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Catchment Governance and Cooperation Dilemmas: A Case Study from Cambodia

ROS Bandeth, LY Tem and Anna THOMPSON

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Responsibility for the ideas, facts and opinions presented in this research paper rests solely with the authors. Their opinions and interpretations do not necessarily reflect the views of the Cambodia Development Resource Institute.

Front cover photo: Stung Chrey Bak stream, Kompong Chhnang province

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AFSC	American Friends Service Committee
AusAID	Australian Aid for International Development
CSF	Commune/*Sangkat* Fund
CC	Commune Council
CDRI	Cambodia Development Resource Institute
CIDA	Canadian International Development Agency
D&D	Decentralisation and Deconcentration
FAC	Fisheries Administration Cantonment
FGD	Focus Group Discussion
FWUC	Farmer Water User Community
GIZ	Deutsche Gesellschaftfür Internationale Zusammenarbeit (German Society for Technical Cooperation)
ICM	Integrated Catchment Management
ICMCG	Integrated Catchment Management Coordinating Group
ISF	Irrigation Service Fee
IWRM	Integrated Water Resource Management
JICA	Japan International Cooperation Agency
LAMCPMDK	Law on the Administrative Management of Capital, Provinces, Municipalities, Districts and Khans
LCSAM	Law on Commune/*Sangkat* Administration and Management
LD	Line Department
LM	Line Ministry
LO	Line Office
LWF	Lutheran World Federation
MAFF	Ministry of Agriculture, Forestry and Fisheries
MoE	Ministry of Environment
MoWRAM	Ministry of Water Resources and Meteorology
NGO	Non-Government Organisation
O&M	Operation and Maintenance
PDoA	Provincial Department of Agriculture
PDoE	Provincial Department of Environment
PDoLMUPC	Provincial Department of Land Management, Urban Planning and Construction

PDoWRAM	Provincial Department of Water Resources and Meteorology
PDRD	Provincial Department of Rural Development
PIMD	Participatory Irrigation Management and Development
PRASAC	Programme de Rehabilitation au Secteur Agricole du Cambodge
RBC	River Basin Committee
RGC	Royal Government of Cambodia
RHR	Khmer Riel
SAW	Strategy for Agriculture and Water
SIDA	Swedish International Development Cooperation Agency
UK	United Kingdom
WRMRCDP	Water Resources Management Research Capacity Development Programme

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ABSTRACT

Integrated Catchment Management (ICM) is a recent ideal approach to be introduced into the Cambodian national strategy on water management to ensure better planning and management of water and other related resources in a catchment. A new multi-level catchment body or a committee is soon to be established as a result. Integral to ICM is cooperation between stakeholders. This study seeks to investigate the gap between the ideal principles of ICM and the actual degree of cooperation in Cambodia to identify ways in which ICM can be effectively introduced into water policy in Cambodia within the framework of decentralisation and deconcentration (D&D) reform.

Based on a case in Kompong Chhnang, the findings of this study reveal that even though the concept of ICM is quite new in the country, Cambodia evidently has an administrative foundation that to some extent works in support of ICM in the current governance system. This study concludes that Cambodian stakeholders across different levels still largely operate independently and have few incentives to cooperate at catchment scale. Several entrenched factors that hold back cooperation include cultural traits, lack of trust, overlapping mandates, centralisation, capacity issues, and lack of available information on land demarcation, land tenure and hydrology. Our study concludes that to reduce the gap, several mechanisms are required, including: 1) aligning the ICM initiative with the current governance system; 2) building collective identity among farmers across schemes; 3) clarifying roles and responsibilities, improving trust and strengthening organisational capacity of stakeholders; 4) pushing deconcentration reform further; and 5) providing sufficient information on land demarcation, land tenure and hydrology.

CHAPTER 1 INTRODUCTION

A catchment, or "river basin", refers to area of land that is drained by a single river and its tributaries (Chikozho 2008). Integral to the health of a catchment are resources such as soil, water, wildlife and vegetation, all of which are fundamental in the formation of ecosystems. Water is often the key linking element to support other resources; therefore the governance of catchments is almost exclusively oriented towards the management of water issues (Schramm 1980). A shift in management paradigms has brought modern catchment governance policy to Integrated Catchment Management (ICM), a new approach that has grown significantly since 1970 (McDonald & Kay 1988). This approach is soon to be introduced into Cambodia as a means to achieve sustainable water resource management and the protection of ecosystems in a catchment (RGC forthcoming).

The emergence of ICM indicates a shift in management paradigms, from a single purpose fragmented approach to a multipurpose integrated approach. It is based on the perspective that a catchment is a relevant territorial space where many elements are deeply interconnected and dependent on one another (Schramm 1980; Teclaff 1996). The topography, soil, fauna and flora all interact with catchment waters. If any of these land-based resources are changed by human activities or natural causes, it results in changes to the river system in terms of either water volume, rate of flow, or water quality, and vice versa (Teclaff 1996). Adding to the complexity of catchments and catchment management, their boundaries also cut across administrative boundaries containing different groups of users with different needs, and different social and economic situations (Batchelor 1999).

ICM refers to the co-ordinated planning and management of catchment resources, especially water, for their equitable, efficient and sustainable use at a catchment scale (Batchelor 1999). Humans rely on water for domestic use and the production of food. Upstream users' access to water often impacts on downstream users due to lack of coordination between state players, landholders and irrigators who transcend boundaries. Thus, equitable distribution of water may not always be achieved (Schramm 1980; Mitchell & Hollick 1993; Hu 1999; Macleod et al. 2007; Chikozho 2008). In addition, in-stream water needs for sustaining ecological functions such as fisheries or forestry and groundwater recharge should not be overlooked. Implementation of an integrated approach would help manage the demands of users and balance between objectives for economic development, environmental protection, and uphold satisfactory social norms and values (Mitchell & Hollick 1993).

To achieve coordinated planning and management of catchment resources, cooperation of stakeholders is important (Batchelor 1999; Macleod et al. 2007; Chikozho 2008). Water sector policies in Cambodia have acknowledged the importance of cooperation among stakeholders, to some extent, for over a decade. First, the integration of Participatory Irrigation Management and Development (PIMD) into water policy in 1999 brought the establishment of several community-based organisations referred to as Farmer Water User Communities (FWUCs). These were intended to be responsible for irrigation management at the smallest feasible local level. However, PIMD is not integrated enough. It is mainly for participatory management predominantly by irrigation water users, and not entirely about cross-sectoral collaboration. The implementation of PIMD, though not yet satisfactorily accomplished, has at least initiated efforts to mobilise local users into localised institutions to cooperate with higher levels of government to manage irrigation (Ros 2010). Second, the new Water Law (2007) also refers

to the need for cooperation between government and non-government stakeholders across sectors to effectively implement Integrated Water Resource Management (IWRM). Under this approach, the Ministry of Water Resources and Meteorology (MoWRAM) needs to work collaboratively with other relevant ministries.

The endeavour to adopt ICM represents an attempt by the Royal Government of Cambodia (RGC) to adapt the IWRM approach to specific catchments throughout the country. Adopting ICM requires cooperation not only between farmers, but also between stakeholders across sectors and boundaries within a given catchment. ICM aims to develop a new governance body, namely a River Basin Committee (RBC) which amalgamates all relevant agencies and stakeholders into one decision-making structure to foster multi-level cooperation (Abers & Keck 2006). ICM is to be introduced into Cambodia in a context where decentralisation and deconcentration (D&D) reform is in progress. The extent to which farmer groups and stakeholders across sectors and boundaries within a catchment cooperate with each other is not yet well known. This study investigates this issue with a focus on identifying how far removed current cooperation of Cambodian stakeholders in catchment governance is from the ideals of ICM and to investigate ways in which the introduction of ICM into management policy can be achieved efficiently and effectively.

1.1 Research Question

This research aims to answer one key question: What is the gap between the ideal principle of ICM and the actual degree of cooperation in catchment governance in Cambodia? To answer this question, this study addresses the following objectives:

1. To explore the ideal principle of ICM with a special focus on how it promotes cooperation;
2. To identify the actual level of cooperation between players in the governance of a catchment.

Several players are involved at catchment scale. This study investigates interactions between three groups of players:

1. local bodies within and across irrigation schemes
2. local bodies and line departments
3. line departments across sectors.

The findings of this study will assist the government in justifying mechanisms to bridge gaps in cooperation between stakeholders for effective implementation of ICM in Cambodia.

1.2 Research Method

The research was carried out in the Stung Chrey Bak catchment located in Tuek Phos and Rolea B'ier districts, Kompong Chhnang province. This catchment was chosen because of the presence of multiple local bodies sharing the same water source as well as the involvement of district and provincial authorities and line departments (LDs) from multiple sectors in catchment management. Stung Chrey Bak Stream supplies water to four FWUCs which lie along the stream, from the upstream to downstream regions. Dynamic interactions between local authorities across administrative boundaries and different LDs are also demonstrated within the case-study site.

Multiple techniques of qualitative data collection were employed, such as key informant interviews, focus group discussions, and participant observation from January to February, 2011. Key informant interviews were conducted with three types of informants: committee members of the four FWUCs, local authorities (district and commune level), and line department officials. These officials came from the Provincial Department of Water Resources and Meteorology (PDoWRAM), Provincial Department of Agriculture (PDoA), Provincial Department of Environment (PDoE), Fisheries Administration Cantonment (FAC), and Provincial Department of Land Management, Urban Planning and Construction (PDoLMUPC). The snowball strategy was used to help select key informants for interview. Focus group discussions were conducted with farmers from each of the four FWUCs and participant observation was conducted throughout the entire process to provide additional information to supplement data garnered from interviews.

Interview guides were developed around the research question and objectives. At least two researchers participated in each interview or focus group and discussions (FGDs) commenced with relaxed informal questions. These were followed by more detailed open questions. Further questions were asked when clarification of information was required, particularly in relation to responses closely relevant to the research objectives. A voice recorder was used during each interview and FGD, but only with the consent of the participants.

Ethical principles were adhered to by the researchers. Local authorities were always consulted and asked for permission to conduct fieldwork within their jurisdiction. We introduced ourselves and our project to local authorities and farmers in every interview and FGD, and asked for their informed consent before commencing the interviews. We approached commune chiefs to help gather farmers for the FGDs. All respondents were informed of their right to withdraw from the process at anytime and that they could refuse to answer any of the interview questions. The names and addresses of individual participants were kept confidential throughout the process.

1.3 Scope and Limitation of the Study

This study is not intended to represent the whole array of catchment governance issues in Cambodia. Using a single case-study site, it aims to provide a preliminary understanding on catchment issues to the government and stakeholders who work in this field. With the ambition to present cooperation dilemmas from the ground up to the state level, this study recognises its limitation in choosing local governance bodies and LDs to represent the whole range of resource sectors. Despite the numerous local governance bodies within a catchment such as FWUCs, community forestry, community fishery and commune councils (CCs), this study only extends so far as to look into the dynamic interactions between FWUCs and CCs due to time and resource constraints. At state government level, this study does not touch upon the roles of district and provincial councils, which have just been elected in district and provincial offices as a result of the organic law, in catchment governance due to their limited activities so far. Likewise, the study is only able to focus on the roles of a few LDs. The study also does not aim to show the technicalities related to planning and financial resource management in each LD at catchment level. Rather, the intention of this study is to provide a preliminary understanding of the interactions of LDs. Further, catchment governance also involves line ministries (LMs) and their relationships at national level, which in turn influence the relationships at sub-national level. However, analysis into this level of governance is beyond the scope of this study.

CHAPTER 2 THEORETICAL UNDERPINNINGS OF INTEGRATED CATCHMENT MANAGEMENT AND COOPERATION

The purpose of this chapter is to review literature on Integrated Catchment Management (ICM) and other related discourses to identify key principles to foster cooperation. The chapter also explores challenges to ICM and finally draws an analytical framework to analyse the empirical input of this research.

2.1 What is ICM?

The growing body of academic and practical research on catchment governance approaches has brought a number of different perspectives into the debate, which has ultimately brought about the well-recognised discourse of ICM. This relatively new approach to catchment governance is based upon two main realisations. First, physical, chemical and biological characteristics of a catchment tie it into a complex, interdependent unit (Schramm 1980). The obvious interdependency of water flow within a catchment and other land-based elements (e.g. fauna, flora, soil) indicates that all elements within a catchment should not be managed separately – an integrated approach is required to align the planning and management of each element (Schramm 1980). Second, catchments are spatially complex units which cut across different administrative and cultural boundaries of groups of people with diverse interests, culture or social norms – an integrated approach to governance and management is thus required to balance the different needs of people (Schramm 1980).

ICM refers to the co-ordinated planning and management of the numerous elements of a catchment to achieve equitable, efficient and sustainable use of the catchment as a whole (Batchelor 1999). ICM best practice developed in Australia where farmers and other local stakeholders were encouraged to work with the government to address land degradation issues and other environmental problems (Campbell 1994). ICM has also been implemented in many catchments across Europe and Asia. For example, ICM has been adopted in China to control the water quality in rivers (Hu 1999). The adoption of ICM varies across different countries depending on local needs, history, culture, political structure and stage of development (Schramm 1980).

2.2 Ideal Principle of ICM

The core element of ICM rests on promoting cooperation between stakeholders (Chikozho 2008; Macleod *et al.* 2007; Hu 1999; Mitchell & Hollick 1993; Schramm 1980). The degradation of a catchment cannot be halted by the action of a single group or agency, rather a collective effort from as many stakeholders as possible is needed (Mitchell & Hollick 1993). There are several active stakeholders in a catchment area; these are not limited to local groups but also include important players and decision makers that operate at district and provincial level. For the sake of clarity, this paper divides cooperation of stakeholders into three dimensions: cooperation between local groups; cooperation between local groups and technical departments; cooperation between technical agencies (Batchelor 1999).

Different studies reflect differing perspectives of cooperation. Some scholars (e.g. Hu 1999; Macleod *et al.* 2007) argue that cooperation is necessary to achieve successful ICM in resource conservation and protection. For example, in Western Australia, ICM was implemented in response to the degradation of water and land in the region where all relevant agencies including state, local governments and land holders were mobilised to work cooperatively to address the problems (Mitchell & Hollick 1993). Other scholars (e.g. Batchelor 1999) argue differently, that cooperation can be a primary objective or the end goal of ICM, whereby it is implemented to ameliorate cooperation issues and in doing so, bridges the gap between state players and local communities, specifically in relation to catchment planning and management. As Batchelor (1999: 261) states "ICM is not a panacea, [it can however] develop institutional structures that facilitate the involvement of stakeholders in the development and implementation of appropriate natural resource management strategies and policies". The end goal of ICM is ultimately to achieve "a shift of organisational cultures and participant attitudes towards acceptance and pursuit of cooperative approaches" (Mitchell & Hollick 1993: 741). This definition requires cooperation to be perceived as both a means to achieving ICM as well as the end goal.

To foster cooperation, the ideal principle of ICM rests on the establishment of multiple catchment committees at different scales (Jonsson 2005; Batchelor 1999; Mitchell & Hollick 1993) called "nested enterprises" (Ostrom 1990). These committees undertake two tasks: to enable dialogue between stakeholders to develop a catchment plan, and to promote joint action in implementing the plan (Fenemor *et al.* 2008; Chikozho 2008; Blackmore 1994). An example of this structure is in Western Australia where an interdepartmental committee called the Integrated Catchment Management Coordinating Group (ICMCG) was formed to develop catchment policy and coordinate required activities. Community Catchment Groups, which are the subordinates of ICMCG, with representatives from community-based groups were then established to share information with local people and encourage public feedback and dialogues (Mitchell & Hollick 1993). The two elements (dialogues and joint action) to be undertaken by a catchment committee are described below.

2.2.1 Dialogues

The term "dialogues" refers to interactive processes between stakeholders to share their opinions, needs and concerns which are to be incorporated into decision making and planning (Chikozho 2008). As Mitchell and Hollick (1993) observe, ICM is a stakeholder approach in which various stakeholders "should be able to participate in decisions about what ought to be, what can be, and what will be for an area" (p. 740). Dialogues are important because they ensure reflection on mutual dependence (Chikozho 2008) and contribute to building trust and mutual expectations (Fenemor *et al.* 2008). Steins and Edwards (1999) argue that dialogues are effective in addressing complex issues that occur in complex multiple-use environments like a catchment. Dialogues between water user groups and technical agencies help to ensure knowledge sharing across governance levels, which makes planning more relevant to the physical and social context for which it is intended (Fenemor *et al.* 2008; Batchelor 1999; Steins & Edwards 1999). Local users rely on local resources for their livelihoods, moreover they live close to these resources and so are attuned to local conditions, thus their participation in dialogues is both just and wise (Uphoff 1992).

ICM promotes dialogues between stakeholders at different levels. At the local level, in situations where decentralisation may have taken place, dialogues within a boundary would

occur in two ways: between resource user groups and local decentralised authorities (Manor 2004), and between groups of resource users across boundaries (Steins & Edwards 1999).

Dialogues between resource user groups and local decentralised authorities are conducted to share information and knowledge and to incorporate inputs into activity plans. User groups serve as a channel to enable people to influence decisions on local development, especially resource management decisions that affect them. This means that people are empowered to direct the way in which resources are governed, and elected decentralised bodies, formed via local elections, exist to promote better service delivery to resource users (Larson 2002). Because the duties of the resource user groups and local decentralised authorities overlap to a significant degree and the people to whom they are accountable are almost the same, dialogues between the two groups are required to ensure integrative planning for efficient and effective development on the ground (Manor 2004).

Dialogues between resource user groups across boundaries are defined as the platform for negotiation and discussion to define operational rules to guide the use of resources (Ostrom 1990; Steins & Edwards 1999). The operational rules include appropriation and provision rules – appropriation rules specify the time, place, and quantity of natural resources to be withdrawn as well as the technology to be used, while provision rules identify labour, technology, cash, information or other resources to be contributed by resource users for use of the resource (Ostrom 1990).

Dialogues between resource user groups and technical government agencies refer to the interactive process of sharing local and scientific knowledge to address local problems and identify views on how catchment resources should be used or managed (Chikozho 2008; Blackmore 1994). Dialogues at this level generally encompass four agendas: generating ideas, formulating and assessing options, making choices about the options, and formulating plans to implement those chosen options (Cohen & Uphoff 1980). Past experience has shown that technical agencies often had less belief in local farmers, leading to less cooperation. The promotion of ICM in such situations aimed to change this perspective by emphasising the importance of local knowledge in designing catchment plans, and from that it promoted local participation in sharing ideas and decision making with technical agencies (Batchelor 1999).

At a higher level, dialogues between technical agencies refer to communication to ensure information flows between agencies. This dialogue is essential to avoid duplication of projects and could be carried out through distributing written reports or holding meetings of various sorts (Brinkerhoff & Crosby 2002). Moreover, these dialogues also give an opportunity for agency representatives to sit together in meetings, form relationships, consult, discuss planned and active works, and set a shared goal or catchment strategy to work towards (Mitchell & Hollick 1993).

There is a need to think about which players should be involved in which dialogues and how dialogues are designed in order to make them effective, in what ways each stakeholder group could participate effectively, whether all stakeholders are equal in terms of rights to make decisions affecting the catchment, and which stakeholders are likely to dominate the decision-making process (Chikozho 2008). This means that the role, responsibility and power among stakeholders should be defined clearly to help facilitate dialogues between stakeholders and reduce conflicts which may arise during their interactions (Mitchell & Hollick 1993).

Dialogues are variously defined. To understand dialogues in this study, we choose to investigate specifically:

- Knowledge or information sharing between players to address problems related to catchment or natural resource management
- Degree of negotiation or discussion to set up plans in catchment or natural resource management.

2.2.2 Joint Action

ICM encourages stakeholders to jointly implement catchment work plans. As Mitchell and Hollick (1993) state, ICM is a partnership approach in which state agencies, local governments, non-government organisations and individuals are responsible for implementing planned work and monitoring resource use. Different studies found that joint action occurs differently at different levels. Joint action at local scale occurs between resource user groups and local decentralised authorities. Although literature on ICM has not yet clearly defined joint action, literature on decentralisation in natural resource management could help provide some details in this respect. Manor (2004) defines joint action between resource user groups and decentralised authorities as collective work and mutual monitoring between the two to share resources or labour. Manor is optimistic that the two bodies could be integrated for greater effectiveness whereby resource user groups should be placed under the decentralised authorities because the latter have a more reliable election base, better organisational capacity, and stronger and broader networks with higher level government agencies (Manor 2004).

Joint action between groups of local resource users involves willingness to contribute labour, resources, time and materials to assist each other in implementing operational rules and protecting resources (Ostrom 1990). Individuals who conduct joint action require collaborative work to implement their operational rules and to monitor each other's performance. In Australia, landholders are required to cooperate with each other to manage their own land based on the catchment management strategy to control soil erosion and pollutant export from their land to water bodies – their performance is monitored based on ICM policies and regulations (Hu 1999).

Similarly, joint action between resource user groups and technical agencies has not yet been broadly specified in the literature on ICM, except for some mention of the importance of dialogues between them. In the literature on service delivery, the relationship between technical agencies and local groups outside of dialogues is a service provision relationship (World Bank 2004); Brinkerhoff and Crosby (2002) also consider this type of relationship to be a joint action. Technical agencies provide services to local groups, whereas local groups are the clients who receive services and in return share information, resources or labour as requested by the technical agencies. There are six mechanisms through which technical agencies can provide services to local groups: delivering services directly; contracting the private sector, NGO or other public agencies to provide services; selling concessions to the private sector; transferring responsibility to lower tiers; transferring responsibilities to communities; and transferring resources and responsibility to households (World Bank 2004).

In the same way, joint action between technical agencies across sectors entails both joint activities and resource sharing (such as loans, grants, personnel or facilities) (Brinkerhoff & Crosby 2002). When conducting joint action, agencies should undertake work together, either

sequentially, reciprocally or simultaneously, based on their shared plan or strategy (Alter & Hage 1993). Joint action between these agencies may include data collection, service delivery, monitoring, training and/or supervision (Brinkerhoff & Crosby 2002).

To summarise, specific elements of joint action to be investigated in this study include:

- Resource sharing in terms of financial resources, personnel or facilities in addressing problems, implementing planned works or monitoring resource uses
- Joint activities (sharing labour or time).

2.3 Challenges to ICM

No perfect solutions to catchment management exist, as stated by Mitchell and Hollick (1993). The implementation of ICM faces both success and failure in building cooperation among stakeholders. Abers (2007) identified successful experience in promoting cooperation between stakeholders in a river basin in Brazil through the establishment of collective identities. Collective identity is defined as "an interactive and shared definition produced by a number of individuals…concerning the orientations of their action and the field of opportunities and constraints in which such action is to take place" (Melucci 1996 cited in Abers 2007: 70). Once the collective identities were built as a result of government reform programmes, cooperation could emerge. In Aber's study, collective identities occurred when initiatives were implemented to frame ideas in ways that made people perceive the catchment as a significant territorial space, when networks were expanded across administrative boundaries, when stakeholder capacity to work together was built, and when players recognised their collective identity as members of a catchment.

The success of ICM to foster cooperation is dependent upon the existing institutional structure, political process and political culture of an environment. Experiences of ICM differ between the UK and Australia (Batchelor 1999). The adoption of ICM in the UK seems to have been slower than in Australia due to the separation of the agricultural department from the water department (which is not the case in Australia) and the lower priority given to environmental management in the UK's political agenda (Batchelor 1999). In Brazil, Abers and Keck (2006) found the progress of ICM was hindered by the hybrid political culture of the country and the failure to ensure immediate transfer of authority to new decision-making bodies, causing these new bodies to exist in form but with no authority to function.

Time and dedication to pursue negotiations and dialogues are required to implement ICM (Abers & Keck 2006). Restructuring agencies by gathering stakeholders will not build cooperation immediately. It is also necessary to build trust among stakeholders, and they need to be well intended and determined to work hard to achieve common goals (Mitchell & Hollick 1993).

Cooperation entails transaction costs for individual agencies to travel and hold meetings. If such costs are not included in the contracts or mandates of individual agencies, it will be hard to make sure that those players are going to cooperate (Boston *et al.* 1996).

Another impediment to cooperation between agencies lies in the lack of a strong mandatory obligation of each agency, derived from centralised systems. Subordinate agencies would prefer to account to their central ministry only, rather than to have collaborative practices and reporting systems with other agencies (Boston *et al.* 1996).

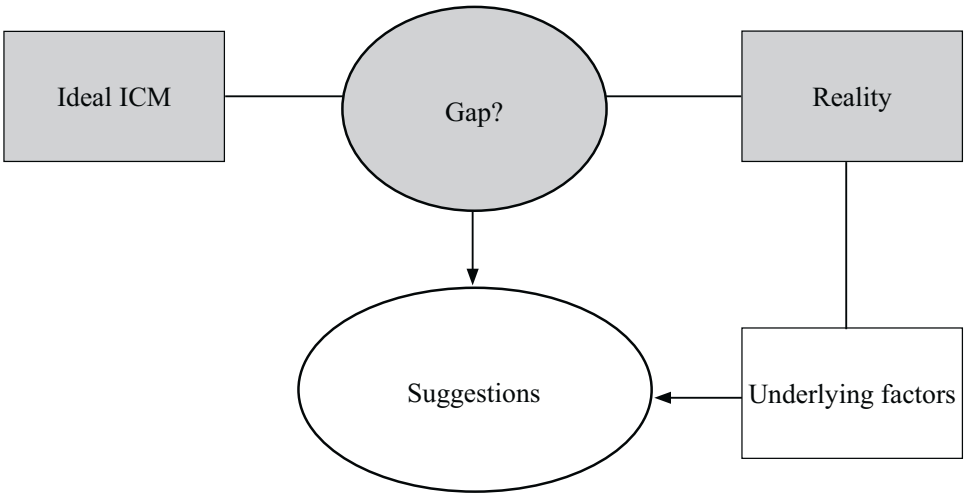
Cooperation at an individual level relies on players having a degree of flexibility in their personal interests and accepting reciprocal arrangements with fellow resource users. Individuals, often with their own self-interest in mind, seek to cooperate with other resource users in the hope that their personal interests will be addressed and their desires met by means of cooperation (Axelrod 1984). Cooperation also exists between players who foresee that they might share important endeavours in the future (Axelrod 1984).

Cooperation is also reliant upon mutual dependencies (Ostrom & Gardner 1993) and reciprocal relationships that allow them to build trust and expect future positive performance from others (Okerson 1990). For example, an upstream water user might agree to share water with a downstream user if the latter shared the costs of upstream scheme maintenance that ensure the function of the whole system (Ostrom & Gardner 1993).

2.4 Analytical Framework

Literature on ICM and other related discourses point out that the ideal principle of ICM is to foster cooperation. This cooperation must extend across an entire catchment and be at a level where it enables dialogues and enhances joint action between stakeholders. The conceptual framework for the study was developed based on this review. Using the two elements (dialogues and joint action), this research explores the actual situation of cooperation in catchment governance in Cambodia to investigate whether there is a gap between reality and the ideal theory of ICM. This research identifies underlying factors that influence the level of cooperation in Cambodia to provide suggestions to policy makers and practitioners when implementing ICM in Cambodia.

Figure 1: Analytical Framework



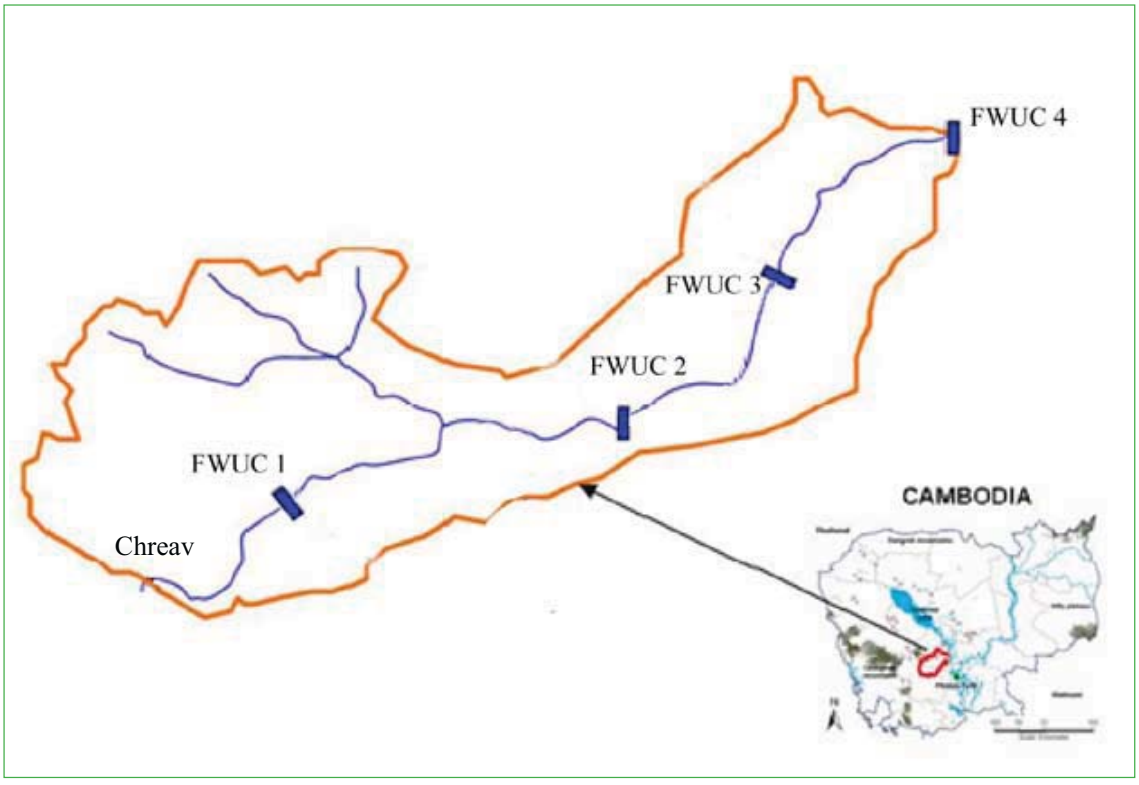
CHAPTER 3 STUNG CHREY BAK

This chapter describes characteristics of the case study site, Stung Chrey Bak. It highlights the main players involved in the case, their roles and responsibilities, and their interactions across territories from individual scheme to catchment scale.

The catchment of Stung Chrey Bak occupies 791 km^2 of two provinces, Kompong Chhnang and Kompong Speu. The catchment is covered by forest, shrubland, paddy fields, natural lakes, streams and other water bodies, all of which supply water to the Stung Chrey Bak stream and the Tonle Sap River. Stung Chrey Bak is one of the largest streams in Kompong Chhnang; its headwaters are located in the Cardamom Mountains and it extends for 80 km, cutting across Tuek Phos and Rolea B'ier districts to the south-east of Kompong Chhnang town, Kompong Chhnang province. The stream intersects Boeng Thom in KB commune, before flowing into the Tonle Sap River. The level of water in the stream rises substantially during the wet season. Based on water measurement data recorded by the WRMRCDP team, water levels reach approximately 50 million m^3 from August to November (the wet season), and gradually fall to 6.3 million m^3 during the dry season, from December to April.

Several irrigation schemes are located along Stung Chrey Bak, most of which were built before and during the Pol Pot regime. Four of these schemes have been renovated several times by PDoWRAM and NGOs. A Farmer Water User Community (FWUC) has been established at each renovated scheme (Figure 2). Other groups of farmers who reside between said schemes' boundaries also rely on water in the stream for irrigation and domestic use and mostly use old, un-renovated infrastructure to divert water into canals and then to paddy plots.

Figure 2: Catchment Map of Stung Chrey Bak, Tuek Phos and Rolea B'ier



3.1 Interactions between FWUCs

The four FWUCs along the Stung Chrey Bak are located at Schemes 1 to 4, as shown on the map in Figure 2. These four FWUCs rely on water from the stream mainly for rice farming. Variation in livelihoods, cultivation patterns and water use among them were observed. Interactions between these four FWUCs are complex and often concern water allocation. Below is a description of the observed interactions between individual FWUCs and dilemmas in their cooperation.

3.1.1 Scheme 1

Scheme 1 is located in the upstream part of the catchment in TK commune, Tuek Phos district, and supplies water to farmers in four villages. Farmers in this scheme were organised into FWUC 1 by PDoWRAM in 2008. This FWUC has little communication with farmers in other communes, either upstream or downstream. The committee indicated that they do not interact with the upstream commune because they find it unnecessary. Whenever they face a water shortage, though this is reportedly quite rare, they go to Chreav, the confluence of Stung Chrey Bak and Stung Krang Ponley, to check the water flow. The committee has never stopped on the way because they know that farmers upstream do not utilise the stream as much as their farmers do. Also, because the topography of the land upstream is high, water flows into their scheme quickly.

Further to having no interaction with upstream schemes, communication between FWUC 1 and the three downstream schemes is also rare. Although the downstream schemes have paid visits to check water levels in the stream, there had never been any dialogues between them. More recently though, the FWUC 1 committee has been introduced to members of the other FWUCs through attending seminars organised by NGOs. Since they have got to know each other, they have begun to contact one another by telephone to share information about water flow.

Box 1: Overview of Scheme 1

Construction of Scheme 1 began in 1950, but it is not yet complete. It was first renovated in 1967-68, then again in 1979-82 by solidarity groups, and a third time in 2005 by PDoWRAM, Kompong Chhnang. Given that the scheme has been renovated several times, the current structure is not robust. Water flow often breaks part of the structures and erodes the stream bank; hence maintenance is required every year. It is a stream-diversion weir type scheme that comprises a diversion weir, one main canal and sub-canals, which only function in the wet season for rice farming.

Farmers in Scheme 1 were organised into FWUC 1 in 2008 by PDoWRAM, with the presence of the CC. There was no pre-discussion with farmers. Staff of PDoWRAM came to the commune and asked the CC to appoint 10 potential candidates and mobilise farmers to participate in an election. A few days later, the election was held in a pagoda. A committee member recalled that only 30 out of 500 farmers from four villages participated in the election. Once the election was finished, PDoWRAM formally announced the existence of the FWUC. The elected committee members were told about their roles and responsibilities in the process. Although this committee is wholly composed of farmers who do not hold any official positions in the local governance system, in practice the village chiefs and the committee have always

worked closely with the FWUC to facilitate water distribution, information sharing and mobilisation of farmers.

In 2010, Scheme 1 provided irrigation for 925 ha of wet-season rice across four villages in TK commune. Farmers in Scheme 1 rely on water from the stream primarily between April and May to sow their seeds as the rains often start late. Water is mostly gravity-fed to farmers' land, but about 30 percent of the total irrigated area is watered using a pump-fed system. During the wet season, the majority of farmers grow a variety of early rice strains known locally as *neang rumpe, sen pidao,* or *rumduol;* these take approximately three to four months to mature before they can be harvested, and rice yields range from 0.5-1.5 tonnes per ha. These farmers choose to grow early rice varieties and the availability of water means that farmers in some villages can grow two crops per year. The first crop is sown in April or May and harvested in August or September, then the second crop is sown in September or October and harvested in November or December.

In the dry season, farmers engage in other livelihood activities such as collecting palm juice, running home businesses, making charcoal, or working for a garment factory (which involves 60 percent of the commune's female workforce). Farmers were adamant that growing wet-season rice is more important for their livelihood than their supplementary jobs in the dry season because they rely on rice for food as well as income. Farmers in FWUC 1 do not grow dry season crops because there is not enough water. Some farmers who had land adjacent to canals and access to water during the dry season said that they still preferred not to grow dry season crops because of the high cost of guarding their fields from cattle which are free to roam during the dry season. Water in the scheme is the source of drinking water for livestock and is also used for other domestic purposes.

Before the FWUC was established, the scheme was managed by the CC. The CC appointed someone who was believed to have a good understanding of irrigation to look after the scheme. This person monitored the scheme and when it was in need of maintenance, he would set up a plan and discuss it with the CC. Upon reaching a decision with the CC, he would be given permission to collect money from farmers to implement the plan.

> *The downstream users once came to my place in the dry season to see the stream. When they did not see any water, they continued further upstream from my place. I did not meet them. I did not know them either until more recently when I received training from PDoWRAM and attended seminars organised by NGOs, where I had time to meet them. (Mr J, leader of FWUC 1, interview, 24/02/11)*

The FWUC 1 committee has prioritised certain issues within their scheme, such as mobilising farmers to contribute to scheme maintenance and strengthening communication between users. Although a FWUC in name and appearance, this community has not yet performed effectively in terms of operating and maintaining the scheme and mobilising farmers to participate in irrigation management. Instead, it relies on the power and resources of the CC and village chiefs to gather labour or cash from farmers (KHR1,000-2,000 per household) to repair irrigation infrastructure and buy plastic bags to block water. Although the Commune/ *Sangkat* Fund (CSF) has not been used for maintenance, the CC has played an important role in providing advisory support to the FWUC committee in regards to monitoring water flows. The CC also mediates and facilitates water sharing between farmers across villages within the commune (i.e. between farmers from the head to the tail end of canals).

3.1.2 Scheme 2

Scheme 2 is located in CM commune, Tuek Phos district and is downstream of Scheme 1; therefore the farmers there are considered as mid-stream users of Stung Chrey Bak. Farmers in this scheme were organised as FWUC 2 in 2005. This FWUC often has interactions with farmers in the neighbouring commune (AP) which relies on water from the same stream, leading to confrontations over water sharing. These confrontations led the two CCs and FWUCs to jointly establish a temporary inter-commune committee in 2010 to resolve conflicts over water sharing.

FWUC 2 is acquainted with the other downstream committees, i.e. FWUC 3 and FWUC 4; however, their only contact has been through participation in seminars organised by NGOs. Committee members hardly ever go upstream to request water because water scarcity in the stream is not an issue during the wet season. The committee is also familiar with FWUC 1 upstream as their CC has shared such information with them.

> *I met the downstream committees a few times through NGO seminars. The downstream committees came by motorbike to observe the stream at our place, but we never met. They wanted to check whether or not we blocked water. When they came and saw no water, they went back. We did not know each other until we met at the seminars. (Mr S, FWUC-2 gate-keeper, interview, 24/02/11)*

Lack of cooperation across schemes is not a primary concern in Scheme 2. The FWUC's priorities are twofold: to find a way to improve the function of the FWUC and farmer participation, and to find a way to share water with AP commune effectively. Despite the presence of FWUC 2, most of the responsibility for irrigation management still rests with the CC. The CC has considerable power to resolve conflicts, approve water requests, and mobilise farmers to contribute labour to repair the scheme. There is no fee collection in the area. In 2004, over KHR10 million of the CSF was used for a large-scale project to construct canals and water gates. The commune chief has plans for additional renovations which exceed their financial capacity, but the commune hopes to get external support from political parties and benefactors. However, financial support is quite rare in this commune compared to others.

Box 2: Overview of Scheme 2

Constructed in 1973, Scheme 2 has been rehabilitated three times: in 1981 by a solidarity group, in 1989 by American Friends Service Committee (AFSC), and in 2005 by MoWRAM. The physical infrastructure comprises a concrete weir across the stream (much like in Scheme 1), one main canal, sub-canals, and culverts. The weir is in need of considerable repair, so farmers often use plastic bags and wood to block the stream until water rises up into a main canal, which was built by MoWRAM in 2005, from where it is diverted into sub-canals or paddy plots.

FWUC 2 was established in 2005 after the scheme had been renovated by MoWRAM. MoWRAM suggested that the CC form a FWUC to take responsibility for the maintenance of the renovated infrastructure. The CC appointed the village chiefs in each village to take responsibility to direct water distribution to their respective villages, and then selected three of these village chiefs to be the head and deputies of the FWUC committee. The CC and MoWRAM also appointed a farmer who lived close to the weir to be a gatekeeper to watch and control the weir. The gatekeeper reports any incidents to the CC and PDoWRAM.

In 2010, Scheme 2 provided wet-season irrigation to 730 ha (of a total of 2363 ha) across eight villages in CM commune. Farmers rely on irrigation water to supplement rainwater primarily between April and May when rain is prone to starting late. Between November and December, farmers use irrigation water to supplement scant rainwater to achieve higher rice yields. The schedule for operating the weir is temporally divided into three periods: from April to May the weir is closed to retain water for agriculture; between August and September the weir is open because water is plentiful; and between November and December, the weir is closed to retain the last of the wet season rainfall for domestic use. Similarly to Scheme 1, farmers in Scheme 2 grow three types of wet-season rice: early, medium, and heavy. The average yield of rice in this commune ranges from 1-1.5 tonnes per ha, depending on the quality of soil. Rather than growing crops in the dry season, farmers do other work such as weaving bamboo baskets, collecting palm juice to make palm sugar, raising livestock, working in garment factories and some migrate to Thailand to find temporary work. Some villagers used to grow dry season rice, but stopped due to a number of factors, including insect infestation, inadequate water, and high costs of guarding the paddy fields from grazing cattle. Other farmers mentioned the issue of having higher-sloped land above the canals in that it is too costly to pump water uphill to their paddies, while some said they were not used to dry season rice farming because traditionally they had never done it. However, the CC and farmers intended to grow dry-season crops in the future, depending on water availability.

3.1.3 Scheme 3

Scheme 3 is located in TK commune, Toeuk Phos district, below Scheme 2. The farmers there are considered mid-stream users of Stung Chrey Bak. It is a reservoir-based irrigation scheme with a capacity of approximately 6 million m^3, though in reality it holds less than this due to severe siltation. Farmers in this scheme were organised into FWUC 3 in 2003.

Farmers in this scheme have frequent interactions with downstream farmers, especially those of FWUC 4, over the sharing of water. Because the reservoir is shallow and the demand by FWUC 4 is high, confrontations between FWUC 3 and FWUC 4 often occur during periods of water scarcity in the dry season. FWUC 3 retains water in the reservoir for a variety of uses during the dry season (e.g. rice farming, gardening, domestic use, biodiversity conservation in the reservoir, or recreation) while FWUC 4 farmers need water to be released because dry-season rice farming is reportedly their only source of livelihood. FWUC 3 also interacts with upstream farmers. Over the past few years, they have visited FWUCs 1 and 2 a few times during times of wet-season water shortage. The purpose of the visits was to see how water was being retained by the upstream schemes and to request that some water be released; this has never led to serious conflict between the groups.

The committee also faces internal challenges within the community itself. Farmers do not use water efficiently. They do not follow-up and block water flow after irrigating their land. There are no water guards to monitor this practice, so water is often wasted. The level of farmers' participation is reportedly low and the functionality of the FWUC is fairly poor with the committee often having to rely on the CC for help. Farmers claimed they are rarely called to attend meetings to plan for maintenance, which is why they do not know what the FWUC needs from them. The FWUC has not yet fulfilled its mandated task of establishing Irrigation Service Fee (ISF) collection; the idea has never been put forward. The CC has occasionally called for contributions from farmers in the form of cash and labour to repair and maintain

the gates and dam. So far the CC has spent its own CSF on the construction of canals and renovation of gates. During periods of heavy rain, the CC also helps to oversee the dam to minimise the risk of it breaking.

Box 3: Overview of Scheme 3

Scheme 3 was built in 1976-77 during the Pol Pot era and has since been renovated twice: in 1985 by AFSC, and in 2001 by the Programme de Rehabilitation au Secteur Agricole du Cambodge (PRASAC). Despite the renovations, the condition of the scheme is poor. The gatekeepers reported that it takes dozens of strong men to open or shut the gates properly. That the water gates often get stuck and damaged is attributed to the lack of routine maintenance, e.g. no oil to lubricate the screw threads. Gatekeepers also mentioned that one water gate has never shut properly because it was poorly constructed (by PRASAC). There is a hole at the bottom of the gate that requires a gatekeeper to dive into water to block it. Farmers complained about how sedimentation in the reservoir is causing it to have insufficient capacity for downstream users. The physical infrastructure of Scheme 3 comprises one reservoir, a spillway, one main canal, and sub-canals.

Farmers in Scheme 3 were organised into FWUC 3 by PDoWRAM in 2003 under a fund supported by PRASAC. A cross-commune FWUC, involving TK commune and two others, was set up. Separate elections were held in each commune. There were pitfalls in the establishment process. Attendance by farmers was reasonably high, but most farmers were reportedly unaware of the purpose of the FWUC. Some villagers said they were nominated as candidates without their agreement. There was no statute to guide the functioning of the FWUC. A committee member said PDoWRAM staff briefed farmers on a draft statute prepared by MoWRAM, but then took it away. The committee was initially taught how to control and adjust the gates by PRASAC, but has had no further training since then. Soon after the departure of PRASAC, involvement from the two other communes stopped and the leaders of TK commune did not initiate any further contact. The committee has become fragmented to the extent that only two leaders plus a new recruit remain, constituting a FWUC committee of only three.

In 2010, Scheme 3 provided irrigation for 875 ha of wet-season rice across 10 villages in TK commune. Farmers rely on water from the stream in three periods: late April to early May to sow rice if the rains are late; June to July when farmers draw from the large quantity of wet season water which they believe is rich in nutrients for their crops; and September to early October when farmers need water from the stream to supplement rainwater. At the time of the study, approximately 80 households cultivated dry- season rice (55 ha in 2010) and vegetables (e.g. water spinach, pak choy, ridge gourds, herbs). Others engaged in other activities during the dry season such as weaving baskets, collecting palm juice, or selling labour. Some farmers were used to cultivating dry-season rice, especially those with land alongside the stream and the reservoir, whereas others had only just begun to do so after hearing about the Department of Agriculture's initiative.

Farmers in Scheme 3 grow three types of rice during the wet season: early rice (e.g. *phka rumduol, phka mlih, kor dong*), middle-weight rice (e.g. 55, 56), and heavy rice (e.g. *neang minh, dak mlih*) which yield 0.5-2 tonnes per ha on average. Farmers begin cultivating heavy rice in April or a bit later if the rains are late, and harvest in December. Approximately 120 farming households have land inside the reservoir which is submerged during periods of heavy rain in the wet season. These farmers sow rice very early in April so that by the time the rain comes and the water level in the reservoir starts to rise, the rice will be ready to start floating.

3.1.4 Scheme 4

Scheme 4 is located downstream, below Scheme 3 in KB commune, Rolea B'ier district, where the Stung Chrey Bak intersects Boeung Thom and Tonle Sap River. Unlike other schemes, farmers in Scheme 4 rely on water from the stream primarily during the dry season. The majority of farmers grow one crop a year during the dry season because their land is submerged during the wet season. The average rice yield in Scheme 4 is high; it is never below 2 tonnes per ha, which is double the amount harvested in the other three schemes. The optimal rice yield can even reach 4-5 tonnes per ha if fertilisers are used.

In 2010, the scheme irrigated 510 ha of dry-season rice land belonging to 674 households from four villages in KB commune. The proportion of irrigated land increased fairly rapidly from 30 ha in 1994-95 to 250-300 ha in 2000-01. There has also been a notable increase in the proportion of dry-season paddy fields, explained by the commune chief to be partly due to population growth and partly due to farmers' growing interest in dry season rice farming. The history of the area obtained from farmers shows that after the Pol Pot regime, farmers cultivated only floating-rice on land distributed by the Solidarity Group. However, because of unreliable yields (determined by the extent of flooding from the Tonle Sap River), farmers abandoned that land for other jobs. Later, having seen the benefits of farming dry-season rice, farmers returned to their old paddy fields that were by then covered with shrubs and flooded forest, cut and burnt the forest to clear the land to farm dry-season rice – action which, according to the FAC, is considered to be illegal as such forests are now reserved for fishery habitats. Conflicts between farmers and the Fisheries Administration Cantonment (FAC) occur every year, reflecting the cooperation dilemmas between the two groups.

The biggest challenge for farmers in Scheme 4 is water shortages. FWUC 4 is the end user of water in the Stung Chrey Bak catchment, and farmers grow dry-season rice because their land is inundated during the wet season. Their irrigation infrastructure is not suitable for water storage and therefore it can only supply water if there is a continual flow from upstream. Although they are constructing a reservoir, it is not yet complete due to insufficient funds. Therefore, farmers have to rely on the reservoir in Scheme 3 to supply them with water during periods of water shortage. Their livelihoods are strongly dependent upon the extent to which the farmers in Scheme 3 agree to share water with them.

Almost every year, between February and March, when water becomes scarce in their scheme, the committee organises meetings among the farmers to discuss contributions to the cost of negotiating water release and to form a working group. Those families who donate labour do not need to contribute cash and those who do not donate cash have to give labour. The farmers of FWUC 4 often contact farmers further upstream in CB commune to propose a coordinated approach in requesting water from FWUC 3. However, their proposals are often rejected and the working group is left to negotiate alone for water.

The FWUC 4 working group usually spends a full day requesting water from FWUC 3. In the early morning they hire vehicles to get to Scheme 3. Sometimes they also invite monks to join them as they believe Buddhist farmers in Scheme 3 would be more generous to monks, and agree more readily to share water with them. The working group meets the commune chief or sometimes the FWUC committee of Scheme 3 to request permission to release water. On reaching agreement with the commune chief, they then have to find the gatekeepers themselves to physically release the water.

If the negotiation to release water is successful, the working group divides into small groups which follow the flows of water downstream across five communes, clearing any blockades erected by farmers adjacent to the waterways. Ordinarily, the working group tries to meet the commune councils along the way to request verbal consent to clear the blockades, but if they cannot find the CCs then they just do the work without consent.

> *Last year, 30-40 people in four vans went together to request water from the FWUC 3. We left at 6:30 am. Once we arrived at Scheme 3, we negotiated with the FWUC committee. It was so hard to find those responsible for controlling the gates in Scheme 3. I went from house to house to look for them. The farmers of Scheme 3 pointed to one another. I think they did not want to tell us. It took us almost a whole day just to find them. [Once getting the gate open], we then divided our labour to follow the water flows. We saw hundreds of blockades made of wood or net in the stream every hundred metres, so we removed them all. Those farmers who built those blockades were angry so they reported us to their communes and then to the district authorities during the district workshop. We got home at around 8:30 pm. (Mr S, leader of FWUC 4, interview, 19/01/2011)*

Conflicts over water sharing between FWUC 4 and FWUC 3 occur almost every year because the two groups want to retain water for their own benefits. FWUC 4 said the commune chief of Scheme 3 has often asked for an official letter from the district stating that the governor had given his consent for the release of water from the reservoir at Scheme 3. They also said that Scheme 3's farmers had not always kept their word and have often shut the gate as soon as the working group left to return home.

Besides the differences with FWUC 3 that FWUC 4 has to address, they have to engage with other upstream user groups who also share the same water in order to allow water to reach their scheme. Those groups of users need water for growing grass, domestic purposes, fish breeding, and raising livestock. Farmers in CB utilise water at the same time as farmers in FWUC 4 to grow dry-season rice. According to FWUC 4, the CB farmers are "an inconsiderate group" as they block water from reaching Scheme 4 and do not cooperate when the farmers from Scheme 4 need to request water from Scheme 3.

Box 4: Overview of Scheme 4

Built in 1991 Scheme 4 was renovated in 1994 with the participation of farmers, technical support from the Provincial Department of Agriculture, and financial support from AFSC. The diversion weir, originally made of bamboo, was replaced with a concrete one during the renovations. More recently, one of the main canals was lengthened. The committee is also constructing a new reservoir to store flood water, which at the time of study had not been completed. The physical infrastructure of the scheme encompasses a diversion weir and a main gate, four main canals, and sub-canals.

When the scheme was first built, it was under the control of KB commune. The commune hired a farmer to control (shut or adjust) the main gate to allocate water to farmers when needed. The practice of hiring a person to operate the gate was not successful due to the lack of cooperation from farmers. In 1995, AFSC proposed a new and untried idea, to establish a water association at commune level. The water association was primarily established to mobilise farmers to participate in irrigation management, both in the form of giving labour and money.

Two farmers known to be competent and outspoken were selected by the commune to lead the association.

The water association was restructured to formally become a FWUC in 2000. This was organised by PDoWRAM and facilitated by the KB commune chief. The process started with several meetings between farmers and PDoWRAM officials. The purpose of the meetings was to discuss the procedure for forming the FWUC, roles of the FWUC and its benefits for farmers, and farmers' contribution to ISF (KHR40,000 per ha). The discussion was followed by the vote to elect four leaders, two of whom had been leaders of the previous water association. The four elected leaders then selected subordinate members to manage the sub-canals. Forty people were originally recruited, but only one had remained active until more people were recently recruited, bringing the total number to 15.

The timing of dry-season rice farming in Scheme 4 is staggered but cultivation begins as the flood waters from the Tonle Sap begin to recede. Cropping begins from November to January. Farmers start building dykes all around their paddy fields to retain some flood water to sow seeds. They then rely on water from the stream to irrigate their land after the seedlings have been growing for a few weeks. Crops are harvested from March to May. The high demand for water in the area is between late January and February, when the whole command area is under cultivation.

Besides farming, farmers also engage in supplementary activities during the wet season including fishing, home gardening, raising livestock or weaving bamboo baskets, but these activities are not considered as important as dry-season-rice farming.

Figure 3: Summary of Key Characteristics of Schemes and Players

	Physical infrastructure/ construction year	**Key players**	**Irrigated land (in 2010)**	**Beneficiaries**	**Use of water**
Scheme 1	Diversion weir /1950	FWUC 1	925 ha	4 villages	- Rice farming (wet season) - Cattle raising
Scheme 2	Diversion weir /1973	FWUC 2	730 ha	8 villages	- Rice farming (wet season) - Cattle raising
Scheme 3	Reservoir /1976-77	FWUC 3	875 ha	10 villages	- Rice farming (both wet and dry seasons) - Vegetable growing - Cattle raising
Scheme 4	Diversion weir /1991	FWUC 4	510 ha	4 villages	- Rice farming (dry season) - Cattle raising

3.2 Moving Up – Government Players Operating Across Boundaries at Catchment Scale

An array of government players is directly or indirectly involved in development and resource management at Stung Chrey Bak. Schemes 1 to 4 are located in TK, CM, TB and KB communes, respectively. Each of these communes is administered by a CC[1] elected by their respective residents. CCs' mandate concerning irrigation and natural resource protection is not explicitly set out in the Law on Commune/*Sangkat* Administration and Management (LCSAM), but in practice at Stung Chrey Bak their roles are extraordinarily important, demonstrating frequent interactions with other bodies including community groups, neighbouring CCs or line departments (LDs). CCs work closely with FWUCs located within their jurisdiction to promote farmers' participation in irrigation operation and maintenance. The relationship between CCs and FWUCs is necessary to ensure irrigation works, but there is sometimes a lack of harmony between them. CCs also interact with other neighbouring CCs across commune boundaries at district meetings or out of necessity, i.e. conflict over water sharing. Moreover, CCs also interact with various LDs by providing data and information to LD agents as per their request.

At district level, Teuk Phos and Rolea B'ier districts are involved. Each district is administered by a district council and a board of governors. According to the Law on the Administrative Management of Capital, Provinces, Municipalities, Districts and Khans (LAMCPMDK), district councils are accountable to the CCs and citizens in the respective districts. They hold both legislative and executive powers to make decisions and to ensure their decisions and activities respond to the priority needs of CCs and people in the district. Once the district councils have made their approved legislation and executive decisions, the board of governors is responsible for administering and implementing them. Although this is written in the law, in reality the district councils have not yet performed their mandates. They are still awaiting budget and the establishment of the three consultative committees[2] (to be organised soon) which are required to fulfil their duties.

Besides CCs and district authorities, a number of LDs are operating, namely: Provincial Department of Water Resources and Meteorology (PDoWRAM); Provincial Department of Agriculture (PDoA); Fisheries Administration Cantonment (FAC); Provincial Department of Land Management, Urban Planning and Construction (PDoLMUPC); and Provincial Department of Environment (DoE). These LDs are extensions of their central ministries and they work to fulfil the mission of their respective ministries in response to Rectangular Strategy II[3]. These LDs have separate roles and responsibilities to achieve their individual organisational goals, but they have to coordinate their activities to make sure that their work does not conflict.

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1 The roles of a CC, as defined in LCSAM, are twofold. First, the CC as an elected entity has a responsibility to serve local development and represent the interests of its citizens. Their mandate includes maintaining security, providing or supervising service delivery, enhancing the wellbeing of people and socio-economic development, and protecting natural resources. Second, CCs are public sector agents of government, and so their power is delegated to them from central government, and as such they must abide by laws, royal decrees, sub-decrees, *prakas* and other legal government frameworks. Each CC receives its own designated CSF fund (ranging from USD17,000 to 18,000 in 2010) to carry out its mandate.

2 These three consultative committees are the Technical Facilitation Committee, the Consultative Committee on Women's and Children's Affairs, and the Procurement Committee

3 Rectangular Strategy II for Growth, Employment, Equity, and Efficiency is the socio-economic policy agenda of the political platform of the Cambodian government of the fourth legislature of the National Assembly

Water management and irrigation falls under the jurisdiction of PDoWRAM[4]. The Water Law, endorsed in 2007, appointed PDoWRAM and the Ministry of Water Resources and Meteorology (MoWRAM) as the responsible agency for water resources management; MoWRAM's roles are detailed in the sub-decree on the establishment of the ministry, dated 1999[5]. The Water Law also appoints PDoWRAM (and MoWRAM) as the legal entity responsible for forming and registering FWUCs, of which there are many situated along Stung Chrey Bak. In many cases FWUCs appear to be a mere extension of PDoWRAM, because of the nature of their creation as well as the fact that they could be terminated by sub-decree. The practical relationship between PDoWRAM and FWUCs is elaborated further in Chapter Five.

PDoA[6], which is accountable to the Ministry of Agriculture, Forestry and Fisheries (MAFF) at national level, works to address agricultural issues including agronomy and soil improvement, agricultural extension, animal health and production, and the introduction of agricultural machinery. PDoA also interacts with PDoWRAM, especially during emergencies or times of water scarcity when they share information with each other or provide pumps or petrol to farmers. Otherwise, their interactions are skewed to independency.

FAC[7] is accountable to the Department of Fisheries, which is under the umbrella of MAFF at national level. The main responsibility of FAC is to protect fishery resources including flooded forests for sustainability. FAC is required to cooperate with CCs to get information about and address illegal fishery activities, but in practice its interactions with CCs are quite limited and involve a lot of misunderstanding. These cooperation dilemmas are discussed further in Chapter Five.

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4 PDoWRAM has five offices employing 27 staff: 1) meteorology and hydrology; 2) irrigated agriculture; 3) management and conservation of water resources; 4) water supply and sanitation; and 5) administration and personnel. PDoWRAM has line offices based in every district including Rolea B'ier and Tuek Phos, which are responsible for collecting data, monitoring irrigation schemes, and preparing reports on issues relevant to the department. PDoWRAM receives regular annual budgets that are classified into four categories (Ch60 for operation and management, Ch61 for external services, Ch62 for other expenses, and Ch64 for salary and remuneration). For development purposes, PDoWRAM receives budget from donor agencies in the form of project-based funding. Such projects are determined at national level and are delegated to PDoWRAM by the central ministry (MoWRAM) to implement. Depending on their level of involvement, PDoWRAM staff, who are involved in implementing these projects, receive extra pay in addition to their basic salary. In 2010 PDoWRAM had two projects: Labour for Rice Paddy Canal Construction funded by the World Food Programme, and Tonle Sap Lowland Stabilisation in cooperation with PDoA and Provincial Department of Rural Development (PDoRD) funded by ADB.

5 Sub-decree No. 58 on the "Establishment and Functioning of the Ministry of Water Resources and Meteorology" was endorsed on 30 June 1999

6 PDoA has eight offices, employs 108 staff, and has district line offices. Line office personnel are field staff who are responsible for reporting all technical affairs related to agriculture to the department and if necessary they provide technical support to farmers. Besides its own regular budget, PDoA receives a separate budget for technical operation (buying rice seeds or cattle to sell to farmers, establishing farmer groups, or undertaking agricultural extension and demonstration); however, this budget is unpredictable. PDoA also runs donor agency-funded projects of which there are currently three: Priority Action Programme for Biogas Plants, Tonle Sap Lowland Stabilisation in cooperation with PDoWRAM and PDoRD, and Agricultural Development funded by JICA.

7 FAC currently employs 46 staff, classified into two divisions and eight district-based *sangkats*. The number of staff in each s*angkat* ranges from one to six depending on the jurisdictional boundary.

The activities of PDoE[8] and PDoLMUPC[9] were also observed at Stung Chrey Bak. PDoE works to address issues related to environment and natural resource protection. The relationship between PDoE and local farmers in some communes is poor. The practice of some PDoE agents whose job is to collect fines is considered illegal by farmers who believe the agents pocket the money. PDoLMUPC deals with land management and cadastre including land registration and conservation of state property. PDoLMUPC had difficulties in demarcating and registering public land, such as forest, flooded forest, water bodies, irrigation, canals, or fishing lots, because it cuts across the jurisdiction of so many departments that their cooperation is hardly realised. It is also difficult to register cultivated land inherited by customary rights to provide ownership to private owners because after years of neglect the land has become overgrown with flooded forest, which is now defined and protected as a fishing ground by the FAC.

Figure 4: Government Players across Boundaries at Stung Chrey Bak

	Commune	**District**	**Province**	**Mandate**
Local authorities	CCs	District Office (salasrok)	Provincial Offices (salakhet)	Democratic development within their jurisdiction boundaries
Technical players	n/a	LO of PDoWRAM	PDoWRAM	Water management and irrigation
	n/a	LO of PDoA	PDoA	Agricultural issues
	n/a	*Sangkat* of FAC	FAC	Fishery resources including flooded forests
	n/a	LO of PDoE	PDoE	Environment and natural resource protection
	n/a	LO of PDoLMUPC	PDoLMUPC	Land management and cadastre

8 PDoE manages two protected areas in Kompong Chhnang; the wildlife sanctuary in Phnom Aural under the jurisdiction of the Department of Nature Protection and Conservation, and the multiple use area of Tonle Sap. PDoE has four offices, accounting for 36 staff in total. At district level, it has line offices, each of which has approximately two to three staff. At the time of study, PDoE did not have any donor agency funded projects and thus was exclusively reliant on the regular budget financed by internal revenue. A few staff were hired to train NGO staff, but this was reportedly of little importance or interest to PDoE staff.

9 PDoLMUPC has 61 staff and three offices. PDoLMUPC has line offices based in the district each with one or two staff members. PDoLMUPC started working on land registration in 2008, and so far it has successfully completed registration in three communes (RB, CB and ST) in Rolea B'ier district, and is extending the project to Boribor district. Land registration is undertaken via two approaches: compulsory systematic land registration, and sporadic land registration. Compulsory systematic land registration is a state-owned programme that aims to provide land security to citizens in a commune or a district. The costs of this project are covered by the government. In practice the process is slow, but it is free of charge to citizens. Sporadic land registration is undertaken on demand of private landholders, and therefore the costs of services are the responsibility of the landholders; these are often very high. PDoLMUPC has its own regular budget that mostly covers administration, and operation and maintenance. It also obtains an operational budget from its line ministry for land registration, though this funding is unpredictable. The department also receives funds from donor agencies to carry out land registration. Land registration has been underway for about three years, with the last two years supported by the Canadian International Development Agency (CIDA). PDoLMUPC has embarked upon two other projects: one involves obtaining social land concessions for the poor and families of soldiers and is funded by the World Bank, the *Lutheran World Federation (LWF),* and the Japanese government; the second is to develop a master plan for land use, funded by GIZ.

CHAPTER 4 COOPERATION OF LOCAL BODIES WITHIN AND ACROSS IRRIGATION SCHEMES

This chapter provides empirical insights into the level of cooperation among local bodies within and across schemes and factors that influence it. It looks into the level of cooperation that exists at two main levels of governance: 1) cooperation between FWUCs and CCs within schemes, and 2) cooperation between neighbouring FWUCs across schemes. Cooperation of neighbouring CCs and district authorities across schemes is also briefly reviewed.

4.1 Cooperation between FWUCs and CCs and Influencing Factors

FWUCs and CCs are the two main bodies involved in the management of irrigation at commune level. FWUCs emerged as a result of the implementation of Participatory Irrigation Management and Development (PIMD) policy in 1999 to promote local participation in irrigation management, while CCs were formed in 2002 in response to the government's reform policy on decentralisation. Based on the Law on Commune/*Sangkat* Administration and Management (LCSAM), CCs are intended to be accountable to their constituents because they are elected bodies while FWUCs according to PIMD policy are to hold responsibility and authority to manage, repair, and improve irrigation systems as delegated by MoWRAM. The relationship between FWUCs and CCs is not broadly discussed in the PIMD policy.

FWUCs and CCs co-exist at commune level. This chapter aims to investigate how both players interact and whether they cooperate with one another on important water management decisions and processes.

4.1.1 Dialogues

In times of emergency or unexpected problems (i.e. water scarcity, damage to irrigation infrastructure, or conflicts over water), FWUCs and CCs have evidently engaged with each other to address these issues. Communication between the two players has occurred even when there were no pressing issues to resolve, but the nature of the dialogues in this regard were less purposeful and organised. Living in the same area, commune councillors and FWUC committee members often encounter each other and the fact that they are well acquainted has promoted greater informal dialogues between them. Furthermore, that the FWUC committees are often composed of village chiefs or councillors has also promoted relationships and more frequent communication between the two groups.

Even though there were dialogues between FWUCs and CCs, reaching agreement over planned actions in one of the case study schemes has remained problematic. Interviews showed that FWUCs 1-3 found it acceptable to follow CCs' direction because they recognised its important role as the highest local authority and because CCs have substantial experience and practical knowledge to assist them. However, FWUC 4 found this process and interaction unacceptable for reasons discussed in the following sections.

FWUC 4 and CC 4 commonly disagreed on two key areas: deciding on what actions should be taken in regards to irrigation scheme development planning; and the extent of each governance body's decision-making power. Disenchanted, the two groups had deliberately avoided each other.

The tensions between FWUC 4 and CC 4 could be attributed to two main factors. The first stems from the lack of guidance provided in the policy or law in regard to the extent of their mandated power and responsibilities and how the two bodies might integrate their ideas effectively and reach agreement on decisions. For example, FWUC 4 defined itself as the representative governance body for citizens regarding irrigation affairs and thus argued that it has the power to make and implement decisions. On the other hand, the chief of CC 4 considered that the CC is a legitimate representative body and the most prominent at commune level as it was formed by general election. Therefore they believed that they hold the power to ultimately approve or disapprove the decisions of FWUC 4.

> *FWUC 4 thought that because it was formed and registered with PDoWRAM, it is not subordinate to the commune. FWUC 4 is an independent body in the sense that its members are farmers who are elected by farmers… However, before making any decisions, FWUC 4 has to consult the commune chief for approval. The commune chief reviews and discusses any points raised by the FWUC and if it finds no problems, the commune chief will approve its decision. (Mr Y, commune chief, FWUC 4, interview, 19/01/2011)*

> *FWUCs are not established to hold power separately from the CC. In a commune, there should not be many domains of power in addition to the power of CCs, which are derived from general elections. Other groups should work to assist CCs. If any established groups perceive their power to be greater than CCs, they are wrong and should be considered as illegal groups. (Mr Y, commune chief, FWUC 4, interview, 19/01/2011)*

Second, the lack of trust between FWUC 4 and CC 4 has hampered their dialogues. In the case of FWUC 4, there were personal conflicts between the committee leader of FWUC 4 and the chief of CC 4. The sentiments attached to these experiences have diminished the level of trust between them. The lack of trust was also due to misunderstanding on both sides in terms of operating in accordance with the principles of democratic governance. FWUC 4 accused the commune chief of acting unethically and being greedy, while the commune chief of CC 4 accused FWUC 4 of being authoritarian and financially non-transparent.

> *I am sure that the commune chief wants to profit. I see this in his performance. When tractors came to flatten land or harvest rice, the commune chief competed with us to demand money. I asked the owners of the tractors to pay KHR100,000 to the FWUC budget because they came to flatten paddy fields for dry season rice. However, the commune chief told the owners to pay the fee to the commune instead. I am a councillor and I know that the money will go into his own pocket… (Mr S, leader of FWUC 4, interview, 19/01/2011)*

> *The FWUC did the work before reporting to me. It renovated canals without asking my approval. I hinted that the FWUC should conduct an inventory of land under each household, however it did not take my words seriously. The FWUC said it did not have enough funds to do it, but I doubt this to be the case. (Mr Y, commune chief, FWUC 4, interview, 19/01/2011)*

Both the FWUCs and CCs in all the case study schemes were focused on people's needs as a priority, aiming to manage water for enhanced crop yields. Most of their dialogues had been about improving the quality of scheme infrastructure, to ensure that water could be adequately retained for their citizens to grow crops. They vehemently supported the idea that the more

crops their farmers could grow, the more food their farmers would have. The dialogues had failed to take into account the needs of farmers outside their groups and the balance between cultivated land and the availability of water. Although FWUCs and CCs have encouraged farmers to increase production through intensive farming on the existing land, farmers had more often opted to extend their cultivation area instead. The extension of cultivated land into areas already nominated as fishery domains is considered to be illegal; however, it was found to have occurred frequently, regardless. These issues had not been broadly discussed among FWUCs and CCs because of the emphasis on promoting intensive rice farming which had not yet been achieved in their areas. In addition, some FWUCs and CCs were uncertain about the demarcation between cultivation and fishery domains in their communes. Finally, lack of information about local hydrology has prevented them from undertaking cultivation planning effectively.

4.1.2 Joint Action

FWUCs and CCs are supposed to work together in managing irrigation schemes. In reality, FWUCs were engaged in both the technical and managerial aspects of irrigation management, while CCs were occupied with providing advice and instruction to FWUCs. This research found that FWUCs and CCs have been working together to an extent, but the degree of cooperation logically followed how well they had been able to integrate and agree on management decisions. Where FWUCs and CCs could work well together during dialogues, CCs seemed to have been cooperative in action beyond just providing advice and instruction, but where they had failed to agree on decisions CCs were accordingly less cooperative with FWUCs.

However, during times of urgency, even when the two bodies had conflicting ideas, they still sought to cooperate. Their joint action increased when there was a shortage of water, a drought, or crop failure. In these cases, FWUCs and CCs sought to work collectively and divided tasks to deal with the issue at hand.

The poor institutional capacity of FWUCs has prevented them from performing irrigation works effectively without CCs' support. The primary responsibility of most of the FWUCs in Stung Chrey Bak is to control water gates – opening or shutting the gates – and undertake small maintenance tasks. Other tasks within the FWUC's defined mandate were carried out to a lesser extent. Meetings between farmers and FWUCs were not observed among the four case-study schemes, and Irrigation Service Fees (ISFs) were collected in only one scheme. FWUCs were reliant on CCs for their functioning in most cases, especially the mobilisation of farmers for scheme operation and maintenance. In brief, the roles and responsibilities of the FWUCs with regard to irrigation management and governance were found to be weak due to institutional insufficiency and their inability to work effectively without the assistance of CCs.

CCs, especially commune chiefs, have supported FWUCs in several ways. CCs have been effective in mobilising farmers, building awareness and to a lesser degree allocating resources for scheme maintenance. They have helped bridge the gap and build relationships between FWUCs across schemes during periods of water shortage and often helped to resolve conflicts. Even though in most schemes CCs had failed to provide sufficient financial and technical support to FWUCs, in most cases they drove initiatives to raise funds from external sources. Once they knew farmers were facing water shortage, CCs would often strive to help. CCs' support is influenced by three factors. First, because CCs managed irrigation schemes before

the existence of FWUCs, they have retained a sense of responsibility for its smooth operation. Second, ensuring the functionality of irrigation systems is intrinsically linked to the wellbeing of the people. As CCs are mandated to maintain the people's wellbeing, assisting FWUCs in irrigation management is a means to fulfilling their mandate as well. Third, although FWUCs have been established within the case-study schemes, farmers still go to CCs for assistance because CCs are respected and broadly recognised by farmers as elected bodies.

> *I do not want to see our farmers lack water and die. Farmers come to the commune if they face crop failure because we are an elected body. The commune helps the FWUC because ultimately, ensuring good irrigation management essentially is protecting the lives of my people. Not helping the FWUCs means that farmers have no food to eat. The commune council represents the people. If I do not take part in addressing these problems, what was I elected for? (Mr Y, commune chief, FWUC 4, interview, 19/01/2011)*

In terms of scheme maintenance, financial support from CCs had been insufficient because their dispensable funding (the CSF) was often limited and earmarked to support top priority needs, especially the development of tertiary roads. CCs could raise funds from other sources, i.e. generous people, or political parties, though the success of this varied notably across the communes.

> *I want to dredge the big canal but the CSF is not large enough. I hope that my commune can get support from generous people and party activists, like other communes. But I believe this kind of external support depends on the interests of political parties, if they see any benefits from doing it in each commune (Mr S, first deputy of commune, FWUC 2, interview, 23/02/2011)*

Although cooperation between the two bodies had a number of short-comings, both FWUCs and CCs had cooperated to raise farmers' awareness of the new regulations concerning land extension. Both parties knew that under the new Law on Fishery, irrigation is not permitted within the boundary of the fishery domain; however, they had both failed to enforce it for a number of reasons. First of all, the encroachment of land was sometimes a matter of survival i.e. when farmers had insufficient food to eat or incomes and a growing family. If the CC had disallowed farm extension in these situations, it would have been a breach of their mandate to protect the wellbeing of the people. Second, the extension of land by farmers was not perceived to be illegal by farmers. Farmers were clearing trees and shrubs that had overgrown their old paddy fields, which had been offered them by solidarity groups. These farmers used to grow floating rice there until they abandoned the paddies for other farming practices. FWUCs and CCs live close to the people and were well aware of this history; thus, in allowing farmers to extend their land into fishery territory, they were trying to protect the customary rights of farmers over land use. However, the Law on Fishery enacted in 2006 considers all extension of agriculture lands, including cutting or burning flooded forest, as illegal and prohibits it. Third, FWUCs and CCs still lack clear information on land boundaries between land for cultivation and fishery domains.

The degree to which monitoring had occurred between FWUCs and CCs varied from scheme to scheme. In schemes where most CCs had been influential in FWUC decision-making, the two groups did not appear to be monitoring each other. This is likely due to the fact that FWUCs lack the capacity and leadership needed to perform this role. However, in scheme 4, where the FWUC functions on its own with a degree of independence from the CC, mutual monitoring was evident. CC 4 was monitoring FWUC 4's performance in three ways, by: questioning its financial management during meetings; verifying that its activity

plans responded to the needs of the people; and overseeing its decision making to ensure that it was equitable and effective through obtaining feedback from the farmers within the scheme. In return, the FWUC 4 was also monitoring the performance of CC 4 using the level of its assistance as an indicator of good performance, especially when the scheme faced unexpected problems. FWUC 4 would identify certain needs of farmers and then ensure that CC 4 provided ample assistance.

4.2 Cooperation between Neighbouring FWUCs and Influencing Factors

As initially described, the emergence of FWUCs in Cambodia is the consequence of the PIMD policy reform implemented by MoWRAM. At Stung Chrey Bak, four FWUCs have been independently formed across the catchment by PDoWRAM in collaboration with CCs and NGOs (FWUCs 1 - 4). The main challenge in this catchment is how to get these separate FWUCs which depend on the same stream, albeit via different routes, to cooperate in integrating their individual needs to share water, including costs, for equitable and sustainable water use. Water is finite and demand for it is growing every year due to economic development and population growth. Cooperation has to exist at some level to coordinate water sharing and to prevent conflict among users. This idea was put forth in the Water Law endorsed in 2007, Article 28, Chapter 8. It states that farmers can access water, but cannot access more than they require. Upstream farmers can retain water for use, but they have no rights to reduce the availability of water for downstream users. Below is a description of the observations and insight into the actual level of cooperation between FWUCs at Stung Chrey Bak.

4.2.1 Dialogues

Within Stung Chrey Bak, dialogues between FWUCs had occurred in both the wet and dry seasons, however the frequency and urgency of these dialogues was greater in the dry season as water scarcity was more prominent an issue. The players involved in the dialogues in the dry season were FWUC 4 who grew dry season rice as their main livelihood and FWUC 3 who were upstream of the FWUC 4 scheme, whereas the other FWUCs (i.e. FWUCs 1 and 2) were barely involved. The dialogues between FWUC 3 and FWUC 4 only began when the farmers of FWUC4 were desperate for water between February and March when all their canals were dry. They initiated dialogues to request that FWUC 3 share water with them. Only when water at FWUC 3 was not available did FWUC 4 approach FWUCs 2 and 1 which are further upstream.

> *We often contacted FWUC 3 when we faced a shortage and so we went to request water at their place. We contacted other schemes, i.e. FWUC 2 and FWUC 1 only when we found out that FWUC 3 did not have water. We once went to Chreav above FWUC 1 to see the water flow over there. We know other FWUCs quite well…through this contact. (Mr S, committee of FWUC 4, interview, 19/01/2011)*

The dialogues between FWUC 4 and FWUC 3 were ad hoc. There was no discussion of how to best manage and share the available water before FWUC 4 farmers started their dry-season rice cultivation. Lack of dialogues before the utilisation of water meant that neither FWUC 4 nor FWUC 3 knew the extent of each other's water needs and appropriation. Therefore they were unable to plan their farming according to the availability of water. As an added consequence, FWUC 3 would not save sufficient water to respond to the needs of FWUC 4 effectively.

FWUC 4's attempts to start a dialogue over water allocation with FWUC 3 were short-lived and did not result in mutual benefits. FWUC 4 based their request for water on the idea that upstream users should respect the water rights of downstream users, particularly because dry-season-rice farming is farmers' only livelihood in that area. We did not observe a commitment to building mutual understanding between the groups during the dialogues. From the perspective of FWUC 3, the requests of FWUC 4 were unfair and did not reflect the actual availability of water since sometimes there was not even enough water for their own farmers. It was hard for FWUC 3 to balance between the needs of downstream users and those of its own people when the water in its reservoir was so limited.

> *Water in this reservoir is for domestic use and gardening, especially by three villages whose farmers cannot get water from pump-wells in the dry season. Last year, because the water ran out, all the fish in our reservoir were caught and some households faced crop failure. I'm not selfish in sharing water. I already released water downstream for the whole wet season. I shut the gate only between December and January to retain water for my people. I know that because I did not give water, it made me look selfish, but if I had, I would have had to confront my constituency. If water is plentiful, it is easy to share, but it is scarce, I found it so hard to share. I do not know how to share a small amount of water in order to satisfy both groups of citizens. (Mr D, first deputy commune chief, FWUC 3, interview, 15/02/2011)*

Several factors have hindered dialogues between FWUCs in water sharing: lack of a collective identity, incomplete institutional capacity building of FWUCs, the incapability of FWUCs to communicate about matters beyond their internal affairs, and a sense of dependency on government. Other less direct factors – that some FWUCs practice dry season cultivation and some wet season cultivation, availability of water determined by annual rainfall, steep topography of land, and scheme infrastructure – also had an influence on the extent of communication between the FWUCs.

First, FWUCs did not have an adequate level of dialogues because they lack a collective identity as members of the same catchment sharing the same resource body. The FWUCs did not recognise their interdependency and did not share a mutual sense of belonging to the bigger catchment community. Using a term coined by Ovesen *et al.* (1996), each FWUC was operating as a standalone group like an island. They had hardly looked beyond the scope of their immediate responsibility for their own members and water channels to understand the bigger issues at catchment level.

Second, the incomplete institutional capacity building of FWUCs by PDoWRAM and NGOs is another factor influencing the lack of dialogues. FWUCs along Stung Chrey Bak stream were originally formed as independent groups, and farmers were told to care only for their own local affairs. This was because at the time, most schemes in Stung Chrey Bak were not large enough to supply water across communes. Furthermore, some schemes are located far apart and so forming FWUCs as independent units made them easier to manage and made it easier to mobilise participation in projects. PDoWRAM and external NGOs who formed the FWUCs failed to identify the need for cross-scheme interaction and cooperation between FWUCs. The FWUC formation process was short and hurried due to limitations of available funding. The purpose of FWUCs was to establish a governance body to take responsibility for the renovated irrigation schemes before NGOs withdrew their support.

Third, their institutional weakness which primarily derives from lack of financial resources and farmers' low trust and involvement means that FWUCs have not yet developed

the capability to instigate cross-commune communication independently. The inability of most FWUCs to generate their own revenue from the ISF to support their operations demonstrates their institutional failing. Although FWUC 4 has been able to collect ISFs, the level of trust from farmers was nonetheless fragile due to the lack of transparency in budgetary spending. FWUC committees are supposed to be re-elected every three years; in the case-study sites, committee members had never been re-elected. A group of farmers purported:

> *We were called for a meeting, but this was to collect ISFs. I do not think such a thing is called a meeting. As we know, a meeting refers to a gathering that has an agenda for discussion, not just for the collection of money. Usually, when we were called for a meeting, we just went to pay the ISF and then returned home. The chief of the FWUC always makes decisions in advance and then asks for our agreement. If he said he wanted to do something, he had to do it, and we had to agree. He did not accept our ideas or suggestion for any activities. (Farmers of FWUC 4, group discussion, 20/01/2011)*

Several other factors have led to FWUCs' institutional weakness, FWUCs have limited information about hydrology and cultivated land in their areas, and lack the power to mobilise farmers to discus crop planning in relation to the availability of water in their schemes. For example, in some schemes farmers had extended their land, but this was beyond the FWUCs' control. As such, FWUCs could not get a sense of how much water their own people might need. The inappropriate formation of FWUCs by PDoWRAM and external NGOs, and the lack of institutional building and strengthening since then means the FWUCs were not yet ready to deal with issues beyond their internal affairs.

Fourth, FWUCs felt subordinate to and dependent on government. They would look to government for initiatives, especially concerning inter-commune (or district) issues. FWUCs at Stung Chrey Bak felt that they had no right to form a network across schemes independently i.e. without the direction of local authorities for two reasons: they felt their decisions would be challenged and dismissed by government, and that other FWUCs would be unwilling to cooperate. Ebihara (1968) noted that Cambodian villagers felt most secure when interacting with their own people; interactions with those beyond their territories occurred only out of necessity.

> *We cannot organise groups [for serious well-organised dialogues] by ourselves. The initiative needs to come from district, province or PDoWRAM offices; we do not want to get blamed for being anarchic. We do not have a tradition of promoting cooperation across schemes. There is no rule that suggests that FWUC 4's farmers take responsibility for such and such costs and others for such and such costs…Whatever we do, it has to be the top [authorities] who make the first move. If we were to take the initiative ourselves the other group would accuse us of wanting to be the leader… (Mr S, committee of FWUC 4, interview, 19/01/2011)*

Last, FWUCs felt it unnecessary to communicate with each other because they use water at different times and because of the uneven availability of water in the different schemes defined by the topography of the land and scheme infrastructure. This research found that among the four FWUCs, three rely on the stream in the wet season for rice farming while the other depends on it for irrigation in the dry season. The slope of the land in the upstream regions, i.e. the topography at FWUCs 1 and 2, is much steeper than at FWUCs 3 and 4 which, coupled with the inadequacy of the weir at FWUCs 1 and 2, means that large quantities of water are released; therefore, the downstream users (FWUCs 3 and 4) have found it unnecessary to seek dialogues with the schemes upstream.

4.2.2 Joint Action

FWUCs have not yet engaged in joint action, nor have they shared water as agreed during their dialogues. For example, FWUC 3 had agreed to share water at the request of the downstream users of FWUC 4. In practice however, as soon as the FWUC 4 working group returned home having negotiated the release of water with FWUC 3, the FWUC 3 users would shut the water gates. The gatekeepers explained that the amount they discharged was not dependent on the agreement between the FWUCs, but on the actual availability of water. If water was scarce to the extent that they themselves would not have enough, they could not keep the gates open.

> *…the sharing of water is flexible. Sometimes we shut the gate before the agreed time if we see that little water remains in the reservoir. We can do this [shutting the gate] without having to get permission from the commune chief or anyone. Normally FWUC 4 requests that water be released for three hours, but we usually only open the gates for one and a half hours… (Mr K and Mr E, gatekeepers, FWUC 3, interview, 16/02/2011)*

Lack of joint action between FWUC 3 and FWUC 4 was also demonstrated in other forms. For example, fishers of FWUC 3 shut the gate to catch fish, yet there was no reaction from FWUC 3 to allocate guards to watch the gate to ensure adequate flow of water to downstream users. In another case, water was blocked by other users between FWUC 3 and FWUC 4, for domestic use, growing grass, livestock raising, fish spawning, or gardening, but it was observed that FWUC 3 took no responsibility in following the flow of water to ensure that it arrived at the downstream users.

Three factors were hindering joint action between upstream and downstream FWUCs. First, apparently FWUCs did not actually reach a consensus to share water during the dialogues. The rule to share water was primarily set by downstream users and imposed on upstream users. Although this rule gave them less preparation time and flexibility, the upstream users agreed to share water when the suggestion was proposed by district authorities as they interpreted it as an order they had to obey.

Second, downstream FWUCs gave nothing to the upstream FWUCs in return for releasing water to them. Upstream FWUCs felt that they were being taken advantage of if they did not receive enough benefits in return for sharing the scarce water resources that otherwise would be serving the needs of their own users. In the past, downstream users had brought money or fish as gifts to the upstream users in return for water release; the upstream users however did not consider this amount to be sufficient.

> *I once received 4-5 kg of fish from FWUC 4's working group when they came to request water. I sometimes receive KHR10,000-20,000, but that is only enough for a bowl of noodle soup. Sometimes they come without giving us anything. (Mr M, committee of FWUC 3, interview, 15/02/2011)*

Third, lack of a sense of unity and fragile trust between FWUCs also underlie the lack of joint action. As initially described, each FWUC is confined by water routes and irrigation schemes. Consequently each FWUC could only see problems at the scale of their own water canals and not beyond.

The results of this study reveal a lack of mutual monitoring between FWUCs. FWUCs had never monitored each other over water release and the utilisation of water. FWUC 4, when not getting enough water, could not force FWUC 3 to release it and could only return to request

that water be released again. FWUCs had never sought to understand how water was being used in other schemes. The upstream users (FWUC 1, FWUC 2 and FWUC 3) only knew that the downstream users (FWUC 4) grew a lot of rice, but were unsure of the extent. Likewise, the downstream users were not certain about the water needs and uses of the upstream users, particularly in the dry season. These FWUCs were reluctant to discuss the matter directly, or to monitor each other's water use.

The lack of mutual monitoring between FWUCs largely derives from the lack of a mandate to do so in the current context of Cambodia and lack of support from local authorities to enable it. Each of the FWUCs within the communes felt that if they were to initiate a monitoring programme without instruction from a higher authority to do so, it would be perceived as interference in each other's internal affairs. Similarly, the communes felt that they had no right to monitor the performance of other communes and thus FWUCs across the case-study schemes had not received any support from their CCs to pursue this task.

> *We never thought of going downstream to see how much land they irrigated because that is their territory, so they can do whatever they want. The downstream users can irrigate with the amount of water that they have. In our scheme, like the downstream users, we only think of ourselves, of our own people, of how much water we have and how much land we can irrigate. If our farmers were to expand their land, we would raise the weir to retain more water. (Mr M, committee of FWUC 3, interview, 15/02/2011)*

Box 5: Interactions Between Commune and District Authorities for Cooperation among FWUCs.

By law, CCs and district authorities (board of governors and district councils) are responsible for governing affairs within their territories. Mandates defining the extent of their interactions across territories however, are not yet specified. For example, LCSAM states that if there are issues relating to two or more communes, the Minister of Interior will act as mediator whereas the law does not specify the role of each CC in such a situation. According to LAMCPMDK, district councils should resolve conflicts presented as written complaints that are within their jurisdiction; however they can report conflicts that are outside their jurisdiction to the relevant district councils to find solutions.

In Stung Chrey Bak, the frequent interactions between CCs and district authorities across territories were intended to assist the sharing of water between FWUCs. In this regard, CCs have often played a role beyond that stated in their mandate. When water sharing resolutions could not be met, CCs would contact other relevant CCs. If the negotiations between CCs did not work out, then CCs would contact their district authorities, and the district authorities would continue the effort by contacting other district authorities to find a solution.

The CCs are autonomous bodies whose primary accountability is to the local constituents who elected them. CCs had the right to demand assistance from district councils and the research found that since district councils were not yet functioning in their new mandate, CCs had contacted district governors for their help to address water issues. CCs heeded the suggestions of their district governors. For example, the upstream CCs would release water after receiving a request from the district governor. However, the CCs tended to release the requested amount of water when water was abundant. In times of water scarcity, they would close the gates prematurely.

The findings lead to two conclusions. First of all, the interactions of neighbouring CCs across territories were important to ensure the sharing of water across schemes as they had strongly influenced the decisions and actions of the FWUCs within their communes. Second, district authorities, whose official role is to support the function of CCs, had helped to build relationships between neighbouring CCs within and across districts and hence the relationship between neighbouring FWUCs. Although CCs are no longer obliged to follow district authority commands (since the introduction of government reforms on decentralisation which rendered them independent bodies), they still obey their district officials to an extent that is not detrimental to the citizens of their commune. For example, if the district authorities had requested that a water gate be opened for two hours, the CC might only have insisted that the FWUC open the gate for half an hour if water was scarce.

4.3 Conclusions

FWUCs and CCs had to some extent held dialogues with each other, accepted responsibilities to share resources, and monitored each other's performance. Effective irrigation requires cooperation between the two bodies, not just their individual independent works. However, barriers to their cooperation lie in the overlapping mandate that has compromised the potential for the two bodies to integrate their ideas for joint planned action. Furthermore, lack of mutual trust and the paucity of CCs' dispensable funding (CSF) prevent them from being able to respond to FWUCs' needs in time.

FWUCs and CCs work to achieve agricultural production within their own administrative boundaries; the needs of farmers beyond their boundary were hardly taken into account. None of the FWUCs or CCs had yet considered multiple planning of water use and relationships between agriculture, land and fisheries. Driven by the need to address farmers' poverty, FWUCs and CCs tended to focus on intensive rice farming rather than other issues. Also FWUCs and CCs were uncertain about the demarcation between cultivation and fishery domains and lacked information on hydrology in their region.

Similarly, cooperation between neighbouring FWUCs across schemes was almost absent. Cooperation through dialogues to incorporate local needs across schemes had occurred only in times of necessity, while joint action to share costs and labour and to monitor each other was non-existent. Cooperation of FWUCs was associated with patterns of water use and the availability of water in their canals defined by climatic conditions, the topography of land and the quality of scheme infrastructure. Lack of cooperation between FWUCs was determined by the absence of collective identity defined by lack of interdependency and sense of mutual belonging, and the separate nature of each FWUC i.e. their distinct formation processes, separate water channels, schemes or communes. Other factors include the poor organisational capacity of FWUCs to communicate across schemes and a sense of dependency on government. Because of their poor organisational capacity, FWUCs required support from CCs and district authorities to manage their irrigation schemes which meant that the interactions of neighbouring FWUCs across schemes needed the facilitation of CCs and district authorities.

CHAPTER 5 COOPERATION BETWEEN LOCAL BODIES AND LINE DEPARTMENTS

This chapter provides empirical input on vertical cooperation between local bodies which mainly focuses on FWUCs and the government which mainly refers to Line Departments (LDs).

5.1 Cooperation between FWUCs and LDs and Influencing Factors

FWUCs are composed of local farmers and irrigators that use irrigation water. These bodies hold primary roles to assist PDoWRAM in irrigation scheme operation and management (O&M). FWUCs also interact with other LDs. These LDs, including PDoWRAM, are the arms of line ministries that work to deliver services and/or manage all activities of local farmers as stated in their mandate. FWUCs and LDs need to cooperate to ensure that information flows and effective results on the ground at catchment scale are met. The roles of FWUCs and PDoWRAM with regards to the sharing of costs and support and responsibility for irrigation management are also broadly described in PIMD policy.

5.1.1 Dialogues

FWUCs and LDs are geographically far apart; therefore, communication between them was often indirect. LD staff would only communicate directly with FWUCs in times of need, for example, if the farmers filed a request for urgent assistance in the midst of a drought or crop failure or if there were projects that LDs were operating in communes that needed guidance.

The relationship between FWUCs and LDs is strengthened by line offices based in the district. LDs rely on their line offices at district level to report problems to them. Every month, the agents of the line offices are supposed to travel to each commune to meet CCs, FWUCs and/or farmers to discuss local problems. CCs are also supposed to share local information that they had obtained from village chiefs and farmers with the agents. The line office agents would then report the information that they had collected back to their LDs.

> *Line office staff are the eyes and ears of PDoWRAM, because they are based at the district level, close to the people. They report all problems to the department. They are responsible for monitoring all irrigation schemes in their assigned districts regarding the condition of irrigation schemes, water flows and conflicts. (Mr A, staff of PDoWRAM, interview, 21/01/2011)*

The frequency and organisation of visits by LD agents varied between LD sectors. Agents of PDoWRAM or PDoA had more scheduled visits than those of PDoE or the Fishery Administration Cantonment (FAC). The PDoE or FAC agents would generally come when illegal activities were going on in the communes.

Communication between FWUCs and LD agents was inadequate. Visits were short, irregular, and infrequent often lasting for only one hour (per month) in each commune, in which time the agents would meet with CCs to get updated on their basic data. The agents did not often reach the actual farmers and villagers; this occurred only in times of necessity and even then the visits would be short. Consequently, LD agents generally failed to show their intended support to farmers, and consequently failed to gain and build their trust.

I go to meet commune chiefs to get information. Only when there are specific problems do I go down to their place to get detailed information. I then report to the department. (Mr V, agent of PDoWRAM, interview, 17/02/2011)

Those staff do not go to the commune regularly. They sometimes request CCs to report things to them over the phone and when there are serious problems, they go down to oversee those problems. (Mr A, staff of PDoWRAM, interview, 21/01/2011)

As a result of this, farmers often reported that they did not know district line office agents. Some complained that these agents only visited when there was a delegation or a group of researchers visiting. This low level of interaction between farmers and district agents meant that farmers did not receive sufficient information about matters in regards to what they were or were not allowed to do. Rather than having a relationship with the district staff, farmers were more reliant on personal networks (neighbours or relative), causing local agricultural practice to become fragmented, irrelevant, and removed from government policies. For example, this research revealed that there were some farmers chose to use harmful pesticide that were forbidden by the government, or also there were farmers who were resolute in pursuing land extension practices to grow crops despite encroaching on the fishery domains.

We hardly see the PDoWRAM agents coming to monitor the condition of irrigation infrastructure. They come mostly when they are accompanying special guests, delegates, or researchers who wish to visit our place. They never ask about our problems or how we distribute water to farmers. (Mr. K & Mr R, committee of FWUC 2, interview, 22/02/2011)

I do not think you should be afraid of being caught. I think we should be allowed to cut and burn forest because we are doing it on our old land. I went to discuss things with a top authority yesterday and he said farmers were not banned from clearing forest by hand, but only by excavators. After clearing the forest, we should transform the area into paddy fields and start growing rice. After one year, we can use excavators to flatten land. (Mr B, a farmer of FWUC 4, group discussion, 21/01/2011)

Dialogues between FWUCs and some agents appeared to be more conflicting than compromising. Some of the agents failed to listen to farmers, which was another factor contributing to their inability to build trust and good relationships with farmers. Anecdotes showed that some of the district agents who came to penalise and fine local farmers wanted to pocket the money for themselves.

An agent of the Fishery Administration always came to seek rents from the owners of excavators who were hired by the FWUC to dredge the canal. He said it was illegal to dredge the canal in the fishery domain without permission of the Fishery Association. I and the owner of excavator refused to pay fines because I had just dredged the old canal. The agent did not discuss reasons. He had an attitude to take money from us. (Mr S, committee of FWUC 4, interview, 19/01/2011)

The dialogues between FWUCs and LD agents were constrained by a number of factors. First, LDs could not send their line office agents to each commune or village regularly enough to have proper dialogues with farmers because they were understaffed at the district level and only a proportion of them actually accepted their assigned duties and responsibilities. This research revealed that LDs had only a few line office agents (between one and six). Some LDs had no staff in some districts, and thus had to rely on district governors to report information to them.

We have two staff at Rolea B'ier district, one of whom is a woman who often stays at home to look after her children. She shows up once a while. In another district, the staff left to work for an NGO. We do not have any agents there anymore to collect information for us, so we rely on the district governor to do it. (Mr A, PDoWRAM, interview, 21/01/2011)

The second factor was low pay. Line office agents were not motivated to work hard because their salary was not sufficient to maintain a decent living standard. These agents would only work to fulfil the minimum requirements of their bosses in order to keep their posts or to receive lucrative opportunities, while spending the rest of their time with other businesses to obtain extra income.

Because of low salaries and incentives, line office agents often do not fulfil their responsibilities well. They get a salary of about KHR150,000 (USD37.5) and 10 litres of gasoline per month for local travel to communes. Rolea B'ier district is large, so this amount of gasoline is not enough. If they want to travel to all communes, they must use their own money. In this respect, the LDs do not put pressure on the line office agents and they give them the flexibility to have other jobs or to have their own businesses. (Mr A, PDoWRAM, interview, 21/01/2011)

The third factor was that the line office agents were not receiving sufficient support to perform their work. Their mission fees and petrol were insufficient to enable them to travel to all communes and villages in their designated district.

Well, I receive mission fees, but that is often not enough because this package has to be shared. We have to give priority to our senior officials, the head or deputy of the department who need to travel back and forth quite often to Phnom Penh for meetings. Every year, I have received the maximum amount of mission fees possible, which is only enough for 15 days (KHR8000 or USD2 per day). This amount varies depending on what is left after expenses for the head or deputy of the department have been deducted. If those senior people have high expenses, it leaves only a little for me and the others … Besides this mission fee, I receive 10 litres of petrol per month to do my work. This is not enough because I have 13 communes to drive to and I need at least 3 litres per day. (Mr V, agent of PDoWRAM, interview, 17/02/2011)

The other factors were related to unclear job description of line office staff and their capacity. This research found most line office staff were educated to grade eight or nine. The practice of rent-seeking by some agents was also observed, leading to lack of trust, and misunderstanding between FWUCs and LDs.

5.1.2 Joint Action

FWUCs and LDs worked together during times of emergency for example when the farmers faced water scarcity, conflicts, or crop failure. In these situations FWUCs would contact LDs as soon as possible and by any means, either through district agents or more importantly through direct contact with LDs. Similarly, LDs would respond to the FWUCs via various avenues. PDoWRAM as a responsible agency for FWUCs, provided a lot of assistance when they knew FWUCs were in need.

Apart from during emergency situations, joint action between FWUCs and LDs was often sporadic. On the one hand, LDs could not work alongside FWUCs and on the other hand, FWUCs gave up trying to raise issues with LDs after receiving little to no response from

them. Thus, FWUCs tried to find their own ways of resolving problems or getting support from others e.g., NGOs or private sectors.

> *Help from PDoWRAM for scheme maintenance is quite rare and FWUCs also fail to work with us. If they want to renovate irrigation infrastructure, FWUCs have to report and file a request with us to avoid making design and construction errors and to ensure renovation meets set standards. In practice they tend to carry out renovations without consultation. (Mr R, PDoWRAM, interview, 18/01/2011)*

> *Our rice was destroyed by pests. We often go to buy pesticides from markets and use it, sometimes without reading the instructions. We do not complain to agricultural agents, but we often complain to each other to seek solutions (FWUC 4 farmers, FGD, 20/01/2011).*

> *Last year, we did not get high yields because mo-meagn tnot [a species of insect] destroyed our crops. The PDoA agent came to see it, and he asked us to collect pesticide from his office in the district. This pesticide is also available at the nearby market and we prefer to buy it there because his office is far away. We also heard that the pesticide provided by PDoA is not as effective as the one we bought from market. For this reason, we are not convinced by the [efficacy of] pesticide from PDoA. We just go to buy it directly from market. (Farmers of FWUC3, group discussion, 16/02/2011)*

The roles of NGOs were important. The services of NGOs were accessible and met the demands of farmers. Most NGOs conducted supply and demand-driven approaches. Some NGOs introduced ideas and encouraged farmers to participate in implanting them while others listened to farmers vocalise their wants and needs and then assisted these farmers in response to their demands. Most farmers appreciated the presence of NGOs for their effectiveness in providing services, which was more visible, concrete and predictable than that of LDs. Because of frequency and consistency of NGO presence in their communes, some farmers could not differentiate between services provided by LDs or NGOs. Generally, they believed that all of the services must have been provided by NGOs.

> *We see mostly the presence of NGOs. We went to a meeting at the commune office to listen to agents tell us about fertiliser. Every time we see people coming to disseminate information, we consider them to be agents of NGOs. Some NGOs came to teach us how to do home gardening and they provided us with tools and vegetable seeds before they left. (Farmers of FWUC 4, group discussion, 20/01/2011)*

In some cases, FWUCs and LDs were actually ready to work jointly, but they faced certain constraints. FWUCs failed to work alongside LDs because they experienced unpredictable services from LDs. Furthermore, FWUCs expected fast and good quality responses from LDs, but this expectation was often unmet.

LDs could not deliver services to farmers because of their limited budget for development. The development budget of LDs often relied on funding from donor agencies which often would be distributed and managed by central ministries. Some LDs received funding for projects directly from donor agencies, but they were unable to maintain long term support, so their staff became passive and uninvolved after the completion of these projects.

The annual budget of LDs often covered staff salaries and costs of O&M (see Chapter 3). Anecdotes also revealed that the budget on paper was not the same as the actual amount that they received. Informal reductions were made to the budget along the course of transactions

from the central ministries to LDs. Some LDs revealed that they only received 40-50 percent of the budget that they were entitled to. Moreover, they were often required to spend money on things not officially included in their budget.

LDs did not have discretion to spend their annual budget. If a certain amount was determined for a certain item, it has to be at that amount. Any changes to it required an approval from the Ministry of Economy and Finance. Some LDs received technical budget from their parent LMs. This budget was also unpredictable because of the centralised nature of decision making by LMs. LMs hold decisions on how much and when the budget should be allocated to LDs. As a result, LDs lacked flexibility in providing timely services to farmers when they most needed them.

> *Most budgets are managed by the central ministries and the provinces have no right over how it is spent. How can I provide services to FWUCs effectively when the situation is like this? (Mr K, director of a LD, interview, 18/01/2011)*

FWUCs and LDs did not monitor each other's performance. If LDs could not provide them with satisfactory services and support as promised, FWUCs just turned to the private sector, NGOs, CCs, generous people or party activists for assistance. The support from generous people was often large compared to other sources; for example in FWUC 4, money donated by generous people and party activists was five times more than the ISF. The failure of FWUCs to monitor LDs was associated with two factors. First, there was no mechanism for FWUCs to monitor the performance of LDs. Second, FWUCs could not rely on LDs as their local service provider due to the unpredictability of their services.

Similarly, LDs could not monitor the performance of FWUCs. Their district agents were supposed to monitor the function of FWUCs. However they often failed to do so, mostly due to factors previously described, such as low salary, insufficient support for operation, poor capacity and the lack of job description.

Box 6: LDs interaction with CCs

The level of cooperation between LDs and CCs was uneven across LD sectors. This research shows that some LDs (e.g. PDoWRAM, PDoA and PDoLMUPC) often involved CCs in their operations. They contacted, informed or made a request to CCs before initiating their works in communes; in contrast, the FAC seemed reluctant to work with CCs.

> *So far, staff of FAC came to my place to curb illegal activities without informing me, so I did not take part in their works. Before doing anything in my territory, they should inform me and get my permission first, otherwise if there were any problems, I would not cooperate with them. (Mr Y, commune chief, FWUC 4, interview, 19/01/2011)*

LDs could benefit in two ways from working with CCs. First, they can save on costs. CCs live close to people, so they know most of the local issues in their jurisdiction. LDs located far away had their own district agents to follow up information. Because these agents do not stay with people like CCs do and due to other constraints, they cannot collect sufficient information without the support of CCs. Second, farmers can be easily mobilised. CCs are the most recognised institutions at commune level having gained popularity and trust among farmers. Working with CCs could ensure participation from farmers in LDs' planned actions.

The ignorance of the FAC over the support of CCs stems from two reasons. The first has to do with the lack of trust that the FAC had for CCs. Having viewed CCs as representative of farmers and having had some unsatisfactory experience in working with CCs, FAC believed that CCs acted in support of citizens to the extent that it hindered the effectiveness of their rule of enforcement. Second, the scope of laws and compliance remain unclear. FAC respected its own Law on Fishery while CCs depended on its LCSAM. FAC perceived the fishery domain as an area in which it could exercise its role, regardless of the cooperation of CCs.

> *FAC cannot rely on and cooperate with CCs. Some of them assist us, but some do not because they want to protect their people. They want their people to get rich, though we try to disseminate the Law on Fishery and request their cooperation. Cutting and burning flooded forest to extend land for farming is also going on. If we see any land that is newly cleared, we make a request to the provincial governor to issue an official letter to withdraw this land. (Mr J, FAC, interview, 03/03/2011)*

5.2 Conclusions

There was no systematic cooperation between FWUCs and LDs except in an emergency situation. LDs usually contacted FWUCs through their district agents who mostly required assistance from CCs to help collect basic information. Line office staff failed to contact FWUCs and farmers directly on a routine basis as they were supposed to. Compared to the performance of NGOs, line office and LD staff were underperforming. NGOs' involvement in service delivery was more trusted by farmers, even though it was short-lived.

FWUCs had less patience when it came to waiting for unpredictable services of the LDs. Their trust and a sense of cooperation were reduced by the infrequent contact and sporadic services delivery by LDs; they relied more on their personal networks, private agents, or NGOs that gave them more accessible and reliable services. This is how local practice became fragmented, irrelevant and removed from government policy.

This research highlights various tacks taken by LD agents. The attitudes and actions of some agents turned out to be antagonistic towards FWUCs. Although some agents tried to fulfil their job, others were suspected of misappropriating money often taken illegally from farmers. This partly derived from LDs' poor organisational capacity and ability to perform their mandate and hold staff accountable, including low salary, poor capacity, low development budget, and centralised control over resources and decision making. The practice of patronage alongside the legal-rational system of LDs almost condones rent seeking for personal interests rather than rewarding staff for fulfilling their roles and responsibilities in reaching department goals for good service delivery to farmers.

CHAPTER 6 COOPERATION OF LINE DEPARTMENTS

This chapter provides empirical input on cooperation at a higher level between LDs across departments. The purpose of this chapter is to show the extent of cooperation and the factors that influence it.

6.1 Cooperation between LDs and Influencing Factors

LDs (i.e. PDoWRAM, PDoA, PDoE, FAC and PDoLMUPC) are based at provincial level and each has its own central parent ministry which operates at national level. Subordinate to their ministry, LDs are in charge of carrying out activities as directed by their line ministries (LM). Each LD's activities at catchment scale are related to each other. Land, soil and water are inputs for agriculture, while fisheries and other biodiversity help support the ecosystem services of a catchment. The Strategy for Agriculture and Water (SAW) 2006-2010 acknowledges these interrelationships and calls for collaboration and cooperation between LMs and LDs. This section looks into the actual interactions between LDs to understand the level of cooperation between them when undertaking work at catchment scale.

6.1.1 Dialogues

LDs did hold dialogues with each other but there was no attempt to align decisions beyond their own departments. Regular meetings held by LDs were the monthly provincial meetings. Representatives from all LDs and a number of other government agencies including military and police, were required to attend. In total, the meetings constituted more than 30 people and lasted on average, a few hours. The time allocated was only enough for individuals to report their routine work and activity plans.

Further to the provincial meetings, LDs did not meet often, however some departments did report and inform each other about some issues. For example, the PDoA reported drought related issues to PDoWRAM to request that they urgently support the FWUCs, and similarly PDoWRAM reported to the PDoA the issue of rice crop failure due to pests or disease. These communications however were only to share information about who was doing what and to ensure the provision of sufficient timely help to people. In practice, LDs were still working in a fragmented manner to fulfil the outcomes set by their respective line ministry. LDs would communicate closely with each other only out of necessity, such as when donor-agency funded projects required joint action across LDs.

The lack of dialogue between LDs was due to two factors. First, there is no specific mandate to enforce cooperation and dialogue between LDs at implementation level. At policy level, the need for collaboration across LDs is acknowledged and promoted and some shared policies exist across different departments, for example, between the agriculture and water departments (e.g. Strategy for Agriculture and Water 2006-2010). However, at the implementation level, besides ad-hoc donor-funded projects, LDs did not see working collaboratively with other LDs as part of their formal mandate.

> *The real practice is quite removed from the policy. I do not see why those departments should cooperate with us. We should [cooperate] if we construct irrigation for multiple purposes, but in reality we construct irrigation for a single purpose which is to distribute water to farmers, so that is why we do not need to cooperate. (Mr R, PDoWRAM, interview, 18/01/2011)*

We do not have any relationship with PDoWRAM. All LDs have their individual tasks, so we do not interact. (Mr M, PDoA, interview,18/01/2011)

Second, some LDs tended to avoid dialogue and interaction with other LDs despite being ordered to do so. Interviews revealed a lack of participation from some LDs in working with PDoLMUPC in the registration of public land despite the formal statement issued by the prime minister ordering them to do so, and the intervention from the provincial governor.

Regarding the registration of public land related to forest, irrigation schemes, or stream, I face a lot of difficulties. Line departments who are responsible for certain public lands fail to participate in the process. Although we have a committee (including the provincial governor) to coordinate the cooperation, the process is still slow. The official statement from the government to register public lands was issued two years ago, but it seemed ineffective. As I said initially, we need participation of all stakeholders to do it. (Mr. P, DoLMUPC, interview, 02/03/2011)

6.1.2 Joint Action

LDs did not act cooperatively but rather they worked independently based on their own strategic plans. Again, the exception to this was when they were working under donor agency-funded projects. Some departments hold overlapping mandates with others and so are required by law to inform and consult one another on technical issues, but in practice this procedure was not being followed.

PDoA works to promote farming through agricultural extension, but it also has pumps and petrol to help save crops during periods of water scarcity. PDoA and PDRD can also renovate small-scale canals that convey water to paddy fields. These tasks seem to overlap with our mandate. PDoA and PDRD are required to consult us on technical issues before they start renovations. However, they do not always do so. (Mr R, PDoWRAM, interview, 18/01/2011)

Consistent with the lack of dialogue was the fragmented action of the LDs, partly due to the lack of mandate to act. Each LD was more concerned with achieving their own goals, defined by their parent ministry, than identifying shared goals with other LDs. Furthermore, they had no discretion to do this because the central ministries control resources and power. LDs have no flexibility or autonomy to perform cooperative works across departments unless their parent ministries delegate them the resources to do so, as joint action translates into high costs (e.g. for travel and meetings).

Monitoring between LDs did not exist at provincial level. Interviews revealed that some LDs found fault in the conduct of other LDs, however, they had no obligation to question this and therefore did nothing. Parent ministries are responsible for the monitoring of their respective LDs.

I found some LDs took the job of renovating canals, but once completing it, they did not take responsibility for maintaining them. We, on the other hand, form FWUCs to take a responsibility after construction. I feel that those LDs just want to grab donors' projects, but they do not want to commit to maintain the projects in the long run. (Mr R, PDoWRAM, interview, 18/01/2011)

6.2 Conclusions

LDs at catchment scale, e.g., water department (PDoWRAM), land department (PDoLMUPC), fishery department (FAC), and environmental department (DoE), work separately in response to their strategic goals set out by centrally-based ministries. Some commitment to aligning their work is reflected in their attendance of provincial meetings and the implementation of donors' projects, but this is only short term. Lack of cooperation stems from the absence of a mandate for individual LDs, the lack of discretion to implement work outside the fulfilment of ministerial goals, and limited financial resources to enable cooperation. Provincial governors cannot always facilitate the cooperation of LDs as in the case of land registration identified in this study. There is a mismatch between policy and implementation. The policy for each sector is supposed to work in collaboration with related sectors, and a shared policy in some departments (e.g. water and agriculture) also existed. However, policies to ensure cooperation had so far only been initiated through donor-funded projects and have yet to be effectively implemented through government budget. We do not see how LDs could cooperate without the political will of central ministries to give them more discretion to ensure cooperation across departments.

CHAPTER 7 DISCUSSION AND CONCLUSIONS

This chapter discusses the findings in relation to the theory of ICM and draws conclusions on the gap between the actual level of cooperation in Cambodia and the ideal principles of ICM. Finally, it provides policy implications and suggestions for further research.

7.1 Discussion

7.1.1 Does Cambodia Have a Pre-existing Catchment Body?

The ideal principle of ICM is to develop an institutional structure to facilitate the involvement of stakeholders in planning and managing catchment resources (Batchelor 1999). Players from various departments are organised to form River Basin Committees (RBCs) to conduct catchment planning and management in response to catchment scale policy and strategy. It is expected that when players from various departments come together with a shared mandate and policy, they would be more coordinated and have incentives to work cooperatively (Batchelor 1999).

ICM is soon to be introduced into Cambodia and in order to implement this framework, there is a need for catchment bodies or committees such as RBCs to perform the tasks suggested by the theory. Does Cambodia have such a body? One who does not know the governance structure of Cambodia might claim immediately that a catchment body does not exist at all in Cambodia due to the apparently fragmented way in which stakeholders work and the absence of legal framework for catchment management in the country. Although this study supports the notion that a well-organised catchment body in addressing technical issues of catchment management required by RBCs under ICM theory does not yet exist, Cambodia evidently has, to an extent, an administrative foundation that addresses cross-boundary issues, related to catchment issues, at the sub-national level.

Ranging from the commune, to district, to provincial levels, CCs, district and provincial offices are the respective governance bodies. This study found that CCs were actively addressing several catchment-related issues on the ground (e.g. water sharing, irrigation management, land use, curbing illegal fishing, leadership support for FWUCs, mobilisation of farmers, local awareness raising, information sharing with LDs); however, these roles had not yet been broadly recognised by LDs. District and provincial offices have played important roles in solving conflicts over water sharing between up and downstream users and provided some additional support when called upon. Both district and provincial offices also usually organise monthly meetings which all line office (LO) and line department (LD) agents are required to attend. This allows government officials to meet, though these have not yet helped to promote effective dialogues between them to successfully address catchment issues.

The legal framework of the government also acknowledges the roles of CCs, district and provincial offices, which are specified in the commune law[10] and the organic law[11], in addressing cross-boundary issues at sub-national level. These laws restrict CCs, district and provincial offices from acting upon certain technical issues (e.g. forestry and fishery issues) which are assigned to other institutions defined by other sectoral laws (e.g., Water Law 2007

10 Commune law here refers to Law on Commune/*Sangkat* Administration and Management (2001)

11 Organic law here refers to Law on Administrative Management of Capital, Provinces, Municipalities, Districts and Khans (2008)

of MoWRAM, Fishery Law 2006 of MAFF, Land Law 2001 of MoLMUPC). Thus, some LDs ignore CCs; for example, the FAC claimed to work independently from CCs in addressing fishery issues. However, considering the mandate of CCs, district and provincial offices is to represent LMs so as to coordinate all LOs and LDs and to ensure democratic development within their jurisdiction (including that of fisheries and other resources), the contribution of CCs, district and provincial offices to any issues arising within their jurisdiction should not be ignored or undermined by LDs or LMs.

CCs, district and provincial offices did not manage catchment issues satisfactorily for a number of reasons. They lack technical knowledge and without support from technical LDs they are unable to undertake their management roles effectively. Cooperation between CCs, district, provincial offices and LDs is limited and due to the centralised nature of Cambodia's governance, LDs are more accountable to their parent ministries. Their performance is restrained by the scope of the law (sectoral law, commune law, organic law) which has not yet been clearly defined or complied with. This causes confusion and misunderstanding between CCs, district and provincial offices, and LDs, making it difficult for these stakeholders to cooperate with each other.

In sum, under the commune law and the organic law, it is apparent that CCs, district and provincial offices to some extent are mandated to administer cross-boundary issues (which are related to catchment issues) but these roles are not yet fulfilling the requirement of RBCs under the ICM theory. CCs, district and provincial offices cannot address technical issues of catchment management due to the lack of capacity and expertise. This means they have to rely on LOs or LDs who have some technical expertise and are mandated to manage specific elements within a catchment as defined by their sectoral laws. The current establishment of unified administration at district and provincial levels under the organic law indicates the government's effort to re-mobilise and build cooperation between district and provincial offices, CCs, LOs and LDs. If ICM is introduced into Cambodia and the new policy on ICM is formulated, this policy needs to be aligned with the pre-existing administrative foundation of the governance system. The ICM policy needs to respect the decision-making power of CCs, district and provincial offices that are in charge of cross-boundary issues within a certain jurisdiction and are mandated to supervise and coordinate LOs and LDs in a form of a unified administration.

7.1.2 Actual Level of Cooperation and Factors Contributing to Lack of Cooperation in Catchment Governance at Different Levels

The findings of this study show limited cooperation between stakeholders at different levels. Dialogues to share information were found to be uneven between stakeholders. Dialogues through information sharing were more often found among local bodies within the same boundaries but not so much between local bodies across boundaries. Information sharing between farmers and government agencies, namely LDs, was also identified, but was less systematic than the theory prescribes, whereas information sharing between LDs was deficient and done reluctantly. Dialogue at a higher level between stakeholders to negotiate or develop a joint work plan to manage catchment-related issues as required by ICM theory did not yet exist among stakeholders at catchment scale.

Cooperation through joint action among stakeholders to share resources, labour or time to implement activities or monitor each other in resource use was not evident across tiers except in critical times or emergency. Stakeholders in general tended to work separately in

response to the need of their own groups or agencies, rather than to meet the collective need at catchment scale.

To summarise, there is a degree of cooperation across different levels, however we argue that the current degree of cooperation is not enough yet to meet the ideals of ICM. Cooperation only manifested in critical times and was largely absent otherwise. The following sections highlight factors that explain why there was a lack of cooperation or more specifically, why there was limited cooperation prior to times of crisis.

Cultural factors – kinship, sense of fear and less assertion and patronage

The interactions between Cambodian stakeholders are still very much influenced by cultural traits such as strong kinship, sense of fear, lack of assertiveness and patronage. First of all, kinship within communities has a strong influence on the interpersonal relationships of Cambodian peasants. As the research shows, interactions between neighbouring FWUCs (upstream and downstream users) did not happen on a regular basis, but only when they faced water shortages. Ostrom and Gardner (1993) identified that the lack of cooperation between up and downstream users was due to location asymmetry of irrigation whereby upstream users do not feel the need to communicate with downstream users as they receive irrigation water first and what water passes downstream does not concern them. The question remains as to why the downstream users did not negotiate with the upstream users until they were suffering water shortage. Uphoff *et al.* (1990) found that the level of cooperation between up and downstream users depended on the availability of water. Only when farmers (downstream users) encounter reasonable scarcity of water, do they interact with upstream users for water sharing.

This study recognises the impacts of location asymmetry and water availability in the lack of communication between water users, but puts a stronger emphasis on the influence of cultural factors. During the interviews, farmers were aware of water shortages, but most were still not willing to contact other farmers in other groups to discuss water issues. Their reasoning for this lay predominantly in their strongly entrenched cultural tendency to interact only within their own kinship group, leading to the argument that cultural factors are a core element in determining the way that Cambodian society functions. Farmers felt most secure when interacting with people (kinsmen, friends or close neighbours) who resided within the same geographic or administrative boundaries, such as around a common water channel, scheme or commune. They considered those outside these boundaries to be separate groups whose affairs they felt they had no right to interfere with, or even to talk about water issues in each other's channels. They feared that such communication and involvement might lead to accusations of them interfering in the internal affairs of other groups. Periods of water scarcity were considered exceptional cases where interactions between water users were both necessary and acceptable. This finding was consistent with the results of Ebihara (1968) half a century ago who argued:

> *The [Cambodian] villagers feel most secure with their own community; and when they venture beyond its boundaries the majority of their trips are visits to kinsmen, while most of their other journeys are impelled by some necessity such as seeking temporary employment. And their attitude toward persons who are not kinsmen or acquaintances – even though the latter are fellow Khmer (and even fellow peasants) – is generally one of wariness, distrust, or downright dislike (ibid: 584).*

Due to this cultural trait, FWUCs along the catchment had limited interactions across boundaries and thus they did not hold a collective identity and sense of responsibility and

belonging to the catchment and this is why they were unaware of their interdependency. It also deterred initiatives to share the costs of scheme maintenance (e.g. between FWUC 4 and FWUC 3). Based on a case study in Brazil, Abers (2007) found that a collective identity was integral to effective water sharing among different water users within a catchment. However, he argues that a collective identity could not be forged easily without efforts to help build networks and relationships across administrative boundaries.

Social reciprocity through gift giving to build trust was apparent in this catchment case-study, and has been observed in other case-studies in Cambodia (e.g. Kim 2001). This study found however, that it had little influence in regards to bridging the social gap between schemes. It observed that the upstream users tended to demand scheme maintenance cost sharing instead of gift giving for cooperation and water sharing with the downstream users. A field study by Ostrom and Gardner (1993) found that sharing the monetary costs of maintenance seems to be one of the principal factors needed to enable the effective sharing of water across schemes.

Besides issues of kinship that limit relationships between farmers across schemes, Khmer farmers also have an inherent fear of the government and as a consequence they demonstrate little assertiveness in regards to water issues. Cambodian peasants rely on government authorities to direct them on how they should interact with other groups outside their own boundaries; this comes from their fear of being challenged by the government for acting without approval. This underlying dynamic was evidently preventing local governance bodies such as the FWUCs from exercising their roles in the holistic and broad fashion which is required for effective ICM.

Along with fear and lack of assertiveness, patronage is also a fundamental element of Cambodian society not only at a local level, such as within a peasant community as argued by Ledgerwood and Vijghen (2002), but within the state system of each LD as well. Evidence of a deeply entrenched system of patronage found in this study confirms the findings of previous studies (e.g., Pak & Craig 2008; Eng & Craig 2009; Hing & Craig 2010). Patronage was found in many forms within departments resulting in poor service delivery due to staff absenteeism, commencement of works without approval, lack of rule enforcement by the LD heads to tackle underperformance of staff, and illegitimate rent seeking. In Scheme 4, farmers complained about FAC agents seeking bribe money in exchange for not punishing them for allegedly dredging canals in the so-called fishery domain. Because of the prevalence of patronage, FWUCs found it hard to cooperate with some LDs. Farmers turned more readily to personal networks and the private sector for help with their rice farming, causing local farming practice to diverge from what is advised in government policy (e.g. use of fertiliser, pesticide, land extension).

Trust

Lack of trust is a huge problem in Cambodian society and contributes to the inability of stakeholders to cooperate. Lack of trust exists between stakeholders within and across many scales for several reasons. Between neighbouring FWUCs, cultural traits made FWUCs feel insecure about interacting and communicating with each other to set up operational rules for water sharing which consequently led to a lack of a sense of unity and trust between them. Between FWUCs and CCs, the lack of trust could be largely attributed to three factors: 1) sentiments attached to their experiences of personal conflicts, 2) misunderstandings arising from unclear/or overlapping mandates regarding irrigation, and 3) failure to ensure transparency in financial management. When FWUC 4 failed to involve the commune chief and farmers in discussions on how ISFs should be managed, it was perceived as financially non-transparent. Similarly, when the commune councillors and commune chief tried to perform their role as

local authorities by keeping informed about FWUC 4's activities (especially in relation to the generation and management of the ISF), FWUC 4 felt that the CC and the commune chief were encroaching on their power and interfering in their internal affairs.

Lastly, lack of trust had also manifested between FWUCs and LDs due to unpredictable service delivery from LDs, rent-seeking, and misunderstandings derived from the imposition of recent laws on farmers who were unprepared for such changes. LDs could not ensure predictable services to farmers due to their limited budget and the centralisation of budget control. For this reason, farmers did not trust the services of LDs and relied on the services of NGOs or the private sector. The findings of this research show that some services provided by the private sector were quite different from those prescribed by government policy; consequently local practice has diverged from practices prescribed by government policy. Rent seeking by some LD staff also decreased the level of people's trust in LDs' services. Farmers were not yet ready to accept the fishery law enforced by FAC that imposed changes on their customary rights over the use of flooded lands offered to them by solidarity groups. Land is the source of life for local people and if the use of the land is prohibited by new laws and policies imposed by central government bodies without sufficient compensation to the people, those who rely on the land are unlikely to accept them. This has eroded damaged the level of farmers' trust in local governance bodies as well as other sub-national and national governance bodies which negatively affects the level of their cooperation.

Mandates

Mandates defining the roles and responsibilities of stakeholders, as set out in government laws and policies, contain overlaps and holes. This consequently led to duplication of activities and misunderstandings between stakeholders, hindering cooperation. Overlaps were found between CCs and LDs and between CCs and FWUCs. For example, the Water Law 2007 and PIMD policy 1999 assign MoWRAM the responsibility for establishing FWUCs to manage irrigation. These policies also suggest that FWUCs should carry out the mandate once they have registered (with MoWRAM) which includes managing, repairing and improving existing irrigation systems within commune boundaries. MoWRAM's role in establishing a water user committee partly overlaps the role of CCs who, according to the 2001 Commune Law, have the right to establish various committees to assist various affairs related to local development in their commune. Also the FWUCs' mandate in regard to managing, repairing and improving irrigation schemes overlaps the CCs' mandate in promoting social and economic development and protecting natural resources.

Because of their overlapping mandates, FWUCs and CCs were confused and misunderstood the scope of each other's work, leading to uneven cooperation between the two governance bodies in various schemes. In some schemes (e.g. Schemes 2 and 3), dialogues were found to consist of FWUCs listening to what had been decided by CCs while in another (e.g. Scheme 4), the FWUC preferred to ignore the CC and did not want to integrate their plans into the commune's development plan. In the ideal principle, cooperation through dialogues between these groups should have meant that all relevant stakeholders were given opportunity to participate in discussions and decision making about what ought to be, what activities were possible, and what the future of their areas would hold (Mitchell & Hollick 1993).

There is also a hole in the law and policy in that the extent of power between the FWUCs and CCs is not defined. The PIMD policy 1999, which instructs the establishment and function of FWUCs, has not yet defined the relationship between the two governance bodies. It just states the importance of the involvement of local authorities (CCs) in supporting the activities

of FWUCs, especially in enforcing the rules and regulations of the FWUCs, but to what extent the two bodies integrate their ideas and decision-making is yet to be specified. Even though the FWUCs were partially composed of commune councillors in practice, which was expected to encourage good integration between the two groups, such integration did not generally occur. The confusion over the extent of their mandated power and responsibilities caused FWUCs and CCs to disagree with each other over a number of matters. Clarification over the extent of power and integration of ideas would help them achieve better cooperation.

There are a host of theoretical advantages and disadvantages to having FWUCs and CCs governing at the same level. The advantage of having organised FWUCs in the jurisdiction of CCs for irrigation is that it reduces the workload of CCs who ordinarily are responsible for undertaking a workload that exceeds their time and financial resources. Having FWUCs also means having a local group to help demand accountability from CCs. The disadvantage of this is related to how the two bodies make decisions about overlapping works. According to Manor (2004), when there are two governing bodies at the same level that hold overlapping mandates, there is a need for integration of the two bodies: for example, one actor should be made subordinate to the other in a way that the two bodies are fused and effectively become one. In Cambodia the PIMD policy and the commune law suggest that FWUCs and CCs be developed as separate groups, giving no specification as to how their ideas or actions should be integrated. There is a need to review and clarify the roles, responsibilities and powers of the two bodies in decision making to avoid conflicts.

Overlaps were also found in LD mandates; for example, both PDoWRAM and PDRD are expected to inform and consult each other on technical issues, but in practice this was not usually followed, largely because of transaction costs. As a result, those departments with overlapping mandates undertook their work separately which often resulted in duplications and inefficiencies. This lesson tells us that though there are some guidelines to help clarify overlapping mandates between stakeholders, practicalities such as transaction costs are an important factor that must be included in budgetary plans and stakeholders need to demonstrate commitment to making sure that cooperation does occur between departments.

Centralisation

ICM recognises that land-based resources within a catchment are heavily interrelated (Schramm 1980). However, the organisational structure of the government assigns separate bodies to manage them. The separation of the water department (PDoWRAM) from the agricultural department (PDoA) and the separation of the fisheries administration (FAC) from PDoA means that cooperation is required to coordinate and harmonise the planning and implementation of those departments if a catchment scale resource management framework such as ICM is to be applied.

LDs dealing with different sectors tended to conduct separate planning and implementation as well. Each LD was focused on fulfilling the mandate of its parent ministry which evidently demonstrated a strong line of centralisation. There was no centralised direction that advised them to cooperate in their mandates. Their dialogues and efforts to carry out collective works across departments were very limited. The only platforms on which they had the opportunity to align their individual activities were the provincial and district meetings which in practice focussed on updating each other on news of their routine work, rather than supporting dialogues about how to integrate their work.

Capacity issues

Financial and technical capacity and the level of managerial knowledge are key challenges behind the lacking cooperation between stakeholders across all administrative levels. Between neighbouring FWUCs, poor and hurried establishment of these bodies (by PDoWRAM and NGOs) upon pre-existing villages with no tradition of participation and broad reaching networks (Ebihara 1968) rendered them ill-equipped to form effective relationships and engage in proper communication with each other. Management of irrigation tasks was the responsibility of commune chiefs before the introduction of FWUCs. The transfer of this responsibility to FWUCs that had no experience in managing collective work and little financial resources or authority to mobilise farmers makes it necessary for sufficient financial and technical support to be given to them to achieve the goals of PIMD. All of these factors imply that FWUCs in Stung Chrey Bak were not adequately developed to communicate among themselves independently without the support of CCs.

FWUCs and CCs were more capable of providing good services to the communities when they cooperated with each other and when they had sufficient capacity; however, in practice their ability to provide services was still limited by lack of capacity in both groups. For example, the financial and technical weaknesses of FWUCs in addition to their lack of managerial capacity in terms of ability to lead and promote participation from farmers caused them to rely on CCs. Knowing that CCs could not provide adequate financial support due to limited CSF, FWUCs turned to rely on the financial support of generous benefactors. Similarly, CCs were often faced with inadequate financial resources to respond to the needs of their people including FWUCs, though they had a greater ability to mobilise farmers and better networks with district authorities and other CCs in neighbouring schemes. The limited CSF caused CCs to rely on the financial support of NGOs or political parties. The combined weaknesses of the two groups rendered their joint action insufficient to ensure effective irrigation management. These findings concur with the findings of Kim and Öjendal (2007) who looked into the capacity of CCs and found a mismatch between CCs' resources and their many responsibilities related to supporting community-based organisations within their jurisdiction.

Capacity issues were also found within LDs. These hampered their ability to cooperate with FWUCs and other LDs. Batchelor (1999) argues that the lack of dialogue between LDs and FWUCs is due to the poor organisational capacity of each LD to organise interactions with farmers. Issues such as understaffing, low pay, lack of operational support, poor technical capacity of staff and a lack of clear job descriptions hindered the performance of staff and then the performance of LDs. Also, because of the scarcity of financial resources and the transaction costs of holding meetings, LDs could not coordinate with other LDs on a regular basis. Similarly, Boston *et al.* (1996) argue that cooperation between agencies requires transaction costs and if such costs are not included in the contracts of individual agencies, it is hard to make cooperation happen.

Lack of information on land demarcation, land tenure and hydrology

Stakeholders lacked adequate information on land demarcation, land tenure, and hydrology which is necessary to ensure integrated water management and cooperation across administrative and geographic divides. For example, based on the FAC's definition of fishery domains, it was unclear to CCs where and how to delineate the boundary between cultivation and fishery domains. This was especially the case in communes located on flood plains. CCs also found it hard to be sure whether farmers were extending their land for their own subsistence or for added benefits since they had no record of land tenure by each household. FWUCs and

CCs had no information about hydrology, which is why they were struggling to manage its usage properly.

Donor-agency funded projects

Donor funded projects seemed to bridge the relationships between LDs in planning and implementation, but this cooperation would only last for the duration of funding from donors. The claim that donor-agency funding that mobilises players from different departments to work together will resolve coordination issues between LDs misses a key element of the problem. As the results of this study show, LD staff reverted to their normal passive attitudes upon the depletion of donor-agency funds. Similarly, Eng and Craig (2009) found the same disadvantages of short-term projects and donor fragmentation in their study. They conclude that short-term projects and donor fragmentation have less impact on capacity building and efforts to achieve long-term accountability and broader national objectives than long term ones. In this respect, they suggest that long-term better designed projects are needed to better align donor funding with Cambodian public administration realities.

7.2 Conclusions

7.2.1 Gaps between the Ideal Principles of ICM and the Reality of Cooperation in Cambodia

The findings of this study suggest that a form of administrative foundation in support of ICM to some extent already existed in the current governance system. CCs and district and provincial offices have so far played important roles in addressing cross-boundary catchment-related issues, especially during critical times, though these roles do not yet meet the requirement of RBCs under ICM theory. To manage the catchment effectively, CCs and district and provincial offices need support from LOs and LDs who hold technical expertise in catchment management. The 2008 Organic Law has created a unified administration at district and provincial levels to ensure cooperation between CCs, district and provincial offices, and LOs and LDs. If ICM is to be integrated into water policy, and RBCs are to be established to facilitate these tasks, this new initiative cannot be implemented separately from the current governance system. The decision making power of CCs, district and provincial offices who have a mandate to supervise and coordinate LOs or LDs in a form of a unified administration within a certain jurisdiction needs to be recognised in ICM policy.

Cambodian stakeholders still operate independently and this has hindered the progress of effective cooperation at catchment scale. There are several entrenched factors in Cambodian society that hold back cooperation between all stakeholders. These require attention from donor agencies, who should in future give consideration to the complexity of social constructs and cultural traits such as patronage, lack of trust, overlapping mandates, centralisation, capacity issues, and lack of available information on land demarcation, land tenure and hydrology.

In sum, a significant gap exists between ICM principles and the current practice of catchment governance and management in Cambodia. This paper has identified the gap and presented some of the factors that need to be addressed to assist the effective implementation of ICM if it is to be introduced and adopted in Cambodia.

7.2.2 Policy Implications – How Can the Gap be Made Smaller?

What do these findings suggest for the promotion of ICM in Cambodia? Cambodia is on its way to adopting ICM. River Basin Committees (RBCs) are being planned and will be established to help organise the planning and management of water and other resources at catchment level. Based on the results of this research, there is a gap between the ideal principles of ICM and the actual practice in Cambodia. How can the gap be made smaller? This research provides suggestions to help reduce the gap for effective implementation of ICM in Cambodia.

1. Necessary considerations for the establishment of RBCs need to be put in place

a. If RBCs are to be established, they need to be integrated into the existing governance system determined by commune law, the organic law, and other sectoral laws, in a way that avoids duplication of roles and overlapping mandates which could potentially create conflict and tension between governance bodies.

b. Water within a catchment cuts across many local territories and thus concerns a range of different users or FWUCs and government stakeholders. RBCs should be inclusive of all stakeholders, including local users or FWUCs whose livelihoods are directly dependent on the land and water resources being managed. Sectoral reform policies directing the establishment of RBCs should respect the contribution of local farmers in decision making processes.

2. Addressing local scale issues that inhibit the development of cross-boundary relationships is essential

a. The findings of this study show that interpersonal relationships among Cambodian farmers are still determined by cultural factors such as kinship or trust. Also, interactions require transaction costs, which are costly to local farmers. There is a need for external support to promote collective identity in terms of awareness raising, network expansion across schemes and provision of financial, administrative and technical resources.

b. Improving cooperation between FWUCs to ensure water sharing across schemes should start with the simple solutions suggested by farmer groups. To this end, we found that farmers' principal demand is the sharing of irrigation scheme maintenance costs between upstream and downstream water users.

c. There is a need to build the organisational capacity of FWUCs. One strategy is to strengthen their relationship with CCs, which could be achieved through the provision of clear guidance on how the two bodies should share their ideas and carry out joint decision-making. Mechanisms to ensure transparency in the management of irrigation service fees (ISFs) by FWUCs and the extent to which FWUCs can generate their own revenue within a commune's jurisdiction need to be renegotiated among relevant stakeholders.

3. Addressing higher scale issues that inhibit the development of cooperation is also essential

a. The case study highlights the need for reconsidering the relationships between CCs and LDs, and between LDs and farmers or FWUCs, by improving trust, re-defining roles and responsibilities, enhancing service delivery and reducing the rent-seeking

practices of officials. These levels of governance need to move towards better informed cooperation.

b. ICM cannot be achieved without a reform process in place, especially the deconcentration reform

4. Other prerequisites for ICM should be considered

Promoting and improving the management of water at catchment level cannot be done in isolation, i.e. without also considering the management of land, environment, fisheries, and other resource sectors within the catchment. This requires:

a. Training the FWUCs and CCs on how to work together to plan for multiple and integrated uses of water;

b. Sufficient information on hydrology, land tenure, and land demarcation (e.g. agricultural, fisheries, forestry);

c. Better information for farmers on property rights;

d. Action by the government to push for land registration in order to ensure credible records of the tenurial status of individual households as well as of public land.

7.2.3 Recommendations for Further Research

As ICM is a broad concept that aims to achieve multiple goals related to resource management and involves a range of different groups of stakeholders, the results of this study are not sufficient yet to provide broad knowledge to serve the discussion on this topic. There are a number of areas that need further research that could not be explored given the scope of this study. These include:

1. Findings from this case-study research may not be representative of the whole range of issues in other catchments, so it is important that future research should replicate this approach in other catchments to help verify our findings.

2. This study primarily investigated the interactions of FWUCs as opposed to other local governance groups that are responsible for forests, fisheries, and agriculture within each catchment. Further research that investigates the function and cooperation of these groups may give additional insights into other catchment issues in Cambodia.

3. Future study is recommended to explore local politics that relate to land use and management in rural Cambodia to identify the dynamics in land use on the ground. This would provide further knowledge on land issues which is important for the implementation of ICM.

4. Future research should look into ways that CCs and user groups compromise each other – this should start by looking at a case where the two bodies are managing to work cooperatively together – to identify what factors or behaviours lead them to agree on issues. These findings would be useful in comparing the variables with those of a case study where conflicts occur between CCs and user groups.

5. This study has begun to identify the relationships between some important players but further studies are required; these include: a) relationships between NGOs, generous people or political parties and FWUCs that influence development of irrigation on the ground, b)

relationships between LMs at national levels, and c) the harmonisation of donor agency-funded projects.

6. In support of deconcentration reform, further research should touch upon specific topics that address what kinds of functions or resources are to be assigned or transferred from central ministries to LDs to ensure effective functioning and cooperation between LDs at sub-national level.

7. There is a need for a follow-up study to investigate the challenges and progress of ICM after the endorsement of ICM policy in Cambodia. This would help tailor the implementation of ICM to achieve effective results.

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