and are not brought to the villager's

knowledge will, by no means, achieve the purpose of sustained extraction levels. The idea of ownership comes into play, when distinguishing successful from less successful institutions. Not the de facto membership guarantees acceptance among members and villagers but the understanding of the importance on what these institutions aim together with the expectation that it will serve to improve the individual's livelihood.

Still much is left for further research: Why in some villages are reliable, traditional natural resource management institutions in place, whereas other villages lack this tradition. It can only partly be explained by the time most villagers lived in the village.

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