

' Before the Dam '

A Study of
Environmental Impacts
And
Community Rights
Associated with the
Construction and Operation
Of the
Approved Kirirom III Hydropower
Scheme,
Sre Ambel District,
Southwest Cambodia



សម្ព័ន្ធន្តរភូមិប្រជា

Rivers Coalition
in Cambodia

November 2008

Wayne McCallum



AFSC

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Written by Wayne McCallum (macwayne9@hotmail.com)

About American Friends Service Committee

AFSC began working in Cambodia in 1979 and has worked in Sre Ambel District of Koh Kong Province since 1997, providing assistance on natural resource management, community development and agriculture. AFSC has worked with fishing communities to organize under the sub-decrees since 2001.



Rivers Coalition in Cambodia

The Rivers Coalition in Cambodia is an NGO advocacy coalition dealing with the impacts of hydropower dam projects on the environment and local communities. It includes the NGO Forum on Cambodia and nine individual Cambodian and International NGOs working with communities in Cambodia affected by hydropower projects.

សម្ព័ន្ធន្ទេកម្ពុជា
Rivers Coalition
In Cambodia

សម្ព័ន្ធន្ទេកម្ពុជា

សម្ព័ន្ធរវាងអង្គការសង្គមស៊ីវិលនានាដែលធ្វើការដើម្បីការពារ និងស្តារ ឡើងវិញនូវប្រព័ន្ធអេកូឡូស៊ីទន្លេ និងជីវភាពដែលពឹងផ្អែកទៅលើទន្លេ នៅក្នុងប្រទេសកម្ពុជា

Rivers Coalition in Cambodia

An Alliance of Civil Society Organizations Working to Protect and Restore River Ecosystems and River-based Livelihoods in Cambodia



Front cover: Pongrul Waterfall, Stueng Pongrul (top); local family near Prek Stueng (bottom, left); forest vines in Phnom Toub Cheang Community Forest (bottom, center); Krang Chek villager (bottom, right).

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In July 2008, an advance copy of the original English version of this report was sent to the Ministries of Environment, Industry Mines & Energy, Water Resources & Meteorology, and Land Management Urban Planning and Construction for comment. Comments provided by various officials in September 2008 were helpful in clarifying a number of important details.

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Preamble

The Elephant Mountains of southwest Cambodia are a place of uplands and forests, valleys and flood plains. And the Elephant Mountains are a place of waterways; of rivers and streams, wetlands and lakes, which move and change in rhythms through the lives of those who call this place home. The biggest of the rivers drawing water from this region is the Prek Kampong Saom, which drains from the western-side of the Elephant Mountains into the large bay of Kampong Saom. Like the majority of large rivers in the southwest of Cambodia, the Prek Kampong Saom flows down through a flood plain located in a valley, which gradually broadens as one moves from the headwaters to its mouth. Along its route the river passes through forests, wetlands and areas developed for agriculture, nestled in the beds of deep alluvium silt originally deposited by the river itself. The Prek Kampong Saom is also fed by a number of large tributaries, of which the Stueng Pongrul is the second largest. This river rises in a massif to the east of the main river, flowing through a steep-sided upland before cannoning over the Pongrul Waterfalls and traveling a further ten kilometers to join the main river.

The life of the Prek Kampong Saom is dominated by the effects of the monsoon. At the height of the dry season it is at its lowest level, although because of its moderate height it maintains a tidal influence almost up to Dey Krahorm, 32 kilometers above its mouth. During the wet season the river rises up its banks, overtopping them in places to flood the landscape beyond. Over time people and animals have learnt to adjust to these rhythmic differences. In the dry season, villagers know that water will be sufficiently low to allow them to harvest shell fish from the muddy bed of the river around Krang Chek; while in the wet season they understand that they will be able to harvest fish that are not available during the dry months. All over the catchment people bath, swim and play in its waters; they wash their clothes and their buffalo, and they transport themselves along its rivers in their hand-made boats. So it is that people of the Prek Kampong Saom organize their lives around these ‘waterway rhythms’. They are rhythms that sustain, they are rhythms that nurture - they are rhythms of life.

A proposed hydropower scheme, Kirirom III, which is to be developed in the catchment of Prek Kampong Saom, will change these rhythms forever. The study seeks to explore how this process can be managed to provide for a sustainable form of hydro-development that contributes to local well-being and the economic aspirations of Cambodia.

EXECUTIVE SUMMARY

The Prek Kampong Saom drains from the Elephant Mountains of southwest Cambodia, entering the Gulf of Thailand below the town of Sre Ambel. After years of turmoil, peace has revisited this part of Cambodia, with a steady flow of families returning to settle and re-build their lives. These families have gradually developed rice farms and gardens to provide for their household needs, while drawing on resources found in the nearby forests and waterways to supplement their food supply and provide goods for sale.

Working alongside villagers, the American Friends Service Committee has sought to support these post-conflict communities in the development of sustainable livelihoods. This has included assisting villagers to develop community-based arrangements for the management of near-by forests. The outcome of this support, the Phnom Toub Cheang Community Forest initiative (3,046 ha) has empowered the communities, allowing them to take charge of local natural resources, to direct their management and to capture a portion of their benefit flow. Now, however, this progress is challenged by economic changes and its consequences, including a growing national demand for hydro-power and designs on the electric generating capacity within the Prek Kampong Saom system.

Starting with a feasibility study undertaken in 2004, plans are now underway for the development of Kirirom III, an 18 MW¹ hydropower facility that will generate electricity for Phnom Penh. Recently approved by the Royal Government of Cambodia, construction is scheduled to begin shortly. The intended scheme will be undertaken by a Chinese company with the bulk of financial support also coming from China.

This study explores the anticipated consequences of this scheme on the environment, the livelihoods of those communities that will be directly affected by the project and opportunities for mitigating these impacts upon them. The concerns the study raises include:

- Changes in water quality and quantity in the Prek Kampong Saom and its tributary, the Stung Pongrul.
- Deterioration and loss of community commons areas and private land
- Reduction in the availability of numerous forest products and aquatic resources.
- Economic and social changes brought on by the influx of investment and new workers.
- Health changes, including a rise in mosquito-borne diseases.
- Public safety concerns.
- Flooding.

Yet in the face of these impacts the people of the Prek Kampong Saom are not powerless. The other major portion of this study explores the opportunities that exist for this community to peacefully assert their human rights in the face of the scheme; *the purpose here being not to stop the project but rather ensuring that all affected parties are recognized and – at the elementary levels – their constitutional rights upheld.* The options for achieving this are numerous and include drawing on Cambodia's commitments to international human rights principles and declarations, of using opportunities that exist within national laws and applying non-legal mechanisms to advance their claims and interests.

¹ Though the feasibility study envisaged a 15 MW dam, the planned capacity was later upgraded to 18 MW.

The people of the Prek Kampong Saom have shown tremendous resilience as they have sought to build their livelihoods in the Valley. The challenge they now confront is how to continue with this in the face of new economic imperatives and the efforts by external agents to appropriate the natural resources of their environment. It is a challenge that is being repeated through-out Cambodia, which means that the experiences and observations of this study have a relevancy and meaning that extend beyond the hills of the Prek Kampong Saom valley.

This study makes a series of recommendations for the management of the environmental impacts of the Kirirom III hydropower scheme. These are, with their reference in the study report:

- The maintenance of water flows in the Stueng Pongrul to sustain the key ecological and hydrological services of this waterway (pp. 35).
- Instigation of a compensation strategy for damage and loss of commons areas and private land, including damage caused by flooding and the acquisition of land for infrastructural purposes (pp. 35; 42; 52; 56).
- Flood and tail race flow warning systems in the Stueng Pongrul and Prek Kampong Saom waterways respectively (pp. 35; 42).
- The protection of water quality within the receiving waters of the Stueng Pongrul and Prek Kampong Saom through measures that avoid and remedy for the toxicity of water discharged from the Kirirom III reservoir (pp. 36-37; 42).
- The development of structures in the Prek Kampong Saom to ameliorate the erosive power of tail race discharges on the river and its environs (pp. 42).
- Management of waste water from site facilities, including sewage from the worker camps, to ensure it does not enter into local waterways, including the Stueng Pongrul (pp. 37; 42).
- The adjustment of the Phnom Toub Cheang Community Forest boundaries to include new areas as compensation for land lost to the development of the Kirirom III scheme (pp. 47).
- The approval for community members to fish the Kirirom III reservoir following its filling and stabilization (pp. 47).
- Bio-monitoring of the fish population in the Kirirom III reservoir to test for methylmercury accumulation and toxicity (pp. 47).
- Shifting of proposed quarry sites to locations that avoid damage to the hill slopes of the Phnom Toub Cheang Community Forest and to the Stueng Pongrul (pp. 47).
- The introduction of controls that manage the impact of in-migrant workers, managed and enforced by the hydropower company in consultation with the local community. This includes working with the community to determine the location of certain infrastructure facilities, such as work camps; as well as health checks on new employees as a means to control the presence of diseases (pp. 48; 52 55).
- The use of measures that seek to recognize and protect areas of intrinsic value to the local community (pp. 56).

- Government agencies linked the management of the Kirirom III scheme and the hydropower company introduces a public education program for local villagers to inform them of the effects of the construction and operation of the Kirirom III hydropower scheme. This includes awareness raising about public health and safety issues as well as the economic effects of the project (including distortions to the local labor market) (pp. 52).
- Introduction of medical facilities to the project area (a Health Post) and compulsory health checks of the Kirirom III workforce to remedy and avoid health impacts expected to arise upon the construction and operation of the project (pp. 55).

The study also suggests a number of measures that the hydropower company and its consultants, relevant government agencies, villagers and the wider civil society movement can undertake to advance the rights of the community in the affected area. The recommendations made are:

The Company and its consultants

- Instigate a regular and transparent process of dialogue and information exchange between the hydropower company / the consultants and the parties affected by the construction and operation of the Kirirom III project (pp. 81).

Government

- Instigate a full environment impact assessment for the construction and operation of the Kirirom III scheme (Ministry of the Environment as lead agency) (pp.82).
- Ensure that the scheme's operators apply for a water license from the Ministry of Water Resources and Meteorology and that this license includes a provision for the maintenance of ecological flows in the Stueng Pongrul (pp.82).
- The responsible government authorities should examine the recommendations of the World Commission on Dams (2000) and seek to incorporate them, where relevant, into the procedures governing the construction and operation of the Kirirom III scheme (pp. 83).
- Instigate a like-for-like compensation system for the community commons and private areas that are required or damaged in the course of the project's construction and operation. This should include compensation that is made throughout the life of the project in order to mitigate for the long-term consequences of the scheme (pp.83).

Community within the Affected Area

- Establish a clear and agreed position towards the construction and operation of the Kirirom III scheme and prepare a declaration that forms the foundation for dialogue and negotiation with relevant government agencies, the hydropower company and its consultants (pp.84).
- Include in the declaration a request for the Ministry of Environment, and the Ministry of Water Resources and Meteorology, to instigate the legal procedures for environment

impact assessment and water licensing, respectively, as they relate to the construction and operation of the Kirirom III scheme (pp.84).

- Confer responsibility to an organization from within the community to liaise and negotiate with the government and scheme developers to manage the impacts of the Kirirom III scheme (pp.85).
- Obtain registered title over their land through the procedures managed by the Ministry of Land Management, Urban Planning and Construction (pp.85).

Civil Society

- Undertake a further round of awareness raising exercises with villagers from the Prek Kampong Saom Valley. These exercises should look to build on the work that was previously undertaken with villagers in 2004 and should also seek to fill spaces in community understanding that are raised by this study (pp. 86).
- Civil society groups involved in hydropower advocacy develop a collective strategy of awareness raising and engagement on hydro-development matters for the citizens of Phnom Penh. The strategy should include ways of promoting the engagement of the communities affected by hydropower development, providing them with opportunities to articulate and voice their concerns. This includes, for example, exhibition and other awareness raising events (pp. 86).

If built and operated in the best possible way, with proper mitigation measures in place, the Kirirom III hydropower scheme could set an example for 'best practice' in dam development in Cambodia. At this infant stage in the history of hydro-development in Cambodia, the country has the capacity to strive to be the best hydropower developers in the world, drawing on lessons learnt elsewhere to nurture an industry that contributes to the social and biophysical well-being of the nation, as well as its economic needs.

Contents

PREAMBLE	
EXECUTIVE SUMMARY	
CONTENTS	
ABBREVIATIONS	

PART I – INTRODUCTION

1. Introduction	13.
1.1 Approach	13.
1.2 Caveats	13.
1.3 Context	14.
1.3.1 Location and Focus	14.
1.3.2 Natural Landscape	16.
1.3.3 Human Landscape	16.
1.4 The Kirirom III Scheme	21.
1.4.1 History	21.
1.4.2 Environment Impact Assessment	24.
1.4.3 The Government Landscape – Key Authorities	25.
1.4.4 CEPA Report – 2005	26.

PART II – A STUDY OF ENVIRONMENTAL IMPACTS

2. A Study of Environmental Impacts	29.
2.1 An Approach to the Study of Environmental Impacts	29.
2.2 Environment Impact Zones	30.
2.2.1 Stueng Pongrul Environment Zone	30.
2.2.2 Prek Kampong Saom Environment Zone	37.
2.2.3 Phnom Toub Cheang Environment Zone	43.
2.2.4 Low-Lying Flat Land Environment Zone	48.
2.2.5 General Considerations	52.

PART III – COMMUNITY RIGHTS ASSESSMENT

3. Community Rights Assessment	58.
3.1 An Approach	58.
3.2 What are the Legal Entitlements of the Community?	62.
3.2.1 International Law – Declarations, Conventions and Covenants	62.
3.2.2 National Laws	63.
3.3 Non-Legal Approaches to Rights Advocacy	73.
3.3.1 China EXIM Bank Policy	73.
3.3.2 Information Exchange and Communication	74.
3.3.3 Awareness Raising	75.

3.3.4 Positioning and Advocacy	76.
3.3.5 Media and Communication	77.

PART IV – SUMMARY AND RECOMMENDATIONS

4. Summary and Recommendations.....	80.
4.1 Summary	80.
4.2 Recommendations	81.
4.2.1 The Company and its Consultants.....	81.
4.2.2 Government Authorities.....	82.
4.2.3 Community	83.
4.2.4 Civil Society	86.
4.2.5 Concluding Statement	87.
APPENDICES – Appendix 1: Introduction to Cambodia’s Legal System	88.
REFERENCES CITED	90.

ABBREVIATIONS

AFSC	- American Friends Service Committee
BOT	- Build-Operate-Transfer
CEPA	- Culture and Environment Preservation Association
CETIC	- China Electric Power Technology Import and Export Corporation
EIA	- Environment Impact Assessment
ICCPR	- International Convention on Civil and Political Rights
ICESCR	- International Covenant on Economic, Social and Cultural Rights
ISL	- Integrated Sustainable Livelihoods
LawEPNRM	- Law of Environment Protection and Nature Resource Management
MDRI	- Mid-South Design and Research Institute
MIME	- Ministry of Industry, Mines and Energy
MW	- Megawatts
MWRM	- Ministry of Water Resources and Meteorology
NTFP	- Non-timber Forest Products
OHCHR	- United Nations Office of the High Commissioner for Human Rights
RGC	- Royal Government of Cambodia
UDHR	- Universal Declaration of Human Rights
WCD	- World Commission on Dams

PART I

Introduction

1. Introduction

Approval has been given by the Royal Government of Cambodia (RGC) for the development of a hydropower electric facility in the catchment of the Prek Kampong Saom². Centered on the Stueng Pongrul tributary, the Kirirom III scheme involves building a dam on this river to harness its wet season flows for hydropower production. These captured waters will be stored and discharged through a tail race channel that descends to a generating station on the eastern banks of the Prek Kampong Saom. As originally proposed in 2004 the project will cost an estimated \$US 40.3 million and will provide 18 MW of electricity, which will be moved by transmission lines to cater for the growing electricity demands of Phnom Penh city. Concerned by the potential impacts of this scheme on local communities, American Friends Service Committee (AFSC) and the Rivers Coalition in Cambodia have commissioned this study to identify the consequences of the project in more detail, with the results of this undertaking summarized in this report.

The report has four main parts. Part I sets out the context and status for the Kirirom III project. It does this by firstly introducing the physical and human landscape that the project will affect, including locational details, topographical characteristics, and human and political aspects of the affected area. The second section of this part introduces what is presently known about the project itself, including its history and design characteristics. Part II of the report explores the anticipated environment, social, economic and political impacts of the Kirirom III scheme, focusing specifically on the matters of concern to local communities living in and around the project site. This section will draw on research undertaken with villagers to identify, specifically, the uses they make of the local environment and how anticipated changes arising from the hydropower scheme can be expected to affect these. The next section, Part III, focuses on the subject of villager rights and, more specifically, on what opportunities exist within international and national laws to ensure that their concerns are factored into the scheme's development and operational practices. The final section, Part IV identifies a set of recommendations to be passed on to villagers to assist them in making their own decisions about how they would like to respond to the scheme. These recommendations will form the basis for a facilitated workshop to be held in Krang Chek in June 2008.

This study constitutes an interesting development in the field of community advocacy in Cambodia. It represents the first attempt at an impact study of a hydropower development, undertaken on the behalf of affected communities, prior to the commencement of a project itself. As such it signifies a special opportunity for proponents and concerned stakeholders alike, for it offers information that can be used to help ensure that the project is not only economically viable, but contributes to social and biophysical sustainability as well. Only by having regard for these wider considerations, can the Kirirom III scheme represent a net positive gain for the people of Cambodia.

“Cambodia has the opportunity to learn from the experience of other countries both in the Mekong Region and globally that have suffered ecological and social disaster as a result of poorly thought-out and implemented hydropower schemes. At this early, yet critical, stage in Cambodia's hydropower development planning, it is of utmost importance that an appropriate planning process is adopted that would differentiate projects in which

² The waterway is sometimes called the Sre Ambel River after the name of the largest settlement on its banks.

benefits outweigh costs and should go forward, and projects in which the costs are too great and should be put aside” (Middleton, 2008, p.59).

1.1 Approach

The findings of this study have been developed through a process of information gathering and analysis. Sources of information for this study include:

- A desk-top review of relevant documents, including the summary of the 2004 Kirirom III feasibility study (MDRI, 2005), wider studies of hydropower development in Cambodia and abroad, reports on livelihood work in the Sre Ambel district and the pertinent legislation relating to the environment and human rights in Cambodia.
- Interviews with informants, including staff from the Culture and Environment Preservation Society (CEPA), the NGO Forum, Integrated Sustainable Livelihoods Program (ISL of AFSC), Oxfam America, government personnel from the Ministry of the Environment, and local authorities from the Sre Ambel district, including the Dong Peang commune chief and village representatives.
- An intensive nine-day fieldwork visit to the Sre Ambel district undertaken in coordination with NGO Forum and ISL staff and local villagers from the Dong Peang Commune, to gather on-the-ground information on community natural resource activities, livelihood relationships, and villager thoughts and concerns about the hydropower scheme.

An iterative process of data organisation and interpretation was used to develop the insights in this study, with validity for its findings and recommendations being encouraged through a process of comparative analysis (‘triangulation’) between the respective information sources.

1.2 Caveats

Several caveats need to be acknowledged at this point. Efforts to obtain interviews with staff from the Ministry of Water Resources and Meteorology, and the Ministry of Industry Mines and Energy were unsuccessful. Additionally, attempts to meet with representatives with one of the alleged developers of the scheme – China Electric Power Technology Import and Export Corporation (CETIC) – also failed, although a meeting with a Royal Government of Cambodia armed forces de-mining team leader did yield potentially new details on the scheme (see below). Efforts to secure a full version of the original feasibility study were also frustrated, despite requests being made to several parties. Although all of these sources would have added depth to this study, sufficient details exist in the available documentation, reinforced by information gathered over the fieldwork period, to allow a sound assessment of the anticipated impacts of the Kirirom III hydropower project to be made here.

As the above issues over information and stakeholder access suggest, the public ‘environment’ of hydropower in Cambodia is characterized by issues of responsiveness and transparency. In this situation rumors abound on the nature of projects, with schemes changing dramatically from concept to construction. At several points in this study, for example, new details on the Kirirom III scheme were revealed that have proved difficult to verify at the time of writing. Some of these details have been included, with appropriate qualifications, when their sources or their repetition

suggest they are likely to be correct. Until Kirirom III is physically operating, however, the exact public details of the scheme will likely remain unclear. Nonetheless, this study seeks to describe the anticipated impacts of these new details to ensure that they are not overlooked.

1.3. Context

1.3.1 Location and Focus

The Kirirom III hydropower scheme will be developed in the catchment of the Prek Kampong Saom, a large river draining the middle portion of the western Elephant Mountains (see Figure 1.1). The dam will be located on a tributary of the Prek Kampong Saom, the Stueng Pongrul, with the associated reservoir flooding a portion of this tributary's valley. Separate headrace and diversion channels will pass through a combination of tunnels, pipes and open canals to the Prek Kampong Saom River, spanning across a massif that occupies the eastern portion of the Prek Kampong Saom Valley (Figure 1.2). A generating station, containing two turbines, will be situated near the banks of the Prek Kampong Saom, approximately 0.5 kilometers south of the village of Krang Chek. A transmission line will run from the power station to the site of the Kirirom I hydropower station, situated near the town of Kampong Seila, 24 kilometers east of Krang Chek. The scheme will be developed in the administrative boundaries of Koh Kong province, Sre Ambel district, Dong Peang Commune.

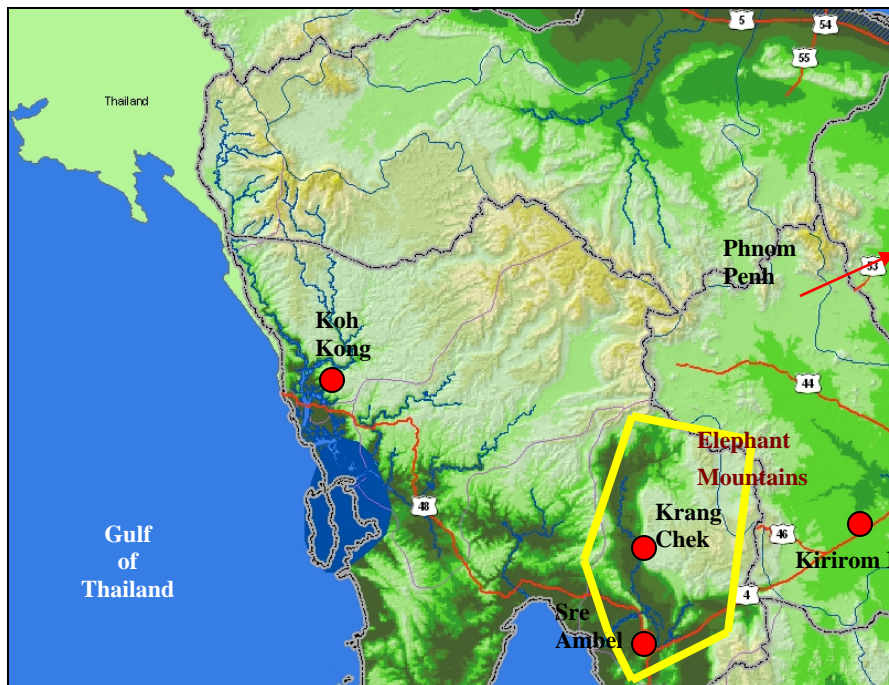
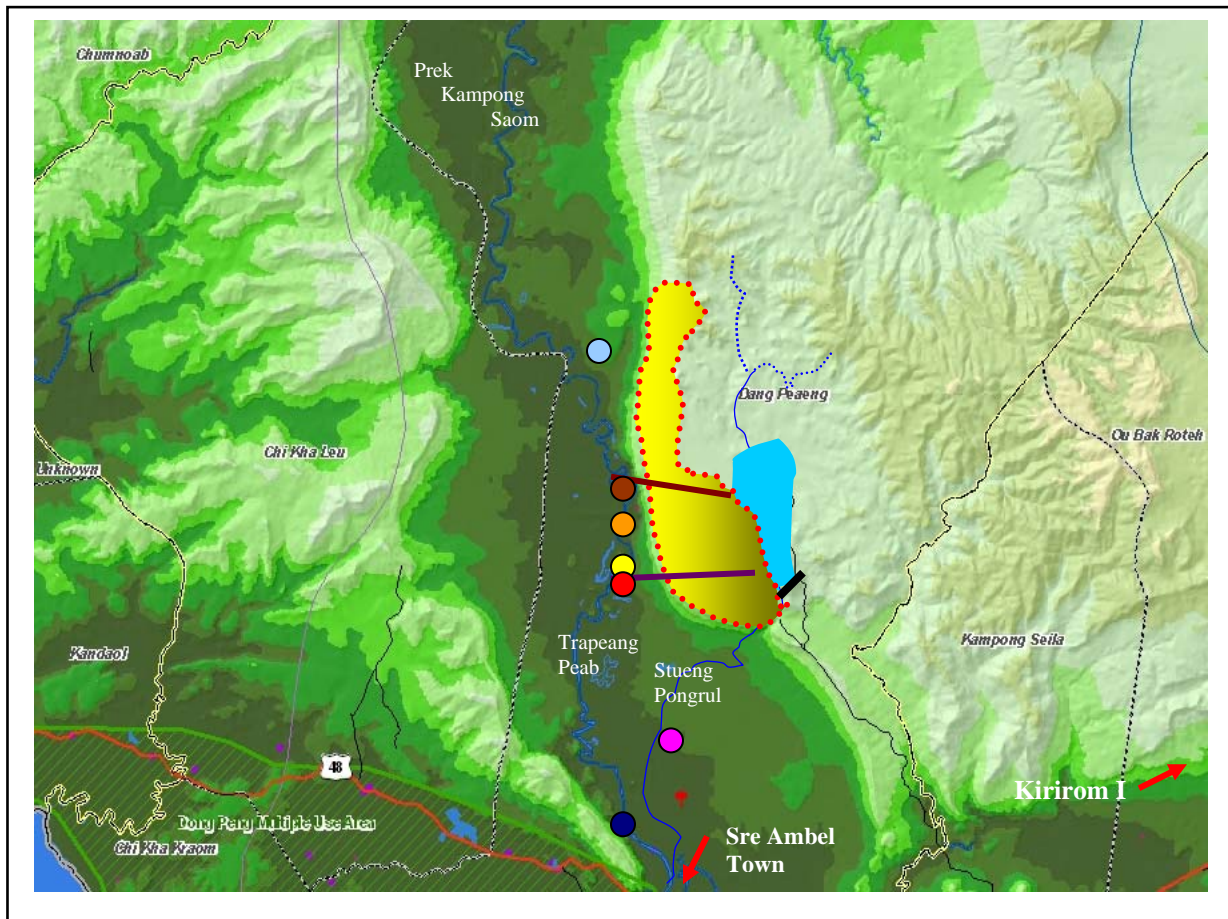


Figure 1.1

Figure 1.2: Key Features of the Study Area



Key (markings are indicative only)

- Krang Chek ● Power Station ● Bothor Village & Diversion Discharge Point
- Phnom Toub Cheung Community Forest; ■ Reservoir & Dam
- Dey Krahorm; ● Preah Angk Kaev ● Prek Stueng ● Bak Ang Rut
- Diversion tunnel and race — Tail race tunnel and race

The scheme will be developed in the commune of Dong Peang, which in 2005 had a population of 4901 people, spread across 856 families (WCS, 2007). As people from this commune either live, access natural resources or rely on eco-services from the project area, the scheme has the capacity to directly impact on this entire population as well as people from further afield. The AFSC has worked in the Sre Amble district since 1996, with a large amount of its efforts being directed towards implementing an integrated sustainable livelihoods program (ISL) within the Prek Kampong Saom catchment. Within this program considerable attention has focused on assisting villagers in the middle reaches of the Prek Kampong Saom to set aside and manage a large area of remnant rainforest – the Phnom Toub Cheung Community Forest project. The villagers potentially directly affected by the scheme are stretched out along the river in

settlements named, moving upstream, Preah Angk Keo, Prek Stueng, Krang Chek, Bak Ang Rut and Dey Krahorm (see Figure 1.2). These locations form the study area for this study; with the communities, their natural resource relationships, the anticipated impacts of the Kirirrom III project and the nature of village rights comprising its focus.

1.3.2 Natural Landscape

The eastern slopes of the Phnom Toub Cheang massif support a combination of moist and mixed evergreen forest (see Box 1.1). Along the massif's top this vegetation gives way to evergreen and deciduous forest and patches of pine trees (Ministry of Environment, undated). Several veals, comprising grasses and occasion deciduous shrubs, also exist along the top of the massif. In the valley floor the vegetation is characterized by grasslands and open deciduous forest habitats, with denser semi-evergreen vegetation found along the banks of the larger waterways and trapeangs (small lakes). Melaleuca (Khmer: *Smach*) forest is prominent between Preah Angk Keo and Prek Stung, encouraged by the saline conditions that prevail in this area (Darong, *et al.* 2001). Biodiversity values include populations of elephants, primates (macaques and gibbons) and various other forest species in the upland areas (WCS, 2007). The river system supports a breeding population of two of Asia's rarest aquatic species, the critically endangered Royal Turtle *Batagur baska* and the Siamese Crocodile. Waterways – rivers, streams and trapeangs – are also an important element of the natural landscape in the study area. They support, for example, riparian vegetation that local human and wildlife communities utilize, including a variety of fruit harvested for food and sale, and wood used for construction. Fish, crabs, shell-fish and aquatic plants found in the local waterways are also important sources of protein for villagers (CEPA, 2005).

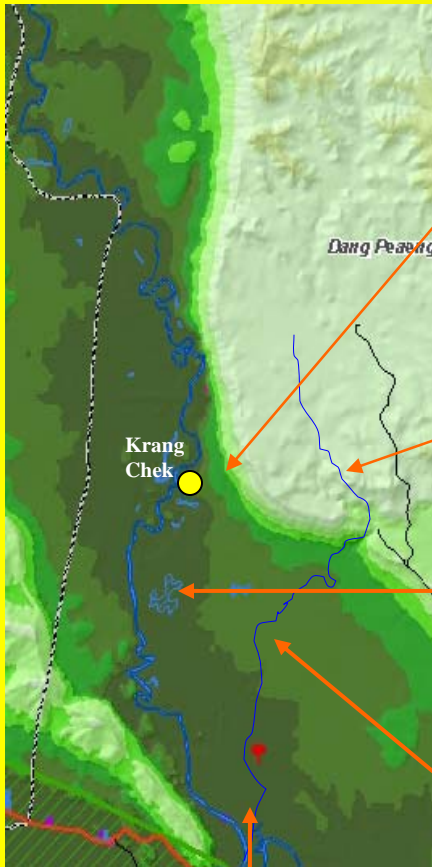
1.3.3 Human Landscape

Records detailing human settlement in the study area prior to the post-Khmer Rouge area are sparse, although the population would have likely been small and settled in isolated pockets, due to the challenges of terrain, physical environment, and associated issues of access and malaria. The communities present at this time were probably subsistent and based alongside the Prek Kampong Saom which, as today, is an important transport route within the study area (cf. Martine, 1997). Significant change followed the end of hostilities in the valley in 1996, when remnant Khmer Rouge forces accepted an offer of amnesty from the Royal Government of Cambodia (RGC) that included a reward of 5 hectares of land to each family. Encouraged by this change, in 1996, a Malaysian timber company (Samling International) started extracting timber from the valley under the terms of a concession agreement with the RGC. A number of small saw-mill operators also entered the valley at this time, leading to a period that some locals still refer to as the time of 'timber anarchy' (McCallum, forthcoming). With the suspension and subsequent demise of concession logging operations, in 2001, many migrants who had arrived to work in the timber industry decided to stay and settle in the valley. Interviews indicate that a number of these settlers encouraged their relatives and friends to come and join them in the valley and to establish homes and farms. Krang Chek village is largely comprised of former logging families, who joined the ex-Khmer Rouge families - many of who settled in Bak Ang Rut - and older valley inhabitants, including a small Cham community, that live in the valley (see Box 1.2). Reflecting the importance of access to community development, the largest settlements have developed alongside the Prek Kampong Saom and sections of the old concessionaire road abutting the eastern-side of the valley (CEPA, 2005).

Box 1.1: Natural Landscapes of the Study Area



Moist evergreen and associated tropical vegetation along eastern slopes of the Phnom Toub Cheng Community Forest



Mixed evergreen and deciduous forest around the proposed Kirirom III dam site.



Gallery forest (mix evergreen and deciduous) around the shores of Trapeang Peab.



Melaleuca forest, in the tidal zone near Preah Angk Keo. This forest favors saline conditions.

Open deciduous forest and grassland on the valley floor, near Prek Stueng.



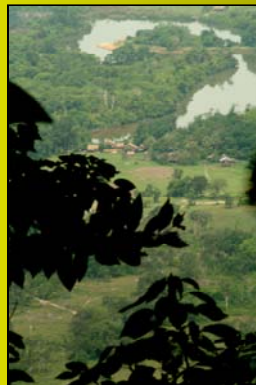
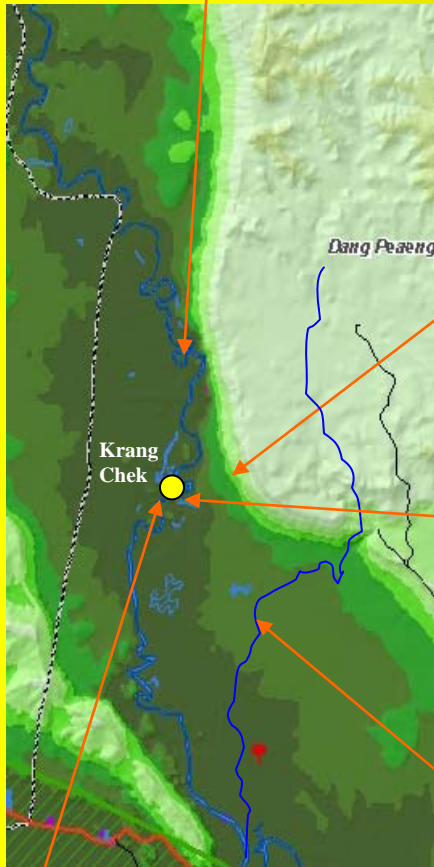
Box 1.2: Human Landscapes of the Study Area



Villagers rely on free access to open grazing areas for their livestock, including the inhabitants of Bothor village (left).



Community forest boundary markings (above) and NTFPs collected from the forest (medicinal roots, below left; pniew, a popular local food, below right).



The village of Krang Chek, on the banks of the Prek Kampong Saom (left). Like many villages in the study area, its proximity to the river provides access to fish stocks and plants for eating and construction, as well as a year round transport route. The Kirirom III power station and discharge area will be 0.5 kilometer south of the pictured village.



A newly created chamkar, near Krang Chak (above). Chamkar agriculture is a primary livelihood activity in the study area.



Local waterways are a key source of protein and income for villagers (right), and a transport route in an area where roads are often impassable (left).



With improvements in access and changing national political economic conditions, the Prek Kampong Saom Valley has become increasingly attractive as a site for intensive agricultural development. An economic land concession granted in Chhy Reap (above the study area) and the recent acquisition of land to develop sugar plantations on the western-side of the valley, will dramatically change the human landscape of the area. Encouraged by these new economic possibilities, land values in the valley have climbed significantly, with per hectare values of between \$200 to \$3000 USD being reported in April 2008 by local villagers. This has encouraged a rapid growth in settlement and efforts to demarcate land in the valley, with this being especially noticeable in the low-lying areas between Trapeang Peab and the Stueng Pongrul. The Kirirom III project will only intensify the pattern of change as infrastructure (dam, reservoir etc) are constructed and families arrive to take-up opportunities offered by this development. The overall result is a human landscape that is in a rapid state of change, largely driven by external political and economic conditions (see Section 1.4).

a. Livelihood Overview

Village livelihoods in the study area center on wet season rice production, undertaken in paddies and chamkars (home gardens). Chamkars are also important sites for the growing of vegetables and fruit, including sugar cane, cassava, potatoes, pumpkins, bananas, rambutans, cashew and pea nuts, jack-fruit, mangoes, chilies, cucumbers and corn. Fishing in the Prek Kampong Saom, the Stueng Pongrul and various trapeangs is the second most significant livelihood activity, and includes the use of lines, traps, nets to capture fish, crab, scrimp, prawn, shell fish and turtles. The collection of non-timber forest products (NTFPs) provides a supplementary source of food and income for those living in the valley. At various periods through the year rattan, cressna, fuel wood, bamboo, mushrooms, samrong (malva nuts), honey, resin, kuy, pniew and bamboo shoots are collected from the community forest area and in the vegetated portions of the valley floor (including along the edge of waterways). A number of plants are also collected for medicinal and cooking purposes, including a variety of barks, fungi, herbs and roots. Animal raising, hunting, selling of grocery and sale of labor, in descending importance, fill out the remainder of prominent livelihood activities (WCS, 2007; Rio, 2001).

Villagers interviewed in April 2008 indicated that the focus of livelihood activity was on production for domestic consumption (see also CEPA, 2005). When it occurred, surplus production was exchanged or sold to relatives or neighbors and on occasion, in the market of the nearby town of Sre Ambel. The difficulty of accessing the Sre Ambel market, including the time it takes to travel there, has been described by villagers as a major economic hindrance (CEPA, 2005). Production to meet ceremonial requirements was also noted as a prominent draw on surpluses. Field data suggest that poorer families encounter food shortages during parts of the year. Records from 2001 revealed that $\frac{3}{4}$ of family farms (paddy and chamkar) were less than three hectares in size, with 92 percent having no record of official ownership (Rio, 2001). Data collected at this time also indicated that a lack of water buffalo was a primary limiting factor to livelihood improvement. More recent figures suggest a rise in buffalo numbers (WCS, 2007), with the declining availability of land now emerging as the most prominent livelihood limitation.

b. Institutional Landscape

A variety of local institutions exist in the study area to control the management of resources, although a number of resource systems, most notably the main waterways, remain essentially open access systems (i.e., there are few rules governing use). The most significant formal institutional arrangement exists to manage the Phnom Toub Cheang Community Forest, which was initiated in 2003 by local villagers with support from the AFSC and the Community Forest

Research Project³. The Phnom Toub Cheang Community Forest covers 3,046 hectares, situated on the eastern-side of the Prek Kampong Saom valley (see Figure 1.2) (RGC, 2003)⁴. The community forest and the other forest areas in the valley previously formed part of the Samling International concession which, following suspension in 2002, reverted to the status of natural forest protected area. Under the Forest Law (2002), communities are guaranteed traditional user right within these areas (Article. 9)⁵ and the protection of resin trees from cutting (Article. 29).

An important recent development has been the granting of an economic land concession to the Koh Kong Sugar Industry Company on the western-side of the Prek Kampong Saom Valley. This has resulted in villagers within the study area losing access to areas they previously used for rice cultivation and animal grazing (OHCHR, 2007). Many villagers have complained that the granting of the concession has removed land that they formally used for animal grazing and rice farming. Reports in April 2008 suggest, further, that the Mong Reththy Palm Oil Company is now also seeking a land concession in the valley.

Few villagers in the study area have legal land title as provided for under the Land Law (2001). Under this legislation any person who has enjoyed peaceful, uncontested possession of land – but not state public land – for at least five years prior to or commencing from the promulgation of the Law can apply for a definitive title of legal ownership (Oberndorf, 2006). Depending on the status of the land in the study area, which remains unclear, these provisions could allow villagers to seek legal title over their lands in the valley. The legal status of land granted to former Khmer Rouge families as a condition of their amnesty in 1996 (5 hectares) remains unknown, but the entitlement does not appear to have been codified into any legal titles held by the relevant villagers.

Box 1.3

Neck-Ta

In many parts of the rural Cambodia *Neck-Ta Srok* and *Neck-Ta Prey* are prominent spirits revered by villagers. The former is held to reside over the well-being of home and village while the latter, *Neck-Ta Prey*, is considered to reside over forests, rivers, trapeangs and other ‘wild’ environments. If something strange occurs in the forest then, most often, *Neck-Ta Prey* will be held to account. The exact form the spirit takes is unclear. Recent studies suggest that they are not ethereal deities but take on a living, human form, with histories and destinies comparable to that of people. Because of this any number of Neck-Ta can reside in an area, each of which must be appeased through its own rituals and ceremonies. The belief that individual affronts to Neck-Ta can have consequences for an entire community is an important institutional control over human activities. It can encourage, for example, the community sanctioning of individuals for improper conduct that is held to anger a Neck-Ta. Such spirit-based institutions are vulnerable to transgression by ‘outsiders’, including external economic actors, who often remain unconscious or unmoved by local beliefs.

³ The right of the Ministry of Agriculture, Forestry and Fisheries to designate community forests is set out in Chapter Nine of the Forestry Law (RGC, 2002), with further details provided in the Sub-decree on Community Forestry Management (RGC, 2003) and Prakas on Guidelines on Community Forestry (Ministry of Agriculture, Forestry and Fisheries, 2006).

⁴ The community forest was approved by the Koh Kong provincial governor in 2003. Following the promulgation of the Prakas on Guidelines on Community Forestry (Ministry of Agriculture, Forestry and Fisheries, 2006), a request for the recognition of the Phnom Toub Cheang Community Forest was made to the cantonment chief of Koh Kong, Forestry Administration in August 2007. The outcome of this application is still not known.

⁵ This includes the right to graze animals and collect NTFPs.

Beyond state legislation, a system of traditions, grounded in local beliefs act as ‘spiritual institutions’ governing the use of local natural resources. Significant here is the role of local Neck-Ta spirits (wilderness deities); with villagers believing that these reside and oversee human activities in the catchment (see Box 1.3). This includes a powerful Neck-Ta that is said to reside in Trapeang Peab, who is honored every three years in a special ceremony held near the lake.

c. The Political Economic Landscape

Cambodia is a nation in a rapid state of change. Following a slow recovery from years of turmoil and civil strife it is currently experiencing economic development unsurpassed in the post-Khmer Rouge era. This economic change has helped to stimulate an interest in hydro-development motivated, on the one hand, by a growing demand for electricity and on the other, by the development of an investment environment amenable to large-scale infrastructure ventures. Simultaneously, the RGC has shown strong political support for hydro-development, encouraged by overseas countries and lenders who perceive a benefit in the development of hydro-electric power in this country (Middleton, 2008). Behind these factors have been deeper political and economic changes that have arisen from the rise of China as major economic force in the lower Mekong region.

In April 2006 the Chinese government pledged a \$600 million aid package for Cambodia. This package was a harbinger of a new era of investment in Cambodia in which the traditional influence of the western bilateral and multilateral lending agencies has been steadily eroded by investment from China. Importantly, conditions under which this money have been provided have also differed from that of the past, leading to what some commentators have described as the rise of a new lending environment grounded in the themes of the ‘Beijing Consensus’ (McBride, 2008). Elements of this consensus include: (a) an emphasis on support for infrastructure development and extractive industries; (b) the linking of this support to Chinese geopolitical and natural resource considerations; and (c) a ‘hands-off’ approach to the consequences of Chinese investments on local communities and environments⁶.

Unsurprisingly, these considerations have affected the way local communities and environments are viewed and treated by developers. Concerns over environment sustainability, human rights and rural livelihoods, features of the previous ‘consensus’, have steadily been demoted in priority. The acceptability and consequences of these changes for investment in the study area has been reinforced by a national administrative system that is poorly developed in terms of impact assessment protocols and requirements. As a consequence, it has been relatively easy for large scale projects, such as the Kirirom III hydropower project, to be planned and constructed with a minimal need to consider their social and environmental impacts.

1.4 The Kirirom III Scheme

1.4.1 History

The first record of a hydropower scheme on the Stueng Pongrul (site of the present project) occurred in 1973, when it appeared in an inventory of potential water projects for Cambodia, prepared by the Mekong Secretariat (1973). Profiled in the document was a hydropower and

⁶ The Chinese government’s dominate position is that social and environmental concerns are ‘internal domestic matters’ and are thus issues that should therefore remain outside its lending decisions (Middleton, 2008; Chan-Fishel, 2007).

irrigation scheme in the ‘western Cardamom plateau’, on the site of the present Kirirom III project. A group of Yugoslavian consultants, who completed the Kirirom I project in 1968, are believed to have developed a comprehensive plan for the western Cardamom scheme. The rise of the Khmer Rouge and subsequent years of upheaval saw the impetus for the project wane; however, many features of the old proposal appear to have been incorporated into the current Kirirom III scheme, including the dam location and use of tunnels and tail pipes to transport water to the Prek Kampong Saom (the lack of an irrigation component is a notable exception).

Reports in 2004 indicated that the Kirirom III scheme was being developed by the *China Electric Power Technology Import and Export Corporation* (CETIC). The company is a limited liability subsidiary of the Chinese state-owned *State Grid Corporation of China*. The company’s main business interests have been described as international project contracting, importing and exporting, and industrial investment (Middleton, 2008). CETIC formerly re-built and presently operates the Kirirom I scheme under a Build-Operate-Transfer (BOT) agreement⁷. This BOT arrangement will also be used as the basis for its involvement in the Kirirom III project, with the company being given a 30-year operating concession under its agreement (MDRI, 2005). In early 2008, the Royal Government of Cambodia (RGC) signed a contract with the China State Grid Xin Yuan International Investment Co. LTD to construct the dam (Xinhuanet, 2008)⁸.

Proposals for the Kirirom III scheme first came to attention in early 2004 when a RGC de-mining team appeared in the Stueng Pongrul, clearing the area in preparation for the undertaking of a feasibility study by the consultants hired by CETIC, Mid-South Design and Research Institute (MDRI). Starting in November 2004, the MDRI team compiled and completed a study that was completed in June 2005, with a recommendation that the project should proceed under the conditions set out in Box 1.4. This feasibility study was not, however, released to the public. Information from the Dong Peang commune chief and other documents indicate that the scheme has been approved.

Information obtained in April 2008 revealed an interesting possible addition to the scheme. A quarry may be developed – served by an access road – on the slope of the massif fronting the Prek Kampong Saom valley’s on its eastern side. The rock from this quarry is intended to be used in the construction of the power station and other facilities in the valley.

The 2004 feasibility presentation indicated that 80 percent of finance for the project will be provided by the China Export – Import Bank (China EXIM), one of China’s two sanctioned export credit agencies (banks permitted to lend to native businesses to undertake projects overseas). Aligned to the geo-political and economic interests of the Chinese state, the Bank has provided loans to a range of projects being developed by Chinese companies overseas, including alleged support for the Kamchay Dam in Kampot, southwest Cambodia (Middleton, 2008). China EXIM is one of the worlds largest export credit agencies with an estimated \$20 b (US) worth of approved loans in 2005 and a target of \$40 b (US) by 2010 (Middleton, 2008). Internationally, China EXIM has faced accusations of undermining environment and social standards by financing development projects that other lending agencies have refused to support. This includes

⁷ An approach to infrastructure development encouraging private investment into areas traditionally funded by the public sector, BOT agreements involve private companies agreeing to incur the costs of constructing and operating a scheme in return for concession rights over the outputs it produces. At the end of the concession period the rights to the facility transfer to the host government (Pahlman, 1996).

⁸ It is presumed that the China State Grid Xin Yuan International Investment Co. LTD. and the State Grid Corporation of China are one and the same or closely related, with CETIC being a subsidiary company. In September 2008, government officials confirmed that CETIC is still the company responsible for construction and operation of the dam.

Box 1.4**Kirirom III Hydro-Power Scheme (2004)**

- Operating capacity: 15 MW
- Estimated cost of development: \$40.18 USD (2004 figs.)
- Completion date: 2010 – 2011
- Dam location: Stueng Pongrul (2 km above Pongrul Waterfall); Catchment area – 104.6 km²
- Dam Type: Earth rock
- Dam Height: 336.30 m
- Normal Water Height: 330 m
- Flood Level: 332.85 m
- Source of rock: Two quarries 600 m below the Stueng Pongrul River¹
- Uses of Power: To be transmitted by constructed transmission lines to the site of the Kirirom I scheme (50 km). Here the electricity will be transmitted through existing lines to Phnom Penh.
- Irrigation associated with project: No
- Project labor force: 200+ for dam and reservoir construction; 200+ for power station and associated infrastructure.
- Land required for reservoir: 535.68 ha
- Construction period: 2.5 years
- Other facilities: Dam site – worker camp and office (3 km below dam site); warehouse (0.5 m below dam site); power station & workers facilities (near Krang Chek); diversion and tail race tunnels and pipe lines

PROJECT SUMMARY

An earth dam will be constructed across the Stueng Pongrul River. It will create a reservoir, the water of which will be directed through a pressure tunnel to the edge of the eastern Prek Kampong Saom massif. Water from here will be channeled by pipes to a surge chamber and then through pen stocks to a power generating facility 0.5 km below the village of Krang Chek. Two turbines will generate electricity from the water before it is discharged into the Prek Kampong Saom. Another tunnel and pipe system, discharging near the village of Bothor (see Figure 2) will be developed as a diversion structure to handle water from the Stueng Pongrul while the dam is being constructed. This will be blocked prior to the filling of the reservoir.

TIME LINE (2.5 years)

- January (Yr. 1) – October (Yr. 1) – Six month preparatory work prior to official commencement
- Official Commencement**
- October (Yr. 1) – November (Yr. 1) – Excavation of inlet and outlet of the diversion tunnel
 - Early December (Yr. 1) – Diversion tunnel completed. Stueng Pongrul diverted
 - November (Yr. 1) – March (Yr. 2) – Dam construction
 - December (Yr. 1) - January (Yr. 2) – Excavation of river bed
 - January (Yr. 2) – April (Yr. 2) – Foundations prepared for dam in Stueng Pongrul
 - January (Yr. 2) – March (Yr. 3) – Head race started and completed
 - March (Yr. 2) – Excavation started
 - Concrete lining and steel pipe installation
 - September (Yr. 2) – March (Yr. 3) – Power Station Started and Completed
 - September (Yr. 1) – March (Yr. 2) – Excavation of foundations
 - March (Yr. 2) – August (Yr. 2) – Concrete placement of machine hall
 - December (Yr. 2) – May (Yr. 3) – Turbines installed (n=2). In service by May of third year.

the Kamchay project, which had previously been turned down by Canadian agencies following concerns about its environmental and social costs. The Bank did, however, adopt an environmental policy in November 2004 that was eventually released in April 2007; the document itself is said to be sparse in policy details. Nonetheless, it does offer a potential source of leverage that will be evaluated in Part III.

The impetus of the development of the Kirirom III scheme comes against a surging demand for electricity in Cambodia. Currently only 20 percent of households have access to mains-based electricity, the majority of which are located in Phnom Penh and Battambang⁹. At present Cambodia produces only 212 MW of electricity, which compares with an expected demand of 991 MW by 2020 (Soklim, 2007). The RGC, meanwhile, has stated its intention to have 70 percent of households electrified by 2030, while there is considerable interest in nearby Thailand and Vietnam in the opportunities for accessing electricity generated in Cambodia (Middleton, 2008).

1.4.2 Environment Impact Assessment

The *Law on Environment Protection and Natural Resource Management* (1996) requires that an environment impact assessment should be undertaken on every project and activity, private or public, with these documents being reviewed by the Ministry of the Environment. The 1999 Sub-decree on *Environment Impact Assessment Process* further defines the nature and scale of the impact process. Formal guidelines for the process are currently being prepared but have not yet been officially approved. In their stead, a set of draft guidelines (2000) presently form the template for EIA process in Cambodia¹⁰. In reality, the EIA practice in Cambodia struggles to meet the standards of processes in numerous other countries such as New Zealand and Australia, with the process lacking transparency and many projects failing to undertake assessments. Several factors account for this, including:

- State and investor prioritization of economic and political considerations over environment and social considerations.
- Limited government capacity to undertake rigorous reviews of EIA reports.¹¹
- No state capacity to ensure compliance with impact assessment conditions.
- Absence of state sanctioned guidelines for the EIA process.
- Limited EIA professional class in Cambodia.

The assessment of environment impacts provided in the feasibility presentation has limited coverage and depth and appears to have essentially been a desk-top exercise (see MDRI, 2005). Efforts to find a more detailed document have failed to yield any additional material. In August 2008, the company hired the local firm SAWAC Consultants for Development Ltd. to carry out an Initial EIA for the project.

Key observations from the 2005 MDRI summary presentation of environmental impacts are:

⁹ Cambodia has an estimated population of 14.2 million people (2007).

¹⁰ A more detailed discussion of EIA law follows in Part III.

¹¹ Further capacity building in EIA review processes, including public disclosure and participation mechanisms, may be useful.

- The summary treats the environment in strictly biophysical terms. There is no mention of the social impacts of the scheme or of the social environment generally. The result is an assessment that gives a de-humanized image of the affected area. For example, there is no reference to the importance of the forest where the reservoir will be built as a commons area for the local community. There is also no reference to public safety issues.
- There is no discussion on the water quality and quantity effects of the scheme on the Stueng Pongrul and the Prek Kampong Saom River, except where these relate to protecting the integrity of the economic investment (e.g., the issue of sedimentation in the dam reservoir).
- Suggested mitigation of \$200,000 (US) is set out for two areas of work:
 - To protect the integrity of the project's infrastructure through erosion control activities in the Stueng Pongrul Valley.
 - Compensation for private land acquired for the development of the electricity transmission line.
- Overall assessment is that the project will represent a net benefit in terms of impacts on the environment:

"... the project development would have more positive environmental impacts that [sic] adverse impacts and would not restrict the sustainable utilization of the local environmental resources." (MDRI, 2005 p. 18)

But then confusingly goes on to state:

"... however, there still remain such critical environmental issues during the project construction [sic] the avoidance and restoration of ecological impacts." (MDRI, 2005 p. 19)

1.4.3 The Government Landscape – Key Authorities

Besides the Ministry of Environment's role that has been described above, there are several other government authorities with responsibilities relevant to construction and operation of the Kirirom III scheme.

(i) Ministry of Industry, Mines and Energy (MIME)

Under the Electricity Law (2001) MIME has overall responsibility for the administration of government policies, strategies and planning in the power sector (Article. 3) and is the lead agency in terms of government over-sight of the Kirirom III scheme, having signed a memorandum of understanding with the company sometime early in the millennia. The main department *within* MIME overseeing hydropower development is the Department of Hydropower located within the General Department of Energy. Efforts were made in the course of this study to meet with staff from this Department; however, at the time of writing no appointment had been forthcoming. This is in spite of a letter being written in April 2008 by CEPA staff, requesting a meeting between this study's author and officials within the Department to discuss the Kirirom III project.

(ii) Ministry of Water Resources and Meteorology (MWRM)

Accountable for the management of Cambodia's surface and ground water resources, MWRMs administers the Water Resources Law (2007) and is the lead agency for multiple purpose dams (e.g., power and irrigation) developed in Cambodia; with MIME being the lead authority on all hydropower-only projects.

The key role of MWRM in the Kirirom III project will be restricted to the issuing and monitoring of a license for water use and water works construction to the company. Activities sanctioned under this license are meant to be aligned to the principles of integrated water resources management', which include the recognition of the need for minimum flows to maintain ecological services within waterways. At present, however, the lack of a defining sub-decree and Prakas (guideline) means the Ministry's ability to define and promote activities and best practice under this law is limited.

(iii) Forestry Administration (FA)

Located within the Ministry of Agriculture, Forestry and Fisheries, the FA was ceded management authority for the forest areas in the Prek Kampong Saom catchment in 2002, following the cessation of the Samling International concession. Despite its authority over this area, experience from the nearby Central Cardamom Protected Forest, where it also has management authority, indicates that the terms of the memorandum of understanding between MIME and the scheme's developers will take precedence over its legal responsibility. This leaves the FA as an outside actor in the project.

(iv) Commune Council

Although powerless in terms of the overall decision-making on the Kirirom III scheme, the council and its chief are likely to be important power-brokers in terms of any decisions ceded by the developers and MIME to local authorities. This might come to include decisions over amounts, forms and the distribution of compensation. Without comprehensive community participation, this could give rise to the risk of compensation being 'captured' by the Council and distributed on the basis of political and personal considerations, rather than on the basis of the actual spread and depth of impacts experienced by the community.

1.4.4 CEPA Report – 2005

In November 2004 the Culture and Environment Preservation Association (CEPA) undertook an assessment study in the Prek Kampong Saom Valley. The purpose of their research was to establish a profile of the resident community, including their uses of the local environment and their knowledge and attitudes towards the proposed Kirirom III hydropower scheme. The results from this research were summarized in a report prepared in 2005. CEPA also organized a village workshop, which was intended to inform community members about the positive and negative consequences of hydropower development.

The CEPA research was organised around a series of case studies that focused on specific locations and their families in Bak Ang Rut and Preah Angk Keo villages. Interesting observations made during this research are summarized beneath the headings below.

(i) Community Attitudes

An assessment of community interviews in Bak Ang Rut indicated that 33 percent of families were not happy with the scheme. Reasons cited included concerns about the loss of land and commons areas, decline in water quality and flood events. 40 percent of families indicated that they were happy with the scheme. Reasons cited included the benefits of electricity, the possibility of new infrastructure (e.g., roads, schools and pagodas) and the arrival of more people. 14 percent indicated that they were both happy and unhappy about the project; and 12 percent indicated that they did not know enough about hydropower development to have a perspective. The overall conclusion of the assessment was that the most affected community members, including key local leaders such as village chiefs, were unhappy with the scheme, while those expressing contentment usually lived well away from the anticipated affected areas. CEPA researchers summarized the attitudes of one informant's attitudes towards the project; a Ms. Da Ney (42), of Dey Krahorm village:

“According to her presentation, natural resources in this area enable her to conduct many kinds of business and if this area, including the rice field, forest and plantation is lost, it will have a significant adverse impact on her living as well as other people's in this area. She said she was not happy when there was a plan to build Kirirom III hydropower plant here even though there is no impact on her, but on the overall wellbeing of the community as a whole. People who lose their farming land and homes can not find new land, and people who are not affected have only a small piece of land and can not share it with others. This dam has many impacts on the well-being of local people, including loss of natural resources, especially community forest, loss of animal habitat, loss of business, water pollution, water shortages for use, and loss of land for farming, plantations and houses.” (CEPA, 2005).

(ii) Uses of the Natural Environment

Insights garnered on the use of the local environment by the CEPA field team included:

- Local livelihoods are based on rice and chamkar agriculture, collection and selling of NTFPs, fish, livestock and the sale of labor.
- The raising of livestock is dependant on the availability of large commons areas, which are used for animal grazing.
- The importance of the Prek Kampong Saom as a transport route, especially in the wet season.
- 30 percent of families interviewed from the Bak Ang Rut village use medicines gathered from the forest to treat illnesses. The study also revealed the prevalence of a range of illnesses in the local communities, a number of them - malaria and dengue- being serious.
- The capacity to collect NTFPs from the nearby forests is important; many families rely on the food and the sale of items taken from the forest (including roots and bark for medicine, which is sold in Sre Ambel as well as used domestically) to compensate for poor household rice and chamkar crops.

(iii) Community Requests

Villagers indicated that they sought two main categories of compensation from the government and project developers. These were: (a) personal compensation for the loss of land, animals and crops; and (b) infrastructure for the wider community, including schools, roads, a market, medical facilities and electricity. There was virtual no reference to financial compensation in villager responses. Instead, villagers generally favored like-for-like compensation - lost animals being replaced by new animals, lost land being replaced with land of comparable size and condition and so on.

Villagers from Bak Ang Rut requested, in addition, that 'government experts' should study the effects of the dam and should be responsible for supplying information to the community on the impacts of the development. These villagers also requested that the company be obligated to sign a contract with the community acknowledging it's responsible for ensuring that the project does not adversely affect them - and if it does - a duty to grant compensation.

Part II

A Study of Environmental Impacts

“Conflicts over dams have heightened in the last two decades. This results from dissatisfaction with the social and environmental impacts of dams, and their failure to achieve targets for costs and benefits. It also stems from the failure of dam proponents and financing agencies to fulfill commitments made, observe statutory regulations and abide by internal guidelines.” (World Commission on Dams, 2000, p. 24).

2. A Study of Environmental Impacts

Throughout the world the procedure of Environment Impact Assessment (EIA) has been adopted as a systematic means for detailing and evaluating the effects of a human activity on the environment, including the means for remedying or mitigating for adverse impacts. IN the context of dam development, The World Commission on Dams (WCD) has made strenuous calls for the inclusion of full, detailed and participatory-based environmental assessments as part of the dam construction and operation process (see Box 3.2) (WCD, 2000). Usually, the notion of environment is treated broadly in this process to include social and economic considerations as well as the biophysical. The provision for the undertaking of EIAs in Cambodia exists under the Environmental Protection and Natural Resource Management Law (1996) and is further defined in the Sub-decree on Environment Impact Assessment Process (1999). A more detailed discussion on this legislation is presented in the villager rights section of this study (Part III).

2.1 An Approach to the Study of Environmental Impacts

This portion of the study does not represent a full impact assessment of the Kirirom III project; rather, it highlights a number of factors considered relevant were such an assessment to be undertaken. In this sense it represents a primer for a more detailed EIA. Within Cambodia a draft guideline for conducting EIA has been developed by the Ministry of the Environment (2000) and includes the category areas that should be covered for inclusion within an assessment. Drawing on themes from these guidelines, the assessment in this study is broken-down into the following sections:

- a) A breakdown of the areas potentially affected by the project into four social:biophysical zones. These zones are:
 - i. The catchment of the Stueng Pongrul below the Pongrul waterfall.
 - ii. The Prek Kampong Saom from Bothor down to Preah Angk Keo.
 - iii. The Phnom Toub Cheang Community Forest area and its adjacent landscapes, including the portions of the Stueng Pongrul above the Pongrul waterfall.
 - iv. The low-lying areas between the Phnom Toub Cheang Community Forest and the Prek Kampong Saom (east – west), and Bothor and the Stueng Pongrul (north – south).
- b) The EIA within these zones is set-out according to the following format:

- i. A description of the physical, social, economic and institutional environment of each zone, with an emphasis on its importance to the livelihoods and well-being of the local community.
- ii. A description of the anticipated impact of the scheme on the values of the environmental zone.
- iii. A description of the means for mitigating these impacts where they are considered to be negative in nature.

In addition, there will be some impacts that are common throughout the four zones (e.g., health and economic changes). These will be described and assessed in a separate section.

2.2 Environment Zones and Impacts

2.2.1 Stueng Pongrul Environment Zone

a. Natural Resources and Livelihood Description

The Stueng Pongrul zone encompasses the area from the Stueng Pongrul confluence with the Prek Kampong Saom upstream to the Pongrul Waterfall (see Box 2.1). Life in this zone is oriented around the Stueng Pongrul and the flow of water up and down its main-stem (the former caused by tidal movements). The lower portion of the zone is dominated by inundated malecula forest. The flat low-lying nature of this area means that it is constantly flooded by saline water moving up the Prek Kampong Saom from the sea. The river's tidal-inundated state means that it is unsuitable for rice production and permanent human settlement. However, local villagers do enter the flooded forest to collect a range of NTFPs, wood and fish. NTFPs collected from this area include rattan (used in construction and for ties), honey, wild vegetables, mushrooms, and numerous wild fruit and herbs used for food and medicine. Recent studies indicate that the malecula trees found here are especially important in the honey cycle, with the blooming of the trees triggering the movement of bees from the nearby forested massif to the flatland (Bradley and McNaughton, 2007). Malecula is also cut and used for construction and fencing materials. People use the river for transportation, but generally do not drink its water owing to its high salt content.

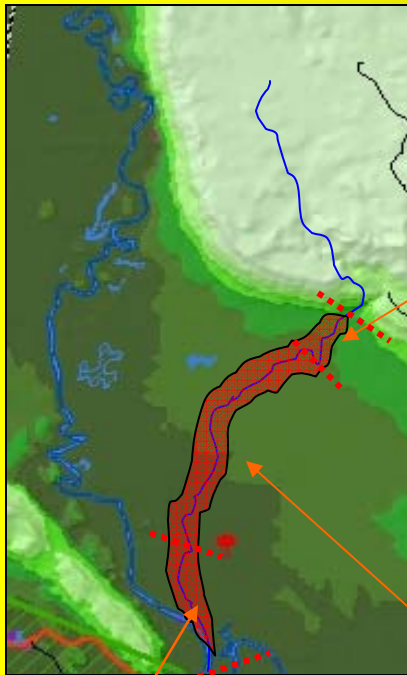
The next section of the zone is more heavily populated with households spread out along the river bank (estimate - ten per square kilometer). These families have permanent rice fields, which grow a wet and dry season crop, and chamkars; with the average size of the combined holdings being two hectares per family. Villagers report that a number of locations along this section of the river are very fertile and can produce an annual rice surplus that they are able to sell and trade. The family chamkars grow a variety of vegetables and fruits, including pumpkins, cucumbers, chili, banana, jack-fruit, mangos and water melons. People also collect a variety of NTFPs from the river bank, including fruit and vegetables for food, and herbs and roots for medicine and cooking. Fish are caught from the river and the near-by trapeangs, which are likely to be hydraulically connected to the stueng (i.e., their water levels rise and fall with the river). Traps, nets and lines are used for this. Water is taken from the river for household purposes, including drinking. Between March and April this water is reported to contain higher levels of salt (due to the dry season low flows and a resulting increased proportion of tidal water in the river). However, locals report still being able to drink the water at this time. Pumps are also used by some households to lift water from the river and to fill their wet rice paddies. Some families do have shallow wells that are located near the Stueng Pongrul; these are likely to be hydraulically connected to the water body meaning that the quality and quantity of water they hold will reflect conditions in the

Box 2.1: Stueng Pongrul Environment Zone Environment Impact Assessment Summary

Partially forested, this area is an important commons site. NTFPs such as wild vegetables and fruit are gathered here, wood harvested for house construction, and stock permitted to graze freely. The area, especially around the Pongrul Waterfall, is considered to be inhabited by a powerful spirit. Few families live in this area. The project will dewater the river, leaving it almost dry (saline tidal inflows will not reach this far). This is likely to cause the demise of the evergreen species living along the river with an associated decline in NTFPs. Seasonal flood pulses, which are an important source of fertility will end, although paradoxically floods caused by discharges from the reservoir and the aggrading of the river bed will create problems for local inhabitants.



Pongrul Waterfall (above); lush riparian landscape & the Stueng Pongrul's main stem (right).



Malecula flooded forest area. No inhabitants & unsuitable for rice production. An important source of NTFPs, fish, & wood for construction & posts. Important in the cycle of honey production. Impact concerns include changes caused by adjustments in water regime; deforestation driven by in-migration & economic changes in the valley generated by dam development.



Chamkar with pumpkins (above); typical house along the river (below)



Villagers living along the middle reaches of the Stueng Pongrul pursue livelihoods based on rice and chamkar cultivation, fishing and the collection of NTFPs. The river and its riparian environment are vital in these activities, supplying water, fish and other aquatic resources (instream) and roots, wild fruit and vegetables (along the banks). Most holdings are 2 ha or smaller in size. Residents claim ownership but few have legal title. The project is expected to cause the dewatering of the river. Major threats arising from this include the reduction of water quantity and quality in the river (including elevated levels of salt), which will reduce the availability and safety of resources such as water for irrigation; flood events caused by discharges from the scheme's reservoir; river-bed aggradation, loss of river transport capacity and the decline of NTFPs along the river's bank.



Malecula (*Smach*) is an important local timber resource, used in domestic construction, including fences.



Rice fields (far left); fish trap (left).

Stueng. People use the river for transport until it becomes too low in the late dry season (February – April). The third area comprises wooded areas, consisting of dense riparian vegetation of evergreen and semi-deciduous shrubs with denser moist evergreen forest away from the river, which stretch up from the low-lying plain to the Pongrul Waterfall. There are very few families living here (estimated – three per square kilometer); however the area is important as a NTFP collection area (samrong, kuy, mushrooms and honey) and for fishing¹². Little rice cultivation occurs in this section, while the tendency of the land adjacent to the river to flood has limited the number of family chamkars. Villagers believe that the Pongrul has good potential for eco-tourism (it was a previous destination for the former Cardamom Tours company in the early 2000s), although they presently lack the capacity to develop this activity themselves.

Overall, villagers indicate that there are few legal institutional arrangements directly governing natural resource activities in the zone except those that exist for the Phnom Toub Cheang community forest. Instead, a set of de facto norms and rules governing conduct have emerged, grounded in beliefs about local spirits. Villagers believe, for example, that very powerful spirits exist over the Pongrul Waterfall, with several ‘scare stories’ in circulation that attest to this deity’s strength and influence. In the downstream malecula forests and around the various trapeangs found through-out the zone, villagers believe that several Neck-Ta reside. The belief in these deities encourages some control in the use of natural resource, including desistance from destructive practices such as explosive fishing.

A significant natural resource practiced in this zone, as well as the Prek Kampong Saom and low-lying plains areas, is the reliance of families on access to commons areas such as uncultivated fields, river banks and around the shores of trapeangs, for the grazing of livestock. These areas are also important collection sites for NTFPs and wood. Land use changes in this zone, including the privatization and fencing of land will see the availability of these areas diminish. If something should occur that results in the ecological deterioration of the open riparian areas of the Stueng Pongrul as well, then the impacts of this trend will be even more severe.

Observations from the zone suggest that the bulk of families are slightly less well-off than elsewhere in the study area¹³. Many families here will therefore be especially vulnerable to developments that threaten their existing livelihood (e.g., harvest failure). In this context, the Stueng Pongrul and its natural resources appear to perform an important safety-net function, ensuring a source of food and household materials when families are under stress.

b. Anticipated Environmental Impacts

With the plans of the Kirirom III developers to divert the Stueng Pongrul at the early stages of the project, communities living alongside the waterway will experience the first direct environmental impacts of the scheme. A description of this impact and others in this environment zone follows.

(i) Water Quantity

The proposal to dam and store the water from the Stueng Pongrul is anticipated to have a devastating impact on the existing flow regime of the river. To meet the requirements for 18 MW the scheme will require the capture of all dry season and the bulk of wet season flows from the

¹² Resin was once collected and cressna trees cut down for their wood, but they are reported to have disappeared – due to logging – in the mid-1990s.

¹³ Indicators include the condition of housing, size of holdings and access to ‘open areas’.

waterway. This will result in the cessation of freshwater flows from most of the Stueng Pongrul catchment (tributaries below the dam will add a small amount of water). In the tidal zone of the river saline in-flows will supplement the freshwater flows but only during the high tide cycle, and at enhanced levels of salinity¹⁴.

In summary, the expected effects of this change will include:

- The elimination of the bulk of existing aquatic life, including fish, from the dewatered reaches of the Stueng Pongrul. This will eliminate a valuable source of local food for the zone's inhabitants.
- The lush riparian vegetation presently existing along the Stueng Pongrul will disappear due to the absence of water and the dry conditions that this will create. This will result in the loss of animals and plants, many of which – such as honey, wild fruit and vegetables – are important NTFPs for the local inhabitants.
- Households will lose access to domestic and agriculture water supplies due to the near absence of water (upstream reaches) and its salinity (downstream reaches) in the Stueng Pongrul. This will take away the ability to bath and draw water for domestic purposes, and for use in rice field irrigation.
- Domestic wells that are hydraulically connected to the river will tend to dry-up (non-tidal reaches) or become contaminated with salt water (tidal reaches), making them unsuitable as household water sources.
- It will no longer be possible to use the non-tidal portions of the river for transport.

Conversely, an alternative impact for villagers could be flooding and dangerous 'water pulses'. The extent to which this could be an impact for Pongrul communities is difficult to calculate as the regime and structures for hydropower water releases are not known. It is anticipated that the proposed diversion tunnel will be a temporary structure and will be blocked at the time of reservoir filling; if, however, it is retained as a part of the scheme it could be used as a discharge point in times of high reservoir levels. The scheme, meanwhile, does not rely on the movement of water through dam structures to power its turbines, this being the role of the tunnel and tail races that discharge into the Prek Kampong Saom. If the diversion structure is de-commissioned, as expected, then periodically excessive water will need to be discharged down the Stueng Pongrul to prevent the dam being overtopped. Experience from the *Se San*¹⁵ catchment, in northern Cambodia, has shown that this can cause considerable harm to downstream human life by causing the flooding and destruction of homes and rice crops, the loss of fishing, household items and boats, and even lives when people are caught unaware by rising waters (3S Rivers Protection Network, 2007).

¹⁴ The reach for these flows will be approximately half way up the river to the Pongrul Waterfall, a distance of about seven kilometers.

¹⁵ The *Se San* River flows from Vietnam through the Ratanakiri and Stueng Treng provinces, north-east Cambodia, and on to the main branch of the Mekong River. Construction of the Yali dam on the Vietnamese portion of the river has resulted in numerous adverse impacts on downstream river communities, including periodic flooding, health issues relating to water quality and deaths caused by sudden water releases. All references to the *Se San* made in this document are to portions of the river that flow through Cambodia unless otherwise stated (See Rutkow, Crider and Giannini, 2005).

(ii) Riverine environment of the Stueng Pongrul

Many of the impacts of dam construction on waterways such as the Stueng Pongrul are extremely difficult to predict. As every river is unique in terms of its flow patterns, the landscape it passes through and the species it supports, so also are the operating regimes of hydro-schemes and their resulting impacts on riverine environments (McCully, 1996). Some of the environmental effects of a dam, meanwhile, may take many years to be realized meaning, in short, that a dam is a massive long-term and largely irreversible environmental experiment. The most significant effect of the impacts the scheme will have on the environment and communities of the Stung Pongrul zone is the disruption of the ecosystem services the river provides, including the support of rich riparian environments and aquatic resources such as fish. This will arise from the cessation of water flows and the resulting fragmentation of the riverine ecosystem. As a consequence, fish species that depend on migration up the Stueng Pongrul as part of their life cycle will no longer be able to do so. This will not only remove them from the system but represent a food and income loss for local inhabitants. Over a range of plant and animal species this amounts to a significant reduction in biodiversity and the availability of resources to nearby households.

All rivers carry sediment that moves nutrients downstream, enhancing the fertility of the waterway and the areas that they periodically inundate, with irregular 'flood pulses' being key drivers of river productivity. Dams trap a portion of this sediment, starving waterways of their normal sediment loads and their associated benefits. As a result, the water below a dam is commonly described as 'hungry' and in this state seeks to re-capture sediment by eroding the beds and banks immediately below a dam and depositing them further downstream. The impact of this process on the Stueng Pongrul will be the steady aggradation of the river bed downstream of the Pongrul Waterfall, the rate and scale of which will be influenced by how much water is allowed to flow down the waterway. Even without releases from the Kirirom III reservoir, undammed tributaries below the dam will continue to discharge sediment into the lower reaches of the waterway as will direct run-off from adjoining land. This will cause the river-bed to aggrade ('build-up') if, as anticipated, there are no seasonal flood flows to dislodge this material and move it further downstream. The impacts of sediment may be exacerbated by the presence of two proposed quarries, described in the feasibility summary, downstream of the dam site, one of which is described as being in the river bed. The presence of quarry operation will mobilize massive quantities of silt and bigger particles that will, through time, pass down the river system to its lower reaches, contributing to the overall aggrading process. In summary, the anticipated consequences of this will be:

- The aggrading of the riverbed will increase the susceptibility of the surrounding land to floods if and when water is released from the reservoir and there is high local rainfall.
- Aggraded river systems tend to have a more uniform morphological character and hence support lower biodiversity than natural pool-and-riffle systems. This reduction in biodiversity will accentuate the decline in the availability of natural foods and materials described above. In the case of *Se San* River, in north-east Cambodia, morphological changes eliminated the deep pools that were important to the survival of several large fish species, removing them from the diet of locals.

(iii) Water Quality

Experiences from the hydro-scheme on the *Se San* River have demonstrated the consequences of impoundment on water quality. Here, water held behind the Yali dam has steadily declined in quality such that when released it has been held responsible for a number of ailments amongst the

downstream population. This has included numerous health effects such as rashes, illnesses (e.g., diarrhea) amongst those swimming and bathing in the *Se San* River. Some domestic animals have even died after drinking water from the river, possibly as a result of toxicity caused by blue green algae in the upstream Yali reservoir.

The extent by which impounded water becomes contaminated is influenced by a number of factors, including local weather conditions, length of water retention, and the physical, chemical and thermal changes water experiences while in storage. It is not possible to directly gauge the overall impact of the Kirirom III scheme on water quality in the Stueng Pongrul, but it is unlikely to contribute to any positive changes with experience elsewhere indicating that the actual outcome may be a marked deterioration in quality. Health effects, such as those experienced in the *Se San* catchment could arise for people who drink and bath in the Stueng Pongrul, as could the death of livestock that drink its water. These effects will arise during the operation stage of the project.

More concerning in the short term, during construction, is the proposed presence of a work camp near the Kirirom III dam site. Recent experiences at the site of the Kamchay Dam, started in late 2007, have included river contamination by sewage and grey water from the projects work camp. There is a possibility that this impact on water quality, especially concerning from a public health perspective, could also arise in the Stueng Pongrul catchment if care is not taken with the placement of these facilities.

c. Management of Environmental Effects

The key to eliminating many of the concerns raised in the previous section would be through a process of managed water releases that replicate the ecological processes threatened by the dam. This can be achieved through a program of flow releases down the river at various times of the year and the maintenance of a biological minimum flow. The former would involve the periodical releases of water that mimic flood conditions. This would help in the cycle of sediment through the Stueng Pongrul system, addressing the problems of aggrading and the loss of fertile flood-borne nutrients from the downstream environment. Some experimental work will need to be undertaken to calculate the desired control flood flow that is most effective in removing sediment over the course of the dry season to maintain the ecological conditions of the downstream environment (gauged at the Pongrul Waterfall).

The potential danger of unexpected flood pulses could be addressed by an early warning alarm system, such as a series of sirens located along the course of the river. Inhabitants could be educated on the significance of the sirens so that they know to move away from the river when they sound. The inclusion of at least an hour space between the sounding of an alarm and the release of water would give inhabitants time to move their personal effects and selves away from the river. It would also be desirable for the project's operators to inform villagers of impending releases as an additional mitigation strategy. The risk of damage to crops and houses would remain however, and could only be addressed through a compensation system and living arrangements by those living alongside the river (e.g., siting of houses away from low lying areas).

An alternative to the release of water down the Stueng Pongrul would be to maintain the diversion system, used in the construction of the dam, as an emergency release valve on the reservoir. Excessive floods could then be directed to the Prek Kampong Saom, which has a larger carrying capacity than the Stueng Pongrul or, alternatively, they could be shared between the two

rivers. The expense of this option may be beyond that desired by the developers, however, which only leaves the warning system and compensation as viable options for addressing the impact of flood flows.

The issue of water quality is closely linked to the addressing of water quantity issues. There would be little merit, for example, in maintaining water flows in the Stueng Pongrul if the water was contaminated and toxic. To address issues of water toxicity in places such as the United States many dams do not draw water directly through their tail races but, instead, through a vertical siphon tower. This tower has a series of holes along its length that allow operators to choose the depth water is taken for release. Depth is an important consideration here, for water tends to become more anoxic and toxic the lower one gets in the water column, a factor attributable to lower levels of sunlight penetration and oxygen as one moves down from a lake's surface. It is anticipated that the use of a similar siphon system in the Kirirom III scheme would allow the dam's operators to manage the quality of water discharged into the Stueng Pongrul

Box 2.2

The Nature of Compensation

Overseas experience suggests that financial compensation as a mitigation tool is seldom effective in ensuring the long-term well-being of local communities. McCully (1996) notes that the level of money offered in compensation seldom reflects the real cost of a project on local peoples. There are also things that cannot be financially accounted for including the self-worth and security that comes from a livelihood, and intrinsic values connected to physical spaces and activities (e.g., spirit sites). Other risks with financial compensation include the danger of capture by certain groups who divert it from those directly affected by a project. Often, meanwhile, payments are made to the males in the household, which places the rest of the household at risk from the financial decisions they chose to make. This issue may be compounded by the fact that the effects of a project are not always felt equally by men and women; gender disparities can therefore arise in a household between those who experience the environment impacts directly and those who receive the benefits of compensation.

As an alternative it is almost unanimous amongst researchers that a like-for-like strategy for compensation is the most desirable approach. In this method a project that results in the loss of land is compensated for by land of comparable amounts and condition; if fish are lost then they should be replaced by a means that provides the equivalent amount of fish (e.g., through fish ponds) and so on. Despite its undoubted merits, like-for-like compensation carries its own set of problems. Replacing land-for-land, for example, may not be physically possible if no land exists. Alternatively, if it requires families to move to another location it can cause social disruption within a family and conflict with long-term residents in the re-settlement location. The inability to compensate for socio-cultural values, meanwhile, remains.

'Best practice' in compensation can go beyond the measures suggested above and include livelihood restoration and benefit sharing, and compensation distributed across the life span of a project and its impacts. The former of these additional approaches is most often applied to communities extensively disrupted by development through, for example, the complete loss of their lands. This is not expected to occur in the case of the Kirirom III project.

through managed decisions over what depth to withdraw water¹⁶ from the lower Stueng Pongrul. The latter would also require experimentation to calculate flow levels that can be maintained in the river to ensure the functioning of its existing biological system. It is recommended that a minimum flow of 3 m³/sec should be maintained in the river

Again, however, the installation and management of this facility might be beyond that tolerated by the scheme's operators. If so then a system of compensation would need to be considered that covers the loss of environment services from the river. Given the discussion in Box 2.2, it is recommended that non-monetary compensation that replicates the livelihood options removed from the river be contemplated. Support for the development of fish ponds for households affected by the loss of fishing opportunities from the Stueng Pongrul would be one example of like-for-like and is recommended for consideration.

The issue of water quality problems relating to the work camp could be addressed by requesting the company to discharge the sewage from this facility away from the river or, alternatively, having the waste pass through a treatment system. Given the potential expense of the latter option it is anticipated that only the former will be more attractive to the developers.

2.2.2 Prek Kampong Saom Environment Zone

a. Natural Resources and Livelihood Description

The Prek Kampong Saom zone stretches fifteen kilometers up river from its confluence with the Stueng Pongrul (see Box 2.3). Moving upstream, the first five kilometers are dominated by the on-going effects of tidal change and saline intrusion, with many of the species present being salt-tolerant (e.g., *Chek*). On its eastern-side, the river shares the same flooded malecula forest as the Stueng Pongrul, with the equivalent natural resource and livelihood values. On the western-side of the river smaller patches of flooded forest exist alongside large areas of rice paddy (June – November) and chamkar gardens. These rice paddies are replicated above the inundated forest on the eastern side of the river and share the same growing season. Other natural resources found in this zone include the tree *Chek*, which resembles a low hung palm with wide fronds. These fronds are cut and used for thatch, while the palm also yields a fruit that is cooked and eaten in desserts. Interspersing the palms are coconut trees, which occur all the way up the river, supplying nuts that are used for food and trade. In the river, villagers report capturing prawn, crabs and 'stone crab'¹⁷, as well as numerous fish, including *Trey Ros* (snake-head) and turtles. NTFPs collected include comprise various fruits and vegetables, including *prang*¹⁸, *knah*, *mdeng*¹⁹ (collected all season), and mango, jack-fruit, and guava (collected March to June). The main settlement in this area is the village of Preah Angk Keo, which is stretched out along the river and comprises 60-odd families.

The next section of the Prek Kampong Saom zone covers the area from below the settlement of Trapeang Raing up to the village of Krang Chak (a distance of seven kilometers). In this area a flat landscape punctuated by flooded forest gradually gives way to river banks covered in dense re-generating forest, behind which are found combinations of open fields and rice paddies, and

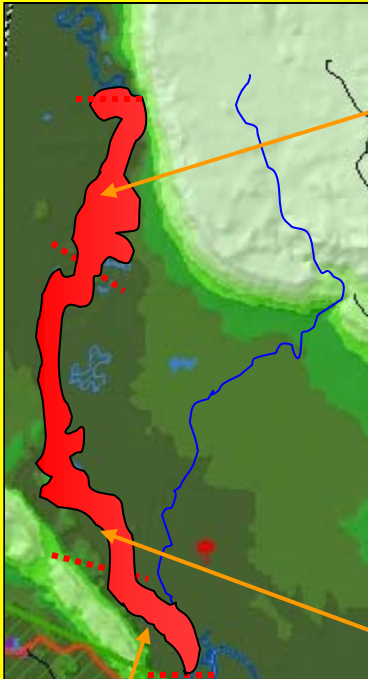
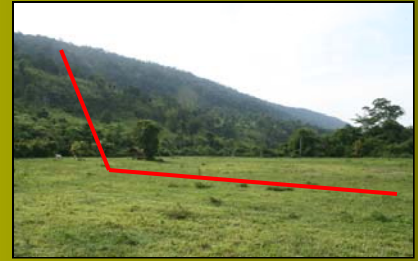
¹⁶ In cases where water has had a long retention time in the late then it would be best to take it from higher up the siphon column; in cases of lower retention time operators could remove water from a lower depth.

¹⁷ Stone crab (Khmer: *Kdam Thmor*) are a large green crab highly praised by Cambodians for their quality and taste, and are consequently very expensive, especially when harvested from a wild state (up to \$6 USD per kilogram).

¹⁸ A wild vegetable that is commonly eaten with prohok (fermented fish paste).

¹⁹ A root specie resembling ginger; it is very hot to eat.

Box 2.3: Prek Kampong Saom Environment Zone Environment Impact Assessment Summary



In the upper reaches of the Prek Kampong Saom zone large portions of the river banks are forested, creating valuable sites for NTFP collection and wood harvesting. The banks are likely to be important fish spawning sites. Some settlements, rice paddies and chamkars abut the river. Impacts - effects of discharges from proposed tail race and diversion facilities including flooding, river bank erosion and the loss of land to support construction of infrastructure. Public safety issues, especially for people living near the river or harvesting aquatic resources.

Children harvesting shell-fish near proposed tail race discharge point (above, far left); fishers on the river (above, center); site of the diversion race pipe-line (above, right [red]).



On the east bank of the river lays malecula flooded forest; further upstream, settlements and farms. On the west bank, less flooded forest and more permanent settlement (including village of Preah Ang Keo, [photo below]). River, flooded forest and riparian margins are important sources of food and household materials including fish, crabs and NTFPs and grazing for livestock in commons areas. Direct impacts from project will be limited. Will experience indirect impacts, including increased pressure on commons resources and price inflation.



Villagers living along the middle reaches of the Prek Kampong Saom zone pursue livelihoods based on rice and chamkar cultivation, fishing and the collection of NTFPs. The river and its riparian environment are vital in these activities, supplying water, fish and other aquatic resources (instream) and roots, wild fruit and vegetables (along the banks). Residents claim land ownership but few have legal title. The project will have limited direct effect on this area. Public safety issues, pressure to privatize commons areas and associated loss of NTFP and grazing sites are matters of concern.

Children on river bank (left, above); typical farming landscape in the river's middle area (above); 'going to school', river transport is important use of the river (below).



disturbed evergreen and deciduous forest. In some places, however, the forest has been totally cleared and open grassy areas and paddies dominate. These vegetation changes are due to a combination of human disturbance and the reduced effects of tidal change in the river, which allows less-saline tolerant species to thrive. A range of different NTFPs are collected here including *koy*, *pniew*, and *sey moan*²⁰ (March – May) and *samrong* (February – April). Honey and mushrooms, meanwhile, are collected in the remnant flooded forest areas. Large patches of chamkar agriculture are undertaken in this area. Species grown replicate those found in the Stueng Pongrul zone with some additions. These include *trosach srov* (a gourd species used in desserts), *trolach* (another gourd specie used in soups, the making of a jam and processing into a sweet), *nor nong* (used in soups), taro and cassava (November – December). Cashew nuts are also grown in the local chamkars (March – June). In the river fish (catfish and snake head), shell-fish, crab, prawns and turtles are harvested. The largest single settlement in this area is Trapeang Raing which, like Preah Angk Keo, is stretched out along the river, and contains 55 families.

The final area includes the reach of the Prek Kampong Saom between Krang Chek and Bothor villages. Here the river moves steadily eastward, to a point where it abuts the massif on the east side of the valley, just below Bothor. Along this reach a similar pattern of rice farming and chamkar agriculture is observed, although there is progressively more forest in proportion to cultivated land as one moves upstream from Krang Chek. NTFPs collected in addition to those already described include medicinal plants, rattan, firewood, *liana* (used as a tying material). Supplementary chamkar species include lemons, peanuts (February – May), yams, beans, egg-plant, *tek doh kor*, pineapples, custard apple and *arum*. Freshwater clams and eels are also taken from the river in addition to the species already mentioned.

Overall, the Prek Kampong Saom zone appears to be more fertile than the others in the study area. The number of rice fields and the variety of chamkar species being one reflection; while families living alongside the river also have access to riverine resources, including various plants and fish. Like households in the other zones, villagers here formerly relied on open access to these resources to supplement their home-grown food and as a safety-net in times when domestic production failed or was depleted. Many villagers report producing a seasonal surplus, which they use to sell and trade for other goods either locally or in Sre Ambel. Access to commons grazing areas is also recognized as an important feature. It is unclear how much villagers use water from the river for domestic and agricultural purposes; certainly it is used for bathing and clothes washing, as well as by animals for drinking. For other needs villagers appear to rely on shallow wells, the majority of which should be hydraulically connected to the river. The river also provides year-round transportation, giving a market link to Sre Ambel.

A similar institutional environment exists in this zone as for the Stueng Pongrul, with the nature of human activities moderated by a belief in local spirits. It is notable, meanwhile, that villagers refer to there being no explosive or electric fishing in the zone, two activities that have been a focus of public education. It appears, also, that a number of ‘outsiders’, most notably from Sre Ambel, come to the area to fish. One fisher we interviewed informed us that he usually spent five days in seven fishing in the river with his two man crew. Finally, villagers report that a large amount of land on the western-side of the Prek Kampong Saom River was claimed by the Koh Kong Sugar Industry Company in mid-2006, supposedly under an economic land concession arrangement with the RGC. Several people we interviewed claimed this had caused them to lose valuable rice paddies and grazing areas. This is a significant development as it means any increase in livelihood vulnerability caused by the dam project will accentuate the pressures already caused by these recent losses.

²⁰ Sour tasting fruit that favors damp conditions.

b. Anticipated Environmental Impacts

The Prek Kampong Saom zone will be the recipient of the respective discharge infrastructures for the diversion (Bothor) and tail race (Krang Chek). The proposed generating facilities will also be located in this zone. The Prek Kampong Saom River, meanwhile, will be the receiving and assimilative environment for water discharged from these respective structures.

(i) Water Quantity & Quality

The Prek Kampong Saom will experience a gain of water in its upstream reaches, although overall this will not represent a net overall increase as this water would have normally entered the river downstream at the Stueng Pongrul confluence. During construction the river will receive the full diverted flow of the Stueng Pongrul. This will end once the filling of the reservoir is commenced. The chief environment concern here is whether the diverted flow will cause flooding in the Prek Kampong Saom? This is unlikely to be an issue in the dry season but may be a problem during the wet season (June – November). Overall, however, it is anticipated that the diversion inflows will be *unlikely* to cause flooding unless there is a major rainfall event in the catchment. If this does occur then flooding in the Prek Kampong Saom would be occurring anyway, with the diversion exacerbated the overall scale of the flood event in the mid-reaches of the catchment. In terms of flow variation and the potential dangers to public safety, the diversion is likely to be a stable and constant flow. This will occur because the diversion is intended to maintain the Stueng Pongrul in a constantly de-watered state. Villagers will therefore be able to adjust their lives to the new flow equilibriums in the river with a high degree of certainty. The quality of this water, meanwhile, is likely to remain high as it will be coming directly from the upper catchment and will not be subject to retention.

The discharge from the power station facility is potentially more problematic in terms of environmental impacts. The release of water will fluctuate with the generating needs of the power station, while the quality of the water will be dependant on such variables as retention time and the depth in the lake from where the water is drawn. As a receiving environment, however, the Prek Kampong Saom has two features that should ameliorate some of the anticipated impacts of this discharge. Firstly, it already carries a significant flow of water. This rate of flow raises its assimilative capacity, meaning that the water quality issues of concern in the Stueng Pongrul zone will be of reduced magnitude. A worst case scenario will be a deteriorating of water quality within the 0.25 kilometer zone below and 0.20 kilometers above the discharge point²¹. Such areas are technically termed ‘mixing zones’ and are defined as areas where contaminants from one source mix with the non-contaminated environment of another.

The boundaries of a mixing zone are determined to be between the points where contaminated water becomes completely assimilated into its receiving environment. This means that the size of mixing zones is a function of the length and volume of water in the receiving environment and the degree of contamination in the discharge. In a river such as the Prek Kampong Saom the size of the mixing zone will therefore vary between the wet and dry season; therefore, assuming the degree of contamination as a constant the size of the mixing zone should be smaller in the wet season (when volumes of natural water in the river are higher) and larger in the dry season. The 0.5 kilometer figure suggested here is recommended as the size of the mixing zone at the height of the dry season and is based on a visual assessment of the river at the intended discharge point. Within the prescribed mixing zone it is anticipated that its food supply and NTFP values will

²¹ The contamination of the area *above* the discharge will be caused by the tidal movement of water upstream.

deteriorate markedly, and the water will become unsuitable for domestic and agricultural uses, including stock drinking.

The other water quantity consideration is the issue of periodic flooding caused by the discharge. Again, as for the diversion, the risk of flooding will primarily arise in the wet season when additions from the tail race will accentuate existing high flow levels. However, because the Prek Kampong Saom is a wide river with significant riparian water storage areas and a human population accustomed to inundation, the physical and human environment has the capacity to assimilate excess volumes of water. Any flooding concerns are therefore likely to be localized and probably limited to a 1 kilometer area above the river and a zone 2 kilometers below, and restricted to low lying areas.

The discharge itself will, meanwhile, pose a public safety issue; especially if it is subject to random variation which makes it harder for people to anticipate (this is a feature in the *Se San* and has contributed too many of the deaths caused by the release of this water from the Yali dam). During recent fieldwork it was observed that a number of households send their children to the Prek Kampong Saom to gather shell-fish from the muddy river bed. This activity places the children at considerable risk in the case of a sudden release of water from the tail race.

(ii) Riverine Environment

The main instream morphological concern in this zone is erosion of the river banks around the discharge area and the mobilization of sediment from its bed. The scale of the first impact is dependant on the characteristics of the discharge infrastructure, but a large volume of water hitting the river will be anticipated to cause the rapid erosion of the adjacent banks. This will cause the loss of land and housing located in these areas, incurring a significant livelihood impact on community's dependant on these areas (including those who collect NTFPs from these locales).

The inflow of water will also disturb sediments located on the bed of the river, increasing the overall turbidity, especially in the dry season when the water is much clearer than between May and November. Species living in the river that are reliant on these clear conditions for feeding and reproduction will see their life cycles disruptive with an expectant decline in their numbers²². A number of local villagers, meanwhile, sight-fish in the river over the course of the dry season, using spear-guns. The ability to do this will be removed in the areas that are made turbid by the operation of the discharge. Overall, as for the issues discussed above, these impacts are likely to be localized and limited to zones 1 kilometer below and 0.5 kilometers above the river.

(iii) Transport

Insufficient information exists to gauge how the discharge will affect boat passage up and down the Prek Kampong Saom. If the discharge does release a large amount of water directly into the river, however, it will make boat passage difficult and potentially dangerous for those travelling past the station. This is especially so if sudden releases of water are permitted to occur with no prior warning.

²² A number of species, for example, have certain biological (olfactory) cues triggered by changes in sediment levels, including migratory movements and reproduction.

(iii) Land Loss

The building of the power station, road access to the construction site and the housing of the construction work force and station operators, will require the acquisition of local land. Experience from the large capital investments elsewhere in Cambodia show that the areas acquired to accommodate this need are often large and strenuously policed (OHCHR, 2007). It is clear from the feasibility study, meanwhile, that the developers consider the land alongside the river to be state land and available to them under the terms of their contract with the RGC. This will result in an obvious adverse impact on villagers as they are dispossessed of their lands and the livelihoods that they derive from them. It will also incur a significant adverse impact on the wider community who rely on access to these areas for the collection of NTFPs and the grazing of their livestock. This situation will further the pressures local communities are facing from the recent loss of land to the Koh Kong Sugar Industry Company on the western side of the Prek Kampong Saom. Unfortunately, the absence of any formal land registration for the bulk of the householders mean they are vulnerable to questions over their ownership rights to land in the zone.

c. Management of Environmental Effects

To manage the adverse environmental zones the following recommendations are suggested:

- A compensation system be established for villagers whose livelihoods are threatened by periodic flood events caused by the operation of the power facility. This compensation should take the form of goods (e.g., land and fish ponds) that allow them to maintain their livelihood security. A means for compensating the wide community for loss of NTFPs should also be negotiated.
- A warning system replicating that described for the Stueng Pongrul zone should be developed for the Prek Kampong Saom zone. This should include a time delay between the sounding of the alarm and the actual discharge. The alarm will only need to be used when an increase in the amount of water discharged from the tail race is programmed to occur.
- Working with the local community, a compensation package for the values lost in the mixing zone of the power station discharge area should be calculated and applied. This should be inclusive of the loss of instream values, such as fish and shell fish, and riparian values such as uses of water for domestic and agricultural purposes and the collection of NTFPs. Where possible a compensation strategy based on a like-for-like process or more comprehensive livelihood support strategy (see Box 2.2) should be followed where, for example, the loss of water for domestic and agricultural purposes is compensated by the supply of clean drinking water (e.g., wells).
- Erosion and turbidity problems can be addressed through engineering features at the point of discharge. This includes designing features such as baffles to reduce the speed that water hits the river and concrete aprons to stabilize the bed of the waterway. Erosion control could also be promoted through the planting of deep rooted riparian species such as mangroves and *chek* along the river banks, which can anchor these areas and reduce the force of water.

- Villagers should seek like-for-like compensation for land taken by the scheme's developers. To accomplish this it is crucial that they improve their negotiating position by obtaining legal registration of their properties with the Ministry of Land Management, Urban Planning and Construction. Without such official documentation they will be legally powerless to make a case for their right to compensation. Villagers should also bring to the developer's attention the importance of public access to certain areas for NTFPs and for their animals, using evidence provided in this study to support their claims. In some cases they may be able to maintain continued access, while in other cases a comprehensive compensation strategy may be required.

2.2.3 Phnom Toub Cheang Environment Zone

a. Natural Resources and Livelihood Descriptions

This environment zone is the least modified by humans and features the 3,046 hectare Phnom Toub Cheang Community Forest and the upper portions of the Stueng Pongrul (see Box 2.4). In spite of its forested appearance, a closer examination of the forest across the massif indicates that it has been heavily modified by logging; as a consequence the remaining forest has limited appeal to commercial loggers. What it does provide, however, is the equivalent of a super-market in terms of NTFPs and wood for local communities. NTFPs collected in the zone repeat some of these already described for the previous two zones; what is different, however, is the density of these products, which is described by villagers as higher than elsewhere in the study area. Notable NTFPs collected by villagers include rattan, bamboo, *koy*, a variety of herbal and medicinal these products, which is described by villagers as higher than elsewhere in the study area. Notable NTFPs collected by villagers include rattan, bamboo, *koy*, a variety of herbal and medicinal plants, *pniew*, *samrong*, resin and honey. Wood taken for construction includes *keteal* commercial loggers. What it does provide, however, is the equivalent of a super-market in terms of NTFPs and wood for local communities. NTFPs collected in the zone repeat some of these already described for the previous two zones; what is different, however, is the density of these products, which is described by villagers as being higher than elsewhere in the study area. Notable NTFPs collected by villagers include rattan, bamboo, *koy*, a variety of herbal and medicinal plants, *pniew*, *samrong*, resin and honey. Wood taken for construction includes *keteal* (tall tree), *sortor* (high economic value timber specie) and *koki ksach*. Another wood, cressna, is also taken but is now very rare. Fish are caught by some villagers from the upper reaches of the Stueng Pongrul.

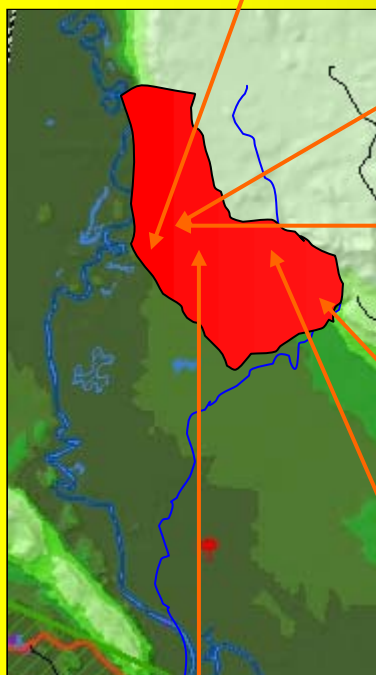
Beside the supply of NTFPs and wood the environment zone provides a number of key ecological services, which are influential on the well-being of communities living in the study area. One of the most significant of these is the supply of watershed services, including moderating the run-off of water from the massif and providing vegetative cover against soil erosion. The latter contribution is especially important as the steep nature of the massif's slopes and its shallow soils make it susceptible to erosion. The forest itself also plays a significant part in the life cycle of several species important to local communities including bees, which spend a large portion of their time living in the forests of the massif.

This zone has arguably the strongest institutional arrangement in the study area, in the form of the by-laws, rules and regulations, map and management plan developed for the community forest (Phnom Toub Cheang). Although these have not been approved (see *supra* 4), villager activities in the forest, sanctioned by strong social norms and rules, are most often undertaken in

Box 2.4: Phnom Toub Cheang Environment Zone Environment Impact Assessment Summary



Edges of the forest, eastern slope of massif, Phnom Toub Cheang Community Forest (far left); evergreen undergrowth on eastern slopes (left); buttress roots and seedlings, eastern slope (below).



The eastern slope of the Phnom Toub Cheang zone provides an array of ecological services to the people living in the Valley including homes for beneficial insects such as bees and supporting a variety of NTFPs. The moist evergreen forest provides important watershed services. Diversion and tail races, a quarry and an access road will be constructed in this area. Impacts will include the removal of forest (community commons and NTFP gathering sites), exposure of soils to the effects of water erosion, disruption of water run-off from the massif, opening of forest to evasive species and degradation of commons by over-exploitation.



Villagers collect a variety of NTFPs from the top of the massif, including rattan, honey and various roots, barks and fungi for medicinal and cooking purposes. Part of the massif, such as *Veal Keb Khmoach*, has important intrinsic values. The dam, reservoir, a further two quarries, two tunnels, access roads and a workers camp and project warehouse will be within this area. Impacts – dewatering of Stueng Pongrul; flooding of Pongrul Valley which will eliminate forest and human values (e.g., NTFPs); adverse impacts of sewage and sediment on Pongrul basin, and human pressure on forest commons.

Community forest members, near top of the massif (above, far left); community forest signage (center); community forest, near Pongrul Waterfall (above, right).

compliance with them. A challenge, however, is posed by ‘outsiders’ who come to the area (e.g., from Sre Ambel) and who are either unaware or chose to ignore these social regulations. Managing such non-compliance has proved problematic for community forest members and, at times, life threatening (see Sokunthea *et al.*, 2004). There are presently no permanent inhabitants living in this environment zone, although groups (such as those harvesting rattan) periodically spend a week or more camping in the area. This could give the impression that the area is unimportant to the local communities; however, as the above discussion testifies, this is far from reality with the forest providing not only supplements to domestic production (including a bulwark against crop failure) but also a range of products (e.g., medicinal plants) not found elsewhere in the study area.

b. Anticipated Environmental Impacts

The Phnom Toub Chang zone will contain the dam and reservoir, tunnel and pipe structures for the diversion and tail race, three quarries and their access roads, and a portion of the scheme’s power transmission lines. Three major areas of impact are anticipated, each of which is described and discussed below.

(i) Impact on the ‘Commons’

The Phnom Toub Cheang Community Forest and its surrounds are state land but are managed by the local communities as ‘commons’ landscapes. This means they are treated as available for use by everyone subject to a system of locally-based rules, both legal (the community forest rules and regulations) and *de facto* (e.g., traditional user rights). In turn, access to the forest yields a range of NTFPs and wood products, the quality and quantity of which will be significantly disrupted by the development of the Kirirom III scheme. The construction and filling of the project’s reservoir, for example, will result in the direct inundation of NTFP and wood gathering sites in the upper Stueng Pongrul valley. This includes a portion that exists within the present boundaries of the community forest (see Figure 1.2).

Three quarries, two below the dam site in the Stueng Pongrul Valley and the other on the face of the eastern massif will also result in the loss of access to NTFPs and wood presently gathered from these areas (including several prime samrong growing areas). Evidence further down the Prek Kampong Saom valley, at the site of the old Samling depot, shows that such quarry areas, devoid of soil and vegetation, leave a visual scar on the hill side that cannot be re-colonized by forest. What this means is that when construction is ended villagers will be left with a ‘commons’ that has lost some of its value and the visual sore of the disused quarry. As many villagers appear to take pride in their efforts to manage this landscape and have put considerable amount of their scarce time into promoting its sustained use, the psychological effect of this impact on community prestige and morale should not be underrated.

Infrastructure development associated with the diversion and tail race will also cause deterioration in the condition of the forest commons, especially on the slopes of the eastern massif where the pipes for both facilities will run down towards the Prek Kampong Saom. It has been reported that a 100 m space will be cut in the forest to hold these structures. As for the quarry, this will cause the loss of NTFPs and wood resources, and expose these cleared areas to soil erosion.

It is unknown what security requirements the company will introduce around the dam and reservoir. As noted previously, the company considers the forest to be state land and a landscape

that is not used by local communities. It is highly probable, therefore, that strict security arrangements will be put in place that result in villagers being denied access to portions of the forest that they presently use. This includes areas around the tail race and diversion pipelines, the reservoir and dam, and the three quarries. If this transpires it will result in the exclusion from natural resources important to local livelihoods of which the community has made a considerable effort to manage sustainably.

A potential positive consequence of the reservoir for villagers is the creation of a lake fishery. Whether this transpires as a benefit will depend on water quality issues in the reservoir itself and authority being granted for physical access. Consideration must also be given to the condition of fish that grow in this new environment, including potential problems of bio-toxicity. In the environment, for example, mercury is naturally present as a harmless inorganic compound in many soils. Bacteria feeding on the decomposing matter in a newly filled reservoir transform this mercury into *methylmercury*, a central nervous system toxin. This compound is absorbed by plankton, accumulating in increasing concentrations as it passes on up through the food chain. The end result of this can be levels of *methylmercury* in large fish that are dangerous to human health. The potential extent of this problem in the proposed reservoir site is difficult to establish; however, as the problem of *methylmercury* poisoning has been observed in neighboring Thailand it can be anticipated to be matter of concern with potential high impacts.

Another ‘commons’ issue will be the impact that in-migrants arriving to work on the project have on the environment. Experience suggests that the new arrivals could have a significant adverse effect on the forest if they are able to enter it at will; this will be especially so if they come to the area with their families, whose non-working members will have more time to enter and exploit the local commons. Overseas experience also shows that in-migrants usually have lower regard for local resource rules and regulations, including those based on spiritual/traditional beliefs; as a result their impacts are often substantial (e.g., over exploitation of NTFPs). Up to 400 people are expected to work on the project; with families, this would represent a massive increase in people living in the study area and seeking to exploit the community commons.

(ii) Impacts on Ecological Services

The construction and operation of the Kirirom III dam and reservoir will remove many of the ecological services supplied by the portions of the Stueng Pongrul above the Pongrul Waterfall. This includes the use of these areas by animals and insects important to nearby communities (e.g., bees) and watershed services (e.g., the supply of freshwater to downstream villagers). The proposed quarries and tail race and diversion pipe structures will, meanwhile, disrupt the watershed services that the slopes of the eastern massif supply to the communities living below. This includes the supply of water for domestic and agricultural uses. Another impact of these works will be the erosion of soil and rock from the massif’s slope. These slopes are very susceptible to erosion due to the shallow nature of their soils, the amount of rainfall received in the region and the reliance on plant roots and cover to hold them in place. Any areas cleared of vegetation will quickly erode, creating the risk of landslides down into the valley below, the clogging of streams with debris, the contamination of local water supplies that draw on these waterways at the foot of the massif, and general damage to the wider forest system. Such erosion will also be potentially worrying to the company in terms of the safety of its infrastructure.

The quarries, pipe structures and access roads will also cause the physical fragmentation of the existing forest system on the massif. This will increase the opportunities for evasive species, such as ‘wire grass’, to enter the environment and compete with the existing forest species. The entry

of these species will broaden the decline in the health of the forest, jeopardizing further the contribution it makes to local livelihoods.

(iii) Economic Opportunities

Members of the Community Forest Committee have indicated an interest in the development of eco-tourism opportunities in the Phnom Toub Cheang area. With its accessibility to Phnom Penh, the recently up-graded Route 48 and the ‘feel’ of an authentic forest experience the area does have good potential for such an endeavor. However, much of what is proposed for the Kirirom III project – access roads, quarries, pipelines, cessation of flows over the Pongrul Waterfall – will reduce the attraction of the area to eco-tourists. Similarly, the noise, dust and mud that accompany the movement of people and materials around the construction sites and the undertaking of construction itself will further reduce the area’s appeal. As a consequence it is anticipated that the study area will lose the option value of eco-tourism, depriving villagers of a means to improve and diversify their livelihoods.

c. Management of Environmental Effects

To manage the adverse environmental effects in the zone the following recommendations are suggested:

- Working with the RGC and the company and its consultants, the community forest committee seek boundary changes to the community forest area to include new areas as compensation for those lost or degraded by the project’s construction (i.e., ‘commons-for-commons’). This would include new commons areas to replace those lost to the reservoir and the two pipelines, and damage caused by the construction of an access road and quarry on the slopes of the eastern massif.
- Authorization be given to community members to access and fish the proposed reservoir. Discussions need to occur with the affected communities to assess whether this will provide suitable compensation (partial or full) for the adverse impacts of the scheme on the fisheries in the Stueng Pongrul and Prek Kampong Saom. Issues of distance to the lake fishery and the disparities in effort required to fish the reservoir may mean that such a right is only partially suitable or not at all as compensation.
- To address the risk of methylmercury toxicity there would need to be a toxicity monitoring program in place to gauge the accumulation of this compound in fish from the lake. This would need to occur up to ten years after the filling of the reservoir to cater for the stabilization of its aquatic environment.
- The company is approached to re-consider the site of the proposed quarry on the hill slope, moving it to an area away from the side of the massif or towards its foot; thereby reducing the overall impact on the visual landscape and the environment below the quarry. The company should also be requested to reduce the size of the pipeline cutting (diversion and tail race) to a width of 40 meters. To support this request it could be made clear to the company how retaining as much vegetation on the massif’s slope as possible reduces the likelihood of erosion and the subsequent threat to their infrastructure, including the pipelines themselves.

- Dialogue between the company, its consultants, government agencies, the local commune council and the community forest committee needs to be established to raise awareness and understanding. The company, for their part, need to be made aware of the importance of the forest commons to local livelihoods and the efforts that the villagers have made to sustainably manage these areas. Iterating how the community's management of the massif forest can help protect the environment in which their infrastructure is located could be a powerful point. From here, a case could be made that by ensuring the integrity of community access and the management of the Phnom Toub Cheang forest, The company's investment is protected from the adverse environmental changes that would arise in the alternative situation of unfettered exploitation.
- As part of the previous point, the community forest committee should work with the scheme's proponents (the company, their consultants and government agencies) to draft rules and procedures for minimizing the impact of in-migrants on the community commons (any rules developed through this process would need to be enforceable). It could involve, for example, clauses in worker's contracts that place restrictions on access to the nearby forest. Simultaneously, an awareness raising program would need to be undertaken to highlight any conditions imposed by the company and the reasons for its imposition.

One important consideration in regards to the first two bullets is the matter of access and equity. Neither the additional proposed commons area nor the reservoir would be as accessible as the common resource areas they are suggested to replace. Further, there may also be gender disparities that result in women or men incurring an unequal portion of the cost of accessing these 'new' commons area (e.g., walking distances). Considerations of the consequences of the accessibility need to be discussed with villagers.

2.2.4 Low-lying Flat Land Environment Zone

a. Natural Resources and Livelihood Descriptions

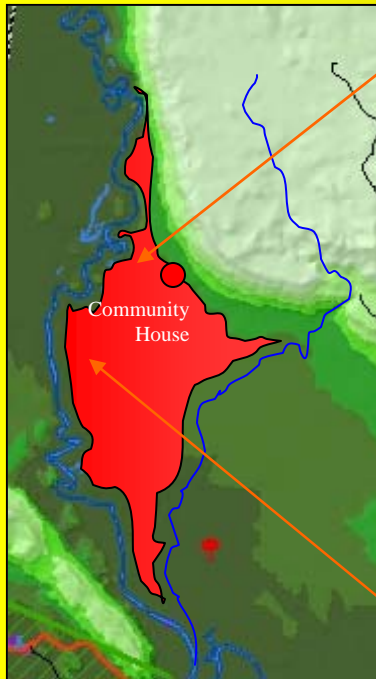
This zone receives a range of benefits from being placed between two contrasting natural resource systems, one aquatic (Prek Kampong Saom) the other terrestrial (the massif forest) (see Box 2.5). Along with the Prek Kampong Saom zone, this is also the most densely populated of those within the study area, although like the study area as a whole the overall level of human habitation has traditionally been low (see WCS, 2007).

Much of this zone comprises infertile river alluvium soils; however in pockets are a richer 'dark' soil that is desired sites for chamkar agriculture. This activity is at it most intense in the soils near the settlements of Krang Chek, Bak Ang Rut and Bothor and along the old Samling Road that abuts the eastern massif. Crops grown in these chamkars repeat those already described for the middle reaches of Prek Kampong Saom zone. An important acknowledgment made by villagers is that land has become scarcer in the zone, which has reduced the opportunity for rotating swidden agriculture; now, increasing effort is being made to maintain permanent gardens rather than ones that sit within a rotating cycle of use and non-use. A decline in the availability of land was described as being behind this trend. Rice is grown within chamkars and in flooded paddies. Several informants indicated, meanwhile, that they had lost access to their traditional rice fields following the arrival and claiming of land by the Koh Kong Sugar Industry Company.

Box 2.5: Flat Lands Environment Zone Environment Impact Assessment Summary



Chamkars located near Krang Chek (left and right) are important sites for food growing. Crops include sugar cane, rice, corn, chilies, beans, pumpkins, gourds, water melons, cassava and potatoes. Most production is for household consumption; surpluses are typically sold to relatives and neighbors or set aside for ceremonial purposes.



The flatlands are the largest of the zones in the study area. They comprise large portions of 'privately' owned land (although most households do not have legal title) as well as important commons areas, where NTFPs are collected and stock allowed to freely graze. Main livelihood activities are rice growing, chamkar farming (above) and livestock rearing. Villagers search for NTFPs and aquatic resources when not engaged in farming activities. Strong social capital has helped to facilitate household involvement in collective activities including community forestry (see right). Impacts – the construction of access roads, land and commons lost to buildings and pipe-line developments, inflation, and degrading of commons. Likely to be most affected zone by immigration, including pressure on common resource areas and health issues.



Community forest members cooking lunch during field study, community house, April 2008 (above).



Commons areas are an important natural resource aspect of the entire study area. Small lakes such as Trapeang Peab are one example of a key commons area; here animals can freely graze, fish caught, fire wood gathered and a variety of wild fruit, vegetables and small animals collected (even spiders). Resident spirits *Neck-Ta* provide over-sight over human conduct and are revered. Use is made of these areas by 'outsiders' as well, highlighting their importance to the wider district. The development of the Kirirom III project raises the issue of displaced degradation, which occurs as people lose access rights to commons sites, or the condition of these sites deteriorates, and they are forced to over-exploit those areas that remain.



Trapeang Peab and grazing water buffalo (left); fish caught from Trapeang Peab for sale in Sre Ambel market (above, right); NTFP- spider (below, right).



NTFPs are also collected within the zone, although most of this is likely to involve traveling to the other zones already described. An exemption is the gathering of products from several trapeangs. These include the lakes of Prang, Tek Pra, Bak Khnong and Peab. The latter, Trapeang Peab, is the largest in the zone and the uses of it mirrors that of the other small lakes, with households collecting NTFPs (mushrooms, herbs and honey), firewood, and fish. The latter is especially important when, in the late dry season - probably because the trapeang is at shallowest - up to a hundred families, (many from Sre Ambel) come and camp around the lake to fish for a week or more. The trapeang is said to have a plentiful supply of fish with ten different eating species, including cat fish and *tray ros*. Traps, set and cast nets, and hand lines are used to catch fish in the lake. One informant, Mr Soy Vuy, indicated that his household regularly accumulated a fish surplus of two – three kilograms every three or so days. At a cost of 8,000 to 10,000 R per kilogram this amounts to a significant income addition for his family. The trapeangs are also very important ‘commons’ grazing areas for water buffalo, which favor the lake environment as a place to eat and wallow; further, these environments usually have available grazing vegetation in the dry season when many of the alternative food supplies have disappeared.

Many of the households living in this zone produce a production surplus. The extra rice and produce is firstly sold or traded with relatives and neighbors, a system of exchange that has helped to build and reinforce social capital in the zone. Villagers also report a stronger system of community-level institutions governing local resource practices. People caught illegally fishing, for example, are routinely ‘arrested’ and sent on to the commune council for punishment. Villagers also report a system of local agreements that help to control the use of NTFPs and fish. As elsewhere in the study area ‘spiritual institutions’ in the form of Neck-Ta beliefs also provide a degree of control over human resource conduct. Trapeang Peab, for example, is said to have a very strong Neck-Ta spirit, which oversees human activities over much of the study area –not just the trapeang. A three yearly ceremony is held by villagers to honor the Trapeang Peab Neck-Ta, with various offering being made to appease this deity (see Box 1.1).

In terms of more formal institutional arrangements it appears that while many inhabitants feel they do have legal rights over the land on which their homes and farms are located, few if any have received legal title. A recent effort by community leaders to seek the expansion of village lands through requests to the Ministry of Land Management, Urban Planning and Construction suggests that villagers can make legal claims on some of the land in the zone. However, any settled areas that do not fall into the current description of village lands will be state land which, at present, is vulnerable to claims by land concessionaires. The recent loss of access for village families to portions of land on the western side of the Prek Kampong Saom is indicative of this process at work. Pressures on the rights to land on the eastern side of the valley is anticipated to increase significantly with the development of Kirirom III, encouraged by improvements in access, in-migration, and perceived economic opportunities and speculation.

Overall, the inhabitants of this zone appear comparatively well-off in terms of typical rural Cambodia conditions. Access to a number of commons areas, including trapeangs, rivers and the nearby forest helps to provide a safety-net in times of shortage. Pockets of rich soil also provide a range of crops, the surplus of which can be exchanged or sold. Many families also have one to two draft animals, an important ingredient in rural advancement. At present, a decline in open areas and the associated reduction in ‘surplus’ land; health matters; lack of certain infrastructure facilities (e.g., high school, health post) and guaranteed land title appear the major livelihood challenges.

d. Anticipated Environmental Impacts

Of the environment zones the flat areas between the massif and the Prek Kampong Saom will eventually contain various infrastructure associated with the Kirirom III scheme. It will feature the work camp for crews working on the power station, the pipes from the diversion and tail races and the access roads to these sites. Nonetheless, this zone will experience a range of environmental effects that will pose issues for the self-reliance and vulnerability of households living or using natural resources from this zone.

(i) Decline of the Commons

Like the Phnom Toub Cheang, the flat land zone contains a number of important commons. These include places where stock are allowed to freely graze and where NTFPs are gathered (e.g., Trapeang Peab). Although there will be little direct infrastructure development within these areas the influx of workers and those seeking economic opportunities will place increased pressure on the exploitation of these commons areas. Further, there is the risk that powerful parties may seek to buy specific commons and privatize their natural resources.

(ii) Land Loss

As previously discuss, the company perceive that much of the land in the project area is ‘state property’ and available for them to appropriate. The only need for compensation they have alluded to is for land taken for the construction of a transmission line. Thus while compensation can be anticipated for losses for this line infrastructure, there is no indication that the company envisages compensating for the land acquired for its access roads, workers camp or the two pipe lines. Fieldwork undertaken in April 2008 indicated that people live, farm or access commons resources from sites where both the pipes lines and the power station are envisaged.

(iii) Public Health and Safety

The proposed influx of a 200-strong work-force to construct the power station and associated facilities will represent a major demographic change in the valley. It is unknown what provisions will be put in place by the company to manage for the effects of this influx. A key concern here is the provisions that will be made for sewage and grey-water treatment, water supply and food. If sewage is allowed to simply run into the river or nearby trapeangs, for example, it will create a major public health issue and have a detrimental impact on the uses of common areas (e.g., the collection of NTFPs). The valley is also a place where adults and children have grown use to certain patterns and rhythms that will change as construction gets underway. There will, for example, be a lot more vehicles and people to contend with than in the past. This will give rise to a range of safety issues, including the risk that large trunks and earth moving equipment pose to human safety.

There are a range of other impacts that can be anticipated to occur in this zone that will also be shared with the other three areas. These are grouped together and discussed in 2.4.5.

c. Management of Environmental Effects

To manage for adverse environmental impacts in this zone the following recommendations are suggested:

- Working through the community forest committee and the commune council villagers should raise the importance of specific commons areas with the company and government authorities (information gathered in the course of this study could be used in this process). From here, villagers should seek an extension of the strategy suggested in the Phnom Toub Cheang discussion – for the control of the impact of workers on the commons - to key commons areas in the flat zone (e.g., Trapeang Peab).
- Villagers should seek like-for-like compensation for land taken by the scheme's developers. To accomplish this it is crucial that they improve their negotiating position by obtaining legal registration of their properties with the Ministry of Land Management, Urban Planning and Construction. Without such official documentation they will be legally powerless to make a case for their right to compensation.
- If possible community representatives need to be given the opportunity to review plans for the provision of services to the proposed work camp and sites so to evaluate their adequacy. This should include consideration of how waste from the camp and work sites will be treated.
- The company should be approached to work with community representatives to develop an awareness program for local inhabitants on the Kirirom III scheme and the potential dangers to people during the construction and operation phases. This would include advice on the dangers of equipment and machinery.

2.2.5 General Considerations

There are a range of environment impacts that will be shared across the four zones. The form of these effects and the means for addressing them are discussed below.

a. Anticipated Environmental Impacts

(i) Environmental Health

The physical changes caused by dams in tropical areas tend to boost the levels of mosquitoes and hence mosquito-borne diseases, including malaria, Japanese encephalitis and dengue fever (already health concerns in the Prek Kampong Saom catchment). Nutrient rich tropical reservoirs, for example, are prone to colonization by aquatic plants. Mats of floating plants provide excellent breeding areas for mosquitoes. Likewise, the removal of forests has been shown to increase biting rates of *Anophele sp.* mosquitoes, a carrier of malaria (McCully, 1996). The specie *A. gambiae* is prevalent in the Elephant Mountains and is one of the most dangerous of malaria vectors, carrying *Phasmodium falciparun*, the parasite responsible for cerebral malaria. This insect breeds prolifically in areas of still water that are open to sunlight – such as reservoirs – with its densities shown to increase dramatically in deforested and flooded areas.

Tropical reservoirs are also ideal breeding grounds for snails that transmit schistosomiasis, with researchers having attributed the spread of the disease through Asia and Africa to dam development (e.g., McCully, 1996). Schistosomiasis involves a flat-worm (*Schistomes*) that moves from snails to water and on to people, entering the blood stream via the human skin. Once here, the parasite finds its ways to the bladder and intestines where it contributes to a range of human ailments, from fatigue to cancer. In Asia, the dominate schistosomiasis strain is *S.*

Japonicum, a specie found in the lower Mekong region, which favors the infection of the human intestines. Although its presence in the Elephant Mountains is unknown, in-migrants coming to work on the project could bring the disease with them, the parasite finding its way into the local environment via human feces and urine.

It can be anticipated that the in-migrating work-force could bring a host of other diseases with them, including HIV and tuberculosis. These and other illnesses will increase in their prevalence and consequences if appropriate waste and health facilities are not developed for the construction community. The impacts of these health changes for local villagers go beyond the diseases themselves. Research undertaken elsewhere in Cambodia has shown that one of the main causes of land loss amongst rural households is indebtedness caused by the combination of ill health, medical costs and lost income (Biddulph, 2000). Any increase of disease in the study area could be expected, therefore, to push the area's more vulnerable families into this downward spiral. Overall, this means that the eco-health impacts of the Kirirom III project should not be under-rated. Along the *Se San* River, for example, villagers have previously attributed 952 deaths, between 1996 and 2005, to diseases arising from the operation of the Yali Dam and its impacts on water quality (Anon., 2000).

(ii) Natural Resource Displacement and Environmental Degradation

Experiences from the *Se San* catchment, northern Cambodia, have demonstrated how hydropower development can indirectly drive environmental degradation. In this region local people, deprived of the resources from the *Se San* River, have resorted to the over-exploitation of NTFPs and the cutting of large swiddens in the nearby forest in order to survive. The human element behind this process of displacement and degradation was neatly summarized by one *Se San* inhabitant: "*We are starving! What else can we do? If the dam was not affecting us we would not be causing nearly as much damage*" (Anon, 2000).

It is anticipated that the inhabitants of the study area will find themselves pushed into a similar pattern of natural resource exploitation, if their access to commons areas and their own lands is compromised, or the condition of these systems deteriorates. The likely outcome of this situation will be increased community vulnerability and more conflicts over natural resources.

(iii) Social Repercussions

Health and natural resource changes generate social repercussions. There are, however, a range of other social issues that require consideration. The first are the issues of equity and equality. Research has shown that the impacts of environmental change are seldom experienced equally by all community members (McCallum and Hot, 2007). Within households, for example, it is often woman who collect NTFPs and are required to collect water for household purposes; changes in the ability to undertake these tasks therefore impacts on them more than men (e.g., Ms. Tep, see Box 3.1). In the case of this assessment, for example, when the Stueng Pongrul is diverted it will be the woman living downstream who will experience a range of specific costs first, including having to spend more time and energy to gather resources lost as a result of the diversion.

Within the wider community, meanwhile, environmental impacts are felt differently by those who are comparatively wealthy and those who are not. Poorer families, for instance, often rely on access to commons area and NTFPs more than wealthier ones because they typically have less land to farm or lack the means of cultivation. Similarly, if family members become sick as a

consequence of environmental changes it is harder for the poor to meet the medical costs, pushing them into the spiral of indebtedness and poverty described previously. When considering the impact of a project it is therefore important to differentiate within and between households in order to understand the full consequences of environmental change; this is especially important when contemplating the forms of compensation and who are to be the direct recipients. Unfortunately, both women and poor families are often marginalized in such decision-making processes for a combination of social and economic reasons²³.

There are, meanwhile, social values that can never be compensated. The trapeangs, forests and rivers of Phnom Toub Cheang are the repositories of memory and keep alive traces of the past in the absence of a strong written tradition. They are perceived as an 'open book' from which villagers can read and convey local history: place names, old roads, legends and stories are attached to places and make them special to local inhabitants. For these communities bulldozing, quarrying and diverting the landscape is tantamount to defiling books and erasing history²⁴. The consequences, in turn, are the loss of traditions and the social organizations they help to sustain. When talking about development, impacts and compensation one should therefore not lose sight of the significance of these intrinsic values and how they can be sustained. In New Zealand, for example, the consideration of project impacts on intrinsic values is recognized as a necessary component of the environment impact process.

Social capital is the aspect of community relationships such as social norms and rules, reciprocity and networks that encourage collective behavior (McCallum, Hughey and Rixecker, 2007). In the study area the presence of social capital partially accounts for the support of initiatives such as the Phnom Toub Cheang Community Forest. Villagers for example, have been compelled to participate in this project, in part, because of social norms about the distribution of the benefits and costs of community participation. The influx of workers and migrants, the latter attracted by new perceived economic opportunities, will place pressure on these social capital relationships. Tensions over natural resources, the employment of some villagers by the project (making them unavailable for community activities), and the ability of new settlers to 'free-ride' and derive benefits from past community work²⁵ can be expected to cause the erosion of local social capital and the support for initiatives such as the community forest project.

(iii) Economic Change

It is anticipated that the development of the scheme will set in train a range of economic effects that need to be considered as part of the assessment process. Already, for example, land values have escalated in the wider Prek Kampong Saom Valley driven, in part, by speculation over the benefits of the scheme. There is the likelihood, firstly, that prices for goods in the study area will increase as a result of an 'inflation bubble'. This bubble will arise because the demand for human labor, food and other resources will increase within the immediate locality, driven in part by is

²³ Within Khmer society there are a range of social norms, rules and protocols that restrict the participation of women in decision-making processes (see McCallum and Chanthy, 2007). Poor families, meanwhile, can find it difficult to attend community meetings because of the economic need to work.

²⁴ I experienced aspects of this 'land as memory' theme over the course of my fieldwork for this study when, in spite of previously living and working in the area for sometime, I was exposed to new legends and stories that I had never heard before. With each story, the landscape around me took on new meanings and resonance. In short, it came alive! Places such as *Veal Kub Khmoach* (Trans: Field where the dead are buried), the Pongrul Waterfall and *Preah Ang Keo* all have stories that carry a meaning for local inhabitants that transform them into 'special places', which provide a frame for their conduct and lives.

²⁵ For example, entering the community forest and freely extract NTFPs without having incurred the social and economic expense of establishing and managing the area.

isolation, which limits the amount of goods that can come in from other places. This means that food traditionally traded between relatives and neighbors – a common practice noted during our fieldwork – will gravitate towards the markets that provide it with higher returns. To compete, locals living in the area will need to offer similar prices to secure goods, including food. This will increase, in particular, the vulnerability and indebtedness of the poor families living in the study area.

Changes in the local labor market can also be expected as a consequence of the scheme. A number of villagers will find work with the project or in associated activities (e.g., transporting goods). This will draw men away from the activities that have traditionally maintained their livelihoods, namely agriculture and fishing. Two impacts are possible: (a) when the project ends and jobs disappear it may be difficult for the redundant men to return to their old professions (their land may have been sold or it may no longer be easily cultivated)²⁶; or (b) the burden of maintaining the farm may be passed on to women and children, increasing the pressures they face. Both of these outcomes distort the employment and labor patterns in the study area, generating issues for the sustainability and well-being of local families.

c. Management of Environmental Effects

In order to compensate for the environment health impacts of the scheme, the following mitigation measures are recommended:

- The Prek Kampong Saom Valley currently lacks any sanctioned Ministry of Health (RGC) facilities, the nearest amenities being a referral hospital in Sre Ambel managed with support from CARE (Australia). The construction and operation of a health post in the Valley, located near the proposed worker's camp, is therefore recommended to fill this void and the anticipated need for additional health care in the future. A health post can provide basic health care, including the treatment of malaria and dengue, and the stabilization of sicker patients before their transport to Sre Ambel. This recommendation is one point that the company and the community could unite on, combining to lobby the RGC to establish a health post facility in the valley (requests for health facilities need to be sanctioned and approved by the Ministry of Health, Koh Kong).
- The problem of disease borne into the area by outsiders could be addressed by a request to the company for all workers on the scheme to complete a health check prior to their employment. A healthy work force is of interest to the company, so it might be willing to accommodate this request.

In order to compensate for the displacement and degradation consequences of the scheme it is essential that the existing commons areas within the study area remain open to community access, that their condition is protected and where the latter is not possible, compensation on the basis of the 'like-for-like' strategy recommended earlier is followed. This includes ensuring that the potential impacts of migrants on these areas is managed and that the provisions for the regulation of the Phnom Toub Cheang Community Forest are approved and upheld (see Management of

²⁶ Post-construction employment will likely be limited. What jobs remain will be relatively skilled professions linked to the operation and maintenance of the scheme's infrastructure. The low education levels and inexperience of most villagers will likely dissuade the operators from employing them in these areas.

Environmental Effects, Phnom Toub Cheang). If this is done the social capital that has helped to drive community participation in this initiative will be conserved.

In order to compensate for the general social repercussions of the scheme, the following recommendations are made:

- Any compensation process involving the community and the company should be inclusive of all demographic groups affected by the project, and should ensure that the voices and considerations of these members are brought to the negotiation process. Through a transparent participatory process, coordinated by ISL for example, the needs of women and the poor could be promoted in compensation decision-making.
- To protect intrinsic values the company and the Ministry of Industry, Mines and Energy need to be made aware of the significance of certain areas to the local community. From here, efforts can be made to follow-up with the company on ways to reduce impacts on certain locations. This may be as straight forward as requesting that toilet facilities not be erected in a spirit forest. It is appreciated, however, that certain intrinsic values will be damaged by the project and that this is difficult to avoid. An effort should therefore be made prior to the start of the project to record the stories, legends and history of the area (e.g., through narratives, photographs and film). These recordings should then be organised into forms that community members can use to communicate to others including local children. Certain agencies can help with this, including *Live and Learn* (Banlung) and the *Bophana Audio-Visual Center* (Phnom Penh).

Compensating for general economic changes is challenging. Economic imperatives and motivations make it difficult to alleviate price increases and the movement of individuals into alternative jobs. Efforts already being supported to maintain and improve livelihoods in the study area and attempts to seek compensation where these are impacted by the project, will help to insulate communities from some of the anticipated economic changes. Balancing this, consideration should be given to an awareness strategy that helps communities to understand the economic changes the project will bring to the valley, opportunities to alleviate pressures generated by these changes and long term labor trends under the scheme. This latter item will encourage villagers to consider strategies that accommodate their needs after construction ends. Villagers also need to be made aware of the consequences of selling their land to speculators; including livelihood impacts and the increasing difficulty of replacing the property they sell in the valley. *It is strongly recommended that this be part of the awareness raising program.* As for any change, however, there will winners and losers; ensuring ‘safety nets’ are in place for the most vulnerable households and that means for managing conflict are supported, should therefore become key planning considerations for agencies working in the Prek Kampong Saom Valley.

An overall summary of the features of the respective environment zones, the anticipated environment impacts of the Kirirom III scheme on these areas, and the means for mitigating these is presented in Table 2.1

Table 2.1: Environment Impact Assessment Summary

Environment Zones	Key Livelihood Values	Key Negative Impacts	Responses
Stueng Pongrul	<ul style="list-style-type: none"> - Harvesting of aquatic resources (e.g., fish) - Rice paddy and chamkar farming - Collection of NTFPs from riparian margins - Water for domestic use and agriculture - River provides transport route 	<ul style="list-style-type: none"> - Negative impacts on water quality & quantity affecting the state of fish, NTFP resources & water supply - Risks of flooding - Loss of flood pulses as nutrient source for low lying land areas 	<ul style="list-style-type: none"> - Maintenance of biological flow in Stueng Pongrul - Artificial flood pulses - Compensation for damage & loss of private and commons areas - Flood warning system & consultation on water releases
Prek Kampong Saom	<ul style="list-style-type: none"> - Harvesting of aquatic resources (e.g., fish) - Rice paddy and chamkar farming - Collection of NTFPs from riparian margins of river and trapeangs - River supplies water for domestic use and agriculture - River provides transport route 	<ul style="list-style-type: none"> - Degradation of water quality and ecological services around the tail race/diversion discharge points; public safety issues - Flooding - Land loss - Damage and loss of the commons - Disruption of water transport 	<ul style="list-style-type: none"> - Compensation for loss and damage to private and commons areas - Tail race discharge warning system - Engineering structure and riparian protection to alleviate problem of erosion at discharge sites
Phnom Toub Cheang Forest	<ul style="list-style-type: none"> - Key commons site in affected area - Source of wide variety of NTFPs and wood products - Livestock grazing area - Performs various important ecological services(e.g., watershed protection) 	<ul style="list-style-type: none"> - Damage and loss of forest commons & ecological services - Undermining of community forest management authority - Amelioration of eco-tourism potential as alternate benefit stream - Methylmercury poisoning of reservoir fish 	<ul style="list-style-type: none"> - Compensation for commons loss, including adjustment of community forest boundaries to include replacement areas - Authorization to fish reservoir - Monitoring of methylmercury levels in fish taken from the reservoir (up to 10 years after filling) - Shifting of quarries - Establishment of formal dialogue and information exchange process between the community and scheme proponents
Flat lands	<ul style="list-style-type: none"> - Rice paddy & chamkar - Livestock grazing - Large number of domestic dwellings - Commons contain variety of NTFPs - Trapeangs hold aquatic resources 	<ul style="list-style-type: none"> - Damage and loss of commons - Loss of private land - Public health and safety issues arising from worker influx and machinery 	<ul style="list-style-type: none"> - Compensation for private land loss - Compensation for loss and damage to commons areas - Awareness raising of villagers on impacts and dangers arising from the scheme on their day-to-day activities
General Impacts	AS ABOVE	<p>Health – Increased cases of certain diseases (e.g., malaria and HIV)</p> <p>Social – Impacts on areas of intrinsic value</p> <p>Environment – Increased pressure on remaining commons areas</p> <p>Economic – Surge in prices of goods & services</p> <ul style="list-style-type: none"> - Labor changes & long-term impacts 	<ul style="list-style-type: none"> - Construction and servicing of an official Health Post - Pre-employment medical checks on work force staff - Maintenance of community access to commons areas - Company administered controls on work force access to commons areas - Intrinsic value – awareness raising & negotiation with developers - Education of community on economic effects of the scheme

Part III

Community Rights Assessment

“Dams are the very antithesis of development for the poor because they enable the expropriation of the resources of a river valley, placing the livelihood of people who depend on rivers at the disposal of those who have the power to exploit them (Williams, 2000, p. 4-5).

3. Community Rights Assessment

3.1 An Approach

Families living in the study area anticipate positive and negative consequences from the development and operation of the Kirirom III project. Potential benefits they describe include improved road access, the availability of cheap electricity and the development of public infrastructure such as schools and health facilities. Negative impacts include concerns over the loss or damage of ‘private’ land and commons areas, public safety issues, and the overall consequences for their livelihoods and well-being. These concerns arise against wider developments in the Prek Kampong Saom Valley, which include the large-scale appropriation of private state land by economic concessionaires and a linked rise in land prices. For villagers, the uncertainty created by these combined changes are a cause of concern and distress for many, while for some it is viewed as a source of opportunity. It should be emphasized, meanwhile, that most community members do not wish to see the project stopped; rather, their concern is ensuring that their livelihoods are maintained, either through the protection of local natural resources or the provision of compensation for their damage and destruction. This establishes a base-line for framing villager concern.

The next step is to consider a framework for promoting these concerns to the proponents of the project – the company and the RGC. In order to accomplish this, a *rights-based* approach is suggested. Elements of this approach are:

- transformation of power relations
- strengthening of community voices
- transparency
- participation and inclusion
- accountability
- harmonizing with human rights standards and objectives (including laws)
- the right to, and protection of, sustainable livelihoods and well-being

All of these elements have a basis in international and national documents, laws and conventions. This includes the International Covenant on Economic, Social and Cultural Rights (ICESCR), the Millennium Development Goals, the Constitution of the Kingdom of Cambodia, and provisions and articles in the country’s national laws. The approach also involves providing members of the community with a voice, something which this report itself has sought to do with the personal reflections present in Box 3.1.

Box 3.1

In their Own Voices: Village Attitudes Towards the Kirirom III Proposal

Transparency, accountability and dialogue are key aspects of the human rights approach (see Section 3.1). Most villagers in the affected area have received limited information about the Kirirom III scheme, while many are concerned for their livelihoods and future, some hoping that the project might enhance their lives by providing new infrastructure such as roads and electricity. To bring forward the voices of the local community, summaries of various interviews undertaken with villagers in April 2008 are described below. These pieces represent the first opportunity that most of those interviewed have had to iterate their views on the hydropower project.

Mr Nheb Ouch – Bak Ang Rut Village

Originally from Battambang Province, Ouch has lived in the Prek Kampong Saom Valley since 2000, coming to the area after he was invited by relatives. Arriving with nothing he now has a farm comprising rice paddies and chamkar. He has recently lost other land that he previously farmed to the Koh Kong Sugar Industry Company. Ouch reports to know a little about the Kirirom III project and is concerned about what he believes will be some of its potential impacts. Conversely, he also believes that the project could provide some mutual benefits to villagers. Ouch believes that if the villagers are allowed to manage their own natural resources that they will double in quantity.



Mr Yang Khly – Bothor Village

A former Khmer Rouge member, Mr Yang arrived in the Valley in 1979, having made his way by foot from Kampong Saom. He now lives with his family at Bothor. He has rice paddy and chamkar lands, sharing 9 hectares with another family. He is aware that the project will affect him directly, with about 1.5 hectares of his land being lost to the construction of the proposed diversion pipe -line. Still, he thinks the project is a good idea because it will bring electricity, roads and a school. He has no concerns about water quality changes. He would like compensation, but would like this to go to the entire community; perhaps for a shared water supply.

Mr Chi Roeum – Sre Ambel

A fisherman, Mr Chi comes from Sre Ambel to fish the Prek Kampong Saom River four times a month, usually for a total of five days, storing his catch in a cooler box. He sells his catch in the Sre Ambel market. Mr Chi has heard about the Kirirom III project but declares to know very little about it. He is not sure if it will affect his fishing, but if it does he will move to another place to fish. He has fished in the river for ten years.



Mrs. Tep Sras – Preah Ang Keo

Mrs. Tep has lived in the area since 1999, having arrived here with her parents from Kampot after they were invited to come by relatives. She has nine children and recently re-married. Her family has 1 hectare of chamkar and recently lost their rice fields to the Koh Kong Sugar Industry Company concession, granted on the western side of the river. She tried to protest against the loss of her land but was told to 'go and talk to Hun Sen'. Her husband sells his labor and fish that he catches. She is very concerned about the hydropower project and worries that the next generation will have no land for their livelihood. She is also concerned about impacts on local fish stocks. If the scheme's proponents were to compensate her for the loss of land she would like land in return. She is concerned that in the future there may be nowhere to live in the Valley.



Mrs. Ry Ly – Prek Stueng

Mrs. Ry Ly has lived in the Valley all of her 46 years, having been resident there since before the time of the Khmer Rouge. Her family has a 4 hectare farm (rice and chamkar) on the banks of the Stueng Pongrul. Periodically, her household experiences a food shortage and her family has to catch fish in the nearby river and gather NTFPs in order to eat. Her household also uses the river for domestic and agricultural water supply. Ly has had 15 children but 5 of them have died. She has heard about the hydropower scheme from her husband, who goes to community meetings on the topic. She is concerned about shortages of fish and other resources as a result of the dam being built and is fearful of what might happen if the dam breaks. If compensation is offered she would like it to be the exchange of similar items for those lost. (e.g., land for land etc)

Mr Mao Phorn – Krang Chek

Mao's livelihood is based around the family chamkar and the fish that he catches in his 'free-time'. He uses spear-guns, nets and traps to catch fish. In his chamkar his family grows corn mixed with rice. He sells the corn in Sre Ambel. He has lived in the Valley since 1979 and was formally from Sre Ambel. He first came aware of the dam when he saw 'outsiders' working in the Valley. He believes that people are more concerned than happy about the scheme, with villagers fearing impacts on fish stocks and their land, and the problem of flooding. If compensation is offered he believes that it should be the replacement of what is lost by a similar item, rather than the payment of money.



Mr Huy Hum – Stueng Pongrul

Living near the inundated forest, Stueng Pongrul catchment, Mr Huy (67) is very worried about the Kirirom III scheme. His worries include concerns about water loss:

“No one has come and told us about the dam; we just hear rumors that Chinese people will come and build a dam. We first heard about this in 2004 and were surprised to see Chinese people here.”

If compensation is provided Hum would like to see a road developed from Sre Ambel so that eco-tourists can come to the area. If there is no water in the Stueng Pongrul he believes that compensation should include fish ponds and wells as mitigation, while if animals are lost, such as cattle, then they should be replaced with new cows.



History of Village Concerns

2004 – Community become aware of Kirirom III scheme when RGC de-mining team and regiment appear in the upper reaches of the Stueng Pongrul catchment.

August 2004 - AFSC team and villagers visit the proposed dam and reservoir site. Speak with the military de-mining team about the scheme. Shown blue-prints of the scheme.

October 2004 – Village committee and members cooperate to protest to the hydropower company and sent a thumb-printed report to the provincial governor stating community concerns.

November 2004 – CEPA team arrives to conduct a preliminary study of the project site and do awareness raising and visit the dam site.

November 2004 – Members of the company, MDRI and MIME met with the community at the community house. Non-scheduled meeting arranged when the staff were observed by AFSC personnel visiting the area and invited them to the community house.

2005 – 2008

- Some community members visit Stueng Treng on awareness raising trip to hear from Se San River villagers about their experiences and then report back observations and discussions to the community.
- Villagers request information from commune council on the project. Commune chief states that he knows nothing. Issue of compensation said to have been discussed with the commune chief but with no one else.
- Mid-2006 – Koh Kong Sugar Industry Company acquires a large amount of land in the Prek Kampong Saom Valley. Many families lose land they have farmed for many years.
- Mong Reththy Company representatives arrive looking for land (east side of river).

In totality, the seven elements are about empowering the local community; of providing them with opportunities to understand, debate and assert their interests as they relate to the Kirirom III scheme. *In this context the most fundamental way that empowerment can occur is through highlighting the fact that villagers do have rights.* Once this is understood discussions over environmental impacts move beyond the concept that villagers have concerns, to an appreciation that they have rights - entitlements that give rise to legal obligations on the part of the proponents of the Kirirom III scheme. *This recognition of legal entitlements and obligations is a crucial step towards empowerment for it highlights that what is at stake it is not the question of ‘should’ their rights be considered, but rather the matter of ‘how’.*

It must be acknowledged, however, that efforts to promote and assert community rights within Cambodia face numerous hurdles. State institutions have little accountability to the civil society or to each other. There continue to be uncertainties about the boundaries of natural resources ostensibly under the control of different state entities, and private companies and powerful individuals; progress on systematic land registration is slow and largely restricted to the central rice-growing provinces; there is widespread public ignorance of the provisions of natural resource laws and their regulations; and weak public disclosure mechanisms and negligible enforcement of existing laws (the latter having resulted in widespread informal possession of land covering more than 5 million hectares).

The origins of these issues lie partially in the legislative environment itself and within the wider political economy²⁷. This combination of factors has contributed towards an administrative and governance environment in which, for hydro-development, economic imperatives take precedence over environment and social considerations. As a result, people affected by hydro-schemes have found themselves disenfranchised; reduced to the role of spectators as their homes, farms and commons have been adversely impacted (see 3S Rivers Protection Network, 2007; Rutkow, Crider, Giannini, 2005). Addressing these systemic issues requires a multi-prong approach that goes beyond a reliance on legislative and judicial recourse, and moves into the areas of networks, and public awareness and advocacy.

3.2 What are the Legal Entitlements of the Community?

3.2.1 International Law – Declarations, Conventions and Covenants

Since the 1991 Paris Peace Accords and the adoption of the National Constitution in 1993, the RGC has acceded to a number of international human rights treaties and numerous optional protocols. Cambodia is a signatory, for example, to the three documents comprising the International Bill of Rights. This includes the Universal Declaration of Human Rights (UDHR), the International Convention on Civil and Political Rights (ICCPR), and the International Covenant on Economic, Social and Cultural Rights (ICESCR)²⁸. The later two documents, which are binding treaties, outline broad categories of rights that states are required to uphold. The fact that Cambodia has ratified these treaties is important for two further reasons: (a) it represents Cambodia’s “ownership” of the relevant provisions; and (b) a ratified treaty is legally binding on all branches of government (OHCHR, 2004).

²⁷ See Appendix 1 and Section 1.3.4 (c)

²⁸ The Constitution of the Kingdom of Cambodia (1993) incorporated into domestic law the human rights guarantees contained in the Universal Declaration of Human Right and other key human rights treaties, and specifically protects Cambodia citizens’ rights to own land and the freedom of expression and assembly (OHCHR, 2007).

The ICCPR establishes the right of protection for individuals from state incursions into their fundamental rights including, life, liberty and security. This obligates the RGC to investigate and remedy any violations of the right to life within its jurisdiction. This includes the responsibility of investigating and remedying potential threats that the Kirirom III project poses to human life in the Prek Kampong Valley, and the right of villagers to express their concern if they feel their rights are prejudiced.

The ICESCR seeks to safe guard a variety of human rights, many of which concern social and economic well-being. The Committee on Economic, Social and Cultural Rights has posited three forms of obligation for social and economic rights: “the obligations to respect, to protect and to fulfill”. In short, the obligation to respect entails the obligation not to interfere with an individual’s enjoyment of the right; the requirement to protect encompasses the obligation to prevent others from interfering with a person’s enjoyment; while the obligation to fulfill requires the taking of progressive steps that realize the right (Rutkow, Crider and Giannini, 2005). In terms of compliance with these responsibilities, in the case of the Kirirom III project the impact portion of this study provides *prima facie* evidence of how the scheme will affect local social and economic rights.

Continuing with the ICESCR, Article 11 provides for the “*right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions*”. As elaborated in General Comment 12 on the right to food, this right incorporates the concepts of “*adequacy and sustainability of food availability and access*” (cited Rutkow, Crider and Giannini, 2005). The Committee on Economic, Social and Cultural elaborates that the “*notion of sustainability [was] intrinsically linked to the notion of adequate food or food security, implying food being accessible for both present and future generations*” (cited Rutkow, Crider and Giannini, 2005). This obligation requires the RGC to consider the impacts of the Kirirom III project on the condition of the environment and local food security. A similar charge can be made for water, which the Committee informs obligates the State to provide this resource in a condition that is safe for human consumption. Under the provisions of the ICESCR, the RGC is also required to respect, protect, and fulfill the right to health. This includes not only the provision of adequate health care but also the right to a healthy environment. By describing the anticipated health effects of the Kirirom III project, of which a summary has been prepared in this study, the community can make a case for the RGC to consider the anticipated health impacts of the Kirirom III scheme under its covenant responsibilities.

In concluding this section, from an advocacy and rights position, explicit reference to the treaties that the RGC has ratified can serve to remind all parties that they are required to avoid policies and practices that contradict the themes of the treaty(s) and which eroded the efforts of the RGC to conform to its obligations. This includes the company, the project’s developers, as well as government agencies themselves. Reference to the provisions of these documents and the use of their language in petitions prepared by the community and civil society groups offers an advocacy tool for the assertion of villager rights in petition documents.

3.2.2 National Laws

Beyond appeals to international law, Cambodia’s legal framework offers the most obvious avenue for promoting villager rights within the Kirirom III development process. In the sub-sections that follow these laws are highlighted, an assessment made of the contribution they can make to villager rights and suggestions made for how they may be used.

(i) Constitution of the Royal Kingdom of Cambodia (1993)

The Cambodia constitution sets out the foundation principles for the relationship between the state and its citizens. All laws promulgated in Cambodia must be consistent with the articles of the constitution:

Article 131-

- This Constitution shall be the Supreme law of the Kingdom of Cambodia.
- Laws and decisions by the State institutions shall have to be in strict conformity with the Constitution

In terms of villager rights, the following articles are of particular relevance:

Article 31-

The Kingdom of Cambodia shall recognize and respect human rights as stipulated in the United Nations Charter, the Universal Declaration of Human Rights, the covenants and conventions related to human rights, women's and children's rights.

Article 32-

Every Khmer citizen shall have the right to life, personal freedom and security.

Article 59-

The State shall protect the environment and the balance of abundant natural resources and establish a precise plan of management of land, water, air, wind geology, ecologic system, mines, energy, petrol, and gas, rocks and sand, gems, forests and forestial products, wildlife, fish and aquatic resources.

In terms of advocacy power, the Cambodia constitution offers limited scope for promoting villager rights. As a 'principled' rather than administrative document it has a narrow role in directing the day-to-day interactions between the state and its citizens. This role, instead, is forfeited to national laws and in the reality of Cambodian political society, the interests of powerful stakeholders (see Appendix 1). It is also possible for the state to claim that, from a constitutional perspective, the effects of hydro-development upon a 'few' are legitimate given the benefits that accrue, via national economic development, to the 'many'.

Nonetheless, by revealing knowledge of their rights under the constitution within advocacy documents and presentations, villagers can cause the company and government agencies to confront their responsibilities and explain their decisions under the terms of this document. This prompting means that state authorities will not be able to work in the Prek Kampong Saom catchment without pressure to acknowledge their responsibilities to the local community. They may subsequently chose to ignore these appeals, but if a wider strategy is employed of making the public aware of villager rights under the constitution (see Section 4.3), state authorities may feel uncomfortable with the spot-light being placed on their actions in the language of constitutional rights violations. This may prompt them to respond more sympathetically to community concerns.

(ii) Land Law (2001)

Promulgated in 2001, the Land Law establishes a framework for regulating a wide range of land-based activities, including the designation of economic land concessions and indigenous community lands, private property rights and dispute resolution processes. The Land Law (2001) also provides for a comprehensive system of land classification and ownership rights²⁹.

It is unclear, at this stage, what process will be used by the RGC to transfer use rights over land in the Prek Kampong Saom catchment, including the dam and reservoir sites, to the company. Under the Land Law (2001) if the land in the area was classified as State Public Land then it could not be legally transferred to the company, stopping the project from proceeding. However, the recent commencement of the Kamchay hydropower project in the Bokor National Park suggests that legal questions over land classification do not carry sufficient judicial weight to prevent a scheme from proceeding. It is therefore not recommended that this issue be pursued as an argument for promoting community rights.

In contrast, more promising are provisions relating to private property. Clauses in the Land Law (2001) offer an avenue for villagers to seek the protection of their land or to seek compensation in the case of its loss. Article 5 of the Land Law (2001) is of relevance here:

Article 5:

“No person may be deprived of his ownership, unless it is in the public interest. An ownership deprivation shall be carried out in accordance with the forms and procedures provided by law and regulations and after the payment of fair and just compensation in advance.”

In practical terms this clause allows for villagers with legal land title an opportunity, at a minimum, to claim compensation for the loss of land incurred by the development of the Kirirom project. The main challenge here is that most villagers do not have registered title over the land they occupy and use (see Rio, 2001). What exists, instead, are a set of *de facto* arrangements that offer little assurance in the face of a major infrastructure development. Provisions within the Land Law (2001) in regards to occupancy, set out in Articles 30 and 31³⁰, suggest that many of the villagers in the affected area do meet the conditions for claiming legal title. The ability to show registered title would, in the present, enhance the negotiating position of villagers in terms of their protection and rights to compensation under the law. Without private title their claims are

²⁹ State Property – This includes “State Public Property”, such as forest and protected areas (these main not be transferred to other parties for economic exploitation) and State Private Property, which can be granted to other parties for economic exploitation (e.g., economic land concessions); Private Property – Land owned by individuals and communities.

³⁰ **Article 30:** Any person who, for no less than five years prior to the promulgation of this law, enjoyed peaceful, uncontested possession of immovable property that can lawfully be privately possessed, has the right to request a definitive title of ownership. In case the granting of a definitive title to ownership is subject to an opposition, the claimant has to prove that he himself fulfills the conditions of peaceful, uncontested possession for no less than five years over the contested immovable property or to prove that he purchased the immovable property from the original possessor or his legal beneficiary or from the person to whom the ownership was transferred, or from their successors. **Article 31:** Any person who had been enjoying possession before this law came into force may be authorized by the competent authority, if such person fulfills all requirements to become an owner of the property, to extend his possession until he attains the legally prescribed period of five years, after which he will obtain a definitive title of ownership. The authorization to extend for the sufficient period of time cannot be denied by the competent authority if the possession is peaceful and uncontested. A competent authority that improperly refuses an authorization to extend the time is personally liable.

tenuous and unlikely to be recognized if developments elsewhere in the district are considered³¹. It is therefore strongly recommended that opportunities for registering land title be commenced by villagers immediately. It is anticipated, however, that assistance will be needed to help villagers to accomplish this task.

(iii) Sub-decree on Social Land Concessions (2003)

Land concessions for social purposes is a legal mechanism established in the Land Law (2001), which, permits the transfer of State Private Land to private individuals or groups for social purposes; specifically, for residential and family farming . Social land concessions are deemed appropriate for situations where there is a social need for land, such as residential land shortages, landlessness, requirements for resettlement, distribution of de-mined land, development of housing and subsistence plots for workers of large plantations. A social land concession is only one mechanism out of several that the state can use to transfer land from its private domain to productive uses (another is the provision for economic land concessions); however, this is the only promulgated mechanism specifically defined for social purposes. Article 17 of the Land Law (2001) provides general authority for the sale, exchange, distribution or transfer of state private land for social purposes. The responsibilities for granting and administering social land concessions are further defined in the sub-decree. Responsibility for administering the sub-decree rests with the Ministry of Land Management, Urban Planning and Construction.

Within the sub-decree, Article 3 defines the conditions under which a social land concession may be granted, including to:

Article 3 [3] “Provide land to resettle families who have been displaced resulting from public infrastructure development.”

As the article suggests, there is the opportunity for villagers to seek compensation for land lost to the development of the Kirirom III project through the social concession process. Those living in the community have developed an attachment to the area so, desirably, any land sought under this provision would be located near their present homes. An ideal situation for many families affected by the scheme, therefore, would be to be able to keep their present homes and have access to nearby lands granted to them under the terms of a social concession.

Applications for a social land concession need to be prepared by commune councils and are highly technical. If this mechanism was to be used to support local communities in the Prek Kampong Saom catchment then assistance to the Dong Peang Commune Council would be necessarily to facilitate the passage of the applications. What is required more immediately, meanwhile, is an exact understanding of the landholders who will be affected by the scheme and the amount of their properties involved, so an idea of those requiring replacement land can be calculated. This requires direct dialogue and information exchange with the company, which has hitherto not been forthcoming. Of concern also is the issue of the granting of a number of economic land concessions in the Prek Kampong Saom Valley. The granting of these concessions will have reduced the availability of land for social concession purposes. Nonetheless, the social land concession provisions do appear to offer a legal means for ensuring that villagers are not left landless by the development of Kirirom III.

³¹ A number of villagers in the nearby commune of Chikha Leu have recently lost land to a land concessionaire (without compensation) despite a number of affected families occupying their properties for many years.

(iii) Environment Impact Legislation

The requirements and procedures for undertaking an EIA are set out in the Law on Environment Protection and Natural Resource Management (1996) (LawEPNRM) and the Sub-decree on Environment Impact Assessment Process (1999). The *Guideline for Conducting Environment Impact Assessment Report* (undated) sets out the areas that an EIA report should cover, but is still draft at this time; however, many agencies presently follow its format in the design of their studies. The EIA process is administered by the Ministry of Environment, Environment Impact Assessment Department.

The requirement for EIA is set out in **Article 6** of the LawEPNRM (1996):

“An environment impact assessment shall be carried out on all projects and activities, either private or public, and shall be examined and evaluated by the Ministry of Environment before being submitted to the government for decision. This assessment shall also be applicable to those existing activities and those that are under process, and for which their environmental impacts have not yet been assessed.”

The sub-decree, meanwhile, defines the requirements of the EIA process. This includes specifying the projects that require an EIA. Noted in the annex of the sub-decree is the requirement for all hydropower projects over 1 MW in capacity to prepare an Initial EIA or EIA. At 18 MW generating capacity, the Kirirom III project falls into the category of a project requiring an Initial EIA or EIA.

The EIA procedure stipulated in the law is a ‘stepped’ process. The first-up requirement is the preparation of an ‘Initial EIA’ (IEIA) [Article 7, LawEPNRM]³². Following the receipt of the IEIA, the Ministry of the Environment may request that a full EIA be undertaken by the submitter. Unfortunately, neither the LawEPNRM nor sub-decree indicates the criteria under which the Ministry of Environment may invoke the requirement for a full EIA. Middleton (2008, p. 13) suggests that this should occur where a “serious impact on natural resources, ecosystem, health or public welfare” is indicated. Reading both the LawEPNRM and sub-decree however, such a clause cannot be distinguished, so its origins and hence legality remain unknown. Even if the clause is *de jure* (i.e., has standing in law) it still remains unclear what criteria will be used to determine the requirement for a full EIA, with no legal guidelines existing in the legislation.

A further concern with the legislation is the requirement in the sub-decree that all EIA reviews undertaken by the Ministry of Environment be completed by 30 working days. If, after this time, no comment is received from the Ministry then the sub-decree states that the submitter can consider their assessment to have been approved [Article 18]. Given the technical nature of many projects and the limited resources of the Ministry of Environment this is a significant clause as it is likely to mean that only a cursory review of an EIA report is possible; an outcome that means many impacts are likely to go unrecognized. Further, there is no opportunity in the legislation for the Ministry of the Environment to ‘stop the clock’ in the review process and to request additional information on the impacts of the scheme (this is a clause that exists within EIA legislation in other countries, such as New Zealand). This combination of factors weights the likelihood of EIA approval very highly in favor of the submitter.

³² Confusingly, in the sub-decree this term is changed to “Initial Environment Impact Assessment (IEIA).”

The Prakas/Guidelines for the content of an EIA report is still awaiting approval by the Ministry of Environment, although a draft guideline does exist. The draft document covers many of the accepted areas of EIA reporting, including:

- Description of environmental resources
- Descriptions on public participation processes
- Environment impact analysis
- Description of proposed impact mitigation measures
- Content of an 'Environmental Management Plan'
- Conclusions and suggestions.

Three of these topics are of special relevance to the advocacy of community rights. Firstly, the reference to public participation follows from articles in the LawEPNRM (1996) (Article 16-17) and the sub-decree (1999) (Article 1), which set-out to foster community involvement in environmental decision-making. Unfortunately, that nature of public participation is not defined in either legislation, with an uncompleted sub-decree intended to detail this in the future. In the present, this means that the role of communities in the EIA reporting process is unclear, allowing them to be largely ignored by developers (see Chamreoun, 2006). Nonetheless, referring to the respective articles in petitions made by the community in the Kirirom III project area will, at the least, oblige the company and its consultants and RGC officials to state how they are complying with the law in terms of its public participation provisions³³. This will stop them believing that they can operate with impunity in terms of legal public participation requirements.

Secondly, the reference to 'impact mitigation measures' provides an opportunity for communities in the Kirirom III project area to forward their claims for the avoidance of impacts on their livelihoods (including land and commons) or, alternatively, to seek compensation for its damage. However, neither the LawEPNRM (1996) nor sub-decree (1999) refers directly to an obligation for mitigation or compensation by developers, while the guideline itself does not specify the form and nature of mitigation measures. The scheme's proponents, in addition, can also claim that the guideline is still in draft form meaning, as an unofficial document, that it does not carry a direct legal responsibility. *In sum, what this means is that there is no legal requirement under the EIA legislation for compensation to be a part of the reporting and planning process.* So while it maybe highlighted as an example of 'best practice' in EIA reporting, it is suggested here that legal claims for mitigation and compensation be based on the provisions within the aforementioned clauses of the Land Act (2001) and the Sub-decree on Social Land Concessions (2003).

Unlike mitigation and compensation, however, the EIA law does stipulate the requirement for an Environment Management Plan (within the sub-decree). Unlike many of the other stipulations in the EIA legislation, the sub-decree highlights the importance of the Environment Management Plan, with the obligations of the submitter to prepare and manage such a document emerging as

³³ **ARTICLE 16:**

The Ministry of Environment shall, following proposals of the public, provide information on its activities, and shall encourage participation of the public in the environmental protection and natural resource management.

ARTICLE 17:

Procedure for participation of the public and access to information pertaining to the environmental protection and management of the natural resources, shall be determined by a Sub-decree following a proposal of the Ministry of Environment.

the RGC's primary expectation of how developers will handle the impacts of their projects on the environment and affected parties. In this context one can interpret the Environment Management Plan forming a *de facto* contract between the state and the submitter in terms of anticipated environmental effects and their management thereof. Of significance here is the right of the Ministry of the Environment to cooperate with other institutions to bring about the banning of a project if it does not 'abide' with its Environment Management Plan (Article 28, Sub-decree), and impose penalties if the operators are revealed to have provided misinformation about their scheme; and further, failed to comply with their Environment Management Plan (Article 29, Sub-decree). The draft Guidelines set-out the provisions of the Environment Management Plan. They include:

- Environment protection measures during the construction, implementation and ending of a project.
- An environment monitoring program during the construction, implementation and ending of a project.

The scope and focus of the Environment Management Plan indicate that it is a key opportunity for factoring the concerns of villagers in the Kirirom III project area into the project planning process. This is particularly so because of the legal obligations it places on the developers. Finding opportunities to input into this process is therefore strongly recommended. The issue confronting this recommendation, as noted above, is the lack of legal requirements and protocol for ensuring public participation and information transparency by project developers. References to the public participation clauses within the LawEPNRM (1996) offer an avenue for arguing the case for villager participation, as do appeals to the constitution and international law. Referring to these provisions is suggested within any declarations or petitions drafted by the local community in regards to their concerns about the project. Again, raising these points will help to stop the proponents of the project thinking they can operate with impunity in terms of national and international laws.

(iv) The Water Resources Management Law (2007)

As noted earlier in the study, the operators of the scheme will be required to obtain a permit from the MWRM to use water from the Stueng Pongrul for hydropower generating purposes; a requirement set-out in the Water Resources Management Law (2007). Under this law water use is meant to comply with the requirements of 'integrated water resources management', including recognition of the need for minimum flows in waterways to maintain ecosystem values.

Unfortunately, the legislation has only recently been promulgated and there is presently no sub-decree(s) defining the permit process, including guidelines for promoting integrated water management, calculating minimum flows and encouraging public participation. This leaves a vacuum in terms of what the local community can expect as redress under the provisions of this law. What is suggested, therefore, is that the local community works with other institutions to draft a petition of concern to the MWRM regarding the granting of any permits for the taking and retention of water from the Stueng Pongrul, including a summary of anticipated effects highlighted in this study. Consultation with the project's proponents on the content of this petition could be beneficial in terms of building relationships and transparency; it may even be possible to get the developers to include the petition's recommendations into their Environment Management Plan. This petition, which should include a suggested water regime for protecting the ecological values of the Stueng Pongrul, should then be submitted the MWRM department responsible for water permitting (Department of Water Resources Management and Conservation).

As for the terms of the permit for the Stueng Pongrul, suggesting a minimum flow regime is a complex science. However, visual estimates can be made with the focus being on how to mimic natural conditions and events, including flood pulses. The following is therefore suggested, based on a flow figure calculated at the Stueng Pongrul Waterfall:

- Dry season minimum flow – 3 m³/sec
- Wet season minimum flow – 6 m³/sec
- Three ‘flood’ events per wet season (June, July and September). These events should last for 24 hours and consist of flows of at least 25 m³/sec.

(v) Forestry Law (2002) and the Sub-decree on Community Forestry (2003)

The Forestry Law (2002) and the Sub-decree on Community Forest (2003) have been key legislative measures influencing the livelihoods of villagers in the study area. However, the provisions of the Forestry Law are not expected to provide much assistance in terms of asserting villager rights in the face of the Kirirom III scheme³⁴. The community could, however, apply for an adjustment to the proposed boundary of the Phnom Toub Cheang Community Forest to include new areas as compensation for those lost or degraded by the development. This includes portions of the community forest that will be lost to the reservoir and dam area, the two pipelines, the quarry on the face of the eastern massif and various access roads through the forest. This application could be lodged with the Forestry Administration Cantonment office, whose chief has the capacity to resolve disputes under Article 9 of the Sub-decree on Community Forest (2003). Complicating this process is the appreciation that the existing Community Forest and its boundaries have not been ratified by the cantonment (see *supra* 4). It is therefore recommended that as a preliminary exercise the community advocate for the approval of the existing community forest application, followed by a request under the dispute clauses in the sub-decree to have the boundaries of the forest adjusted. Even if this is unsuccessful, official approval of the community forest itself will enhance the community’s standing in terms of legal rights within the Prek Kampong Saom catchment and their claims, at the minimum, to present themselves as wise users and stewards of the local environment.

(v) Decision on Establishing Land Dispute Resolution Commissions in Provinces/Municipalities through-out the Country (1999) (the ‘Decision’)

Evolving out of the Constitution and the Law on the Organization and Functioning of the Council of Ministers (1994), the ‘Decision’ provides a legal framework for the establishment and operation of Land Dispute Resolution Commissions throughout Cambodia. The commission and dispute process is housed within the responsibility of the Ministry of Land Management, Urban Planning and Construction. Article 3 establishes the duties of the commissions, which are:

- To investigate and propose effective resolution measure of land disputes in

³⁴ There are several reasons for this: (a) A number of the clauses in other legislation, such as the Land Act (2001), do not integrate with the provisions of the Forestry Act (2002); and, (b) A review of natural resource management in Cambodia suggests that in the hierarchy of influence the Land Act (2001) has precedence over the Forestry Act (2002). Why this occurs is unclear but it may be due to the relative power, within the RGC, of the agencies that are responsible for enacting the two respective pieces of legislation. It may also be accounted for by the fact that while the Forestry Act (2002) provides authority for a natural resource that occur on the land, the management of the land on which they grow is established in the Land Act (2001).

- provinces/municipalities.
- To report about the resolution measures and the results of the above work to Royal Government.
- In the case of demonstration or/and strike relating to land issue in front of Royal Palace, Senate, National Assembly, Council of Ministers and other public places of provinces/municipalities. This commission shall send official to discuss with representative of demonstrators or/and strikers to peacefully handle. Meanwhile, it must immediately report to Royal Government to take appropriate measure.

The Commission offers a legally sanctioned means for the promotion of community rights in regards to the loss of land incurred by the development of the Kirirom III scheme. Villagers have the opportunity to use the leverage from a demonstration in the Phnom Penh - at the locations specified in the Decision - to seek the attention of the commission and to have it instigate its dispute processes on their behalf. This mechanism has recently been used by villagers from the nearby Chikha Leu commune to highlight their claims of the fraudulent acquisition of land by outside parties. Beside the attention of the commission itself, the mechanism also offers a way for community members to highlight their story and concerns to a wider audience. If this is undertaken strategically and with attention to a media strategy, this could prove a very effective means of raising awareness of the villager's plight and gaining support for their rights from a wider audience.

(vi) Sub-decree on Land and Property Acquisition and Addressing Socio-Economic Impact caused by State Development Projects (draft)

The *Sub-decree on Land and Property Acquisition and Addressing Socio-Economic Impact caused by State Development Projects* was publicly released for comment in November 2007 (as of May 2008 the sub-decree had not been promulgated). The sub-decree seeks to provide further clarification of public rights under the Land Act (2001) and includes provisions for compensating private citizens whose land is acquired for state infrastructure developments. The Ministry of Land Management Urban Planning and Construction is the lead agency under the provisions of the sub-decree.

Unfortunately, because the sub-decree has not been passed it does not have *de jure* status. Agencies charged with responsibility under the sub-decree cannot, therefore, be held to account under the provisions of the legislation. Nonetheless, it does represent a 'statement of intent' in terms of government policy and could be used as an advocacy tool to promote compensation for villagers whose land is appropriated to support the scheme.

From the perspective of intent, the following provisions of the Sub-decree are of particular relevance to the Kirirom III situation:

Article 1, which sets out the purpose of the sub-decree:

- The Purposes of this sub decree are to set:
- Principles, procedures, institutional arrangements and measures to regulate and address adverse socio-economic impacts of state development projects that require the short-term, long-term or permanent acquisition of rights and interests to land or property for serving general public interests, national interests , or urgent cases
 - Provision of appropriate opportunities to affected persons and communities to benefit

from state development projects;

Article 4 (2), which set out definitions under the sub-decree, including ‘affected persons’ and the definition of impacts:

- (a) “Affected person” is –
 - (1) An individual, legal person or entity, family, community, non-governmental organization or state or public institution who satisfies the cut-off date requirement and who is directly or indirectly affected by state development projects and will have their -standard of living adversely affected, -right or interest in any land, either state or privately owned land, or in any house or other structure, aquatic farming pond, annual or perennial crop or tree, or water resources, forest by-product or fishery resources acquired or adversely affected, whether in full or in part, permanently, long-term or short-term; or -business, occupation, workplace, residence or habitat adversely affected, with or without displacement, permanently, long-term or short-term, and who will likely suffer income or livelihood or business loss as a consequence of the acquisition or restriction.
 - (2) An owner, possessor or user of any land acquired pursuant to this sub decree for a relocation site, and any member of the host-community whose livelihood, business or access to public or community services is adversely affected as a result of establishing the relocation site in the community.
- (b) “Severely affected person” refers to a person whose income or family livelihood or business is seriously affected because: at least 10 per cent of the family’s total subsistence agricultural or production land or productive assets are subject to acquisition or are adversely affected by state development project
- (c) “Displaced person” refers to a person who is required to leave the person’s farm, formal or informal business location or workplace or other primary source of livelihood.
- (e) “Socio-economic impacts” refers to direct or indirect adverse impacts of involuntary acquisition affecting the status of rights to land or property or income generation, livelihood sources, public or communal services or resources or public or communal resource base, services or facilities and environment of host villages or communities due to changing uses to or loss of the use of land, water or other resources caused by state development projects;

Article 6 (c) (2), which defines areas of ‘general public interest’ that are considered under the provisions of the sub-decree as warranting mitigation, including those affected by hydropower development:

- (2) construction, rehabilitation or expansion of hydropower dam, hydropower station, all kinds of electricity plant, sub-station, structure, facilities, transmission system and lines for distributing electrical energy;

In addition, Articles 16 sets out the procedures for providing redress under the provisions of the sub-decree; Chapter 4 establishes the provisions for planning, including the inputting of gender considerations (Article 24) and community participation (Article 27); while Chapter 5 sets out the procedures for compensation, assistance and relocation.

On paper at least the draft sub-decree provides a clear indication of the RGC's appreciation of the need to provide support to communities affected by the development of public infrastructure facilities, including hydropower schemes. Referencing the provisions of the sub-decree in advocacy material produced by the community would require the government agencies and the company to consider how complicit their actions are to the intent of the RGC, as set forward in the sub-decree. As noted above, however, it is not possible to hold these agencies legally responsible under the sub-decree, as to act outside its provisions is not presently *ultra vires* (i.e., illegal) and will not be until the sub-decree is promulgated.

3.3 Non-legal Approaches to Rights Advocacy

There are several non-legal approaches that the community can draw on to assert its member's rights in the face of the project. These can be used in-part or separately with several of the legal mechanisms already described to form part of an integrated strategy.

3.3.1 China Exim Bank Policy

China Exim Bank is the expected financier of the Kirirom III project, with an estimated 80 percent of capital support being sought by the company from it (see Section 1.4.1). In November 2004 the Bank adopted an environment policy, which was eventually publicly released in April 2007. An unofficial translation of the policy states:

China Exim Bank is paying a high-level of attention to our funded project's environmental impacts. We enhance environmental monitoring and management before, during and after the project implementation.

- (1) Before – Project Review: China Exim Bank considers projects' environmental impact assessment as one of the basic requirements and elements during the project review. We require the funded projects to conduct feasibility study of environmental impacts, and obtain recognition or approval from the recipient country's environmental administration. Those projects that are harmful to environment or do not gain recognition or approval from environmental administration will not be funded. This policy is enacted throughout thousands of China Exim Bank's funded projects.
- (2) During – Project Examination: China Exim Bank conducts regular examination for project implementation, which includes the project's environmental impacts. Once any unacceptable negative environmental impacts have resulted during the project implementation, China Exim Bank will require the implementation unit to take immediate remedial or preventive measures. Otherwise, they will discontinue financial support.
- (3) After – Post-project Review: When the project is stopped or completed, China Exim Bank will conduct post-project review in project implementation and completion status, and its impacts. Environmental assessment is a necessity in

the post-project review. According to the post-project review, China Exim Bank will revise the measures taken before and during the project implementation for similar projects. If necessary, the related requirements and policies will be fully revised.

(Source: Middleton, 2008, p 37-38)

The Bank's policy represents a strong statement of intent in terms of its expectations of environment corporate responsibility by its borrowers. Whether this policy represents lip-service to international pressure it is not possible to say at this point – for only if institutions are challenged by examples from their practices can their sincerity be assessed. The issue therefore is not to question the Bank's intent at the outset but to monitor and evaluate its performance against its policy through time. What the community can do is become part of this process by drawing on the leverage opportunities within this policy to advocate for positive environmental conduct by the company. This includes the avoidance or mitigation of adverse effects on local waterways and commons areas. To mobilize the opportunities provided by these policies the following strategies could be utilized by the community:

- The informing of the company and its consultants by community representatives of their awareness of the environmental policies for projects supported by the Bank.
- The informing of the key RGC parties, including Ministries and local authorities, of the company's responsibilities under the policies of its lending agency.
- Community representatives establishing dialogue with the China Exim Bank itself including, as part of an initial discussion, their current environmental concerns and recommended means for addressing these.
- The community should seek to ensure that China Exim Bank fulfills the during- and post- project review processes that are set out in the environment policy, including the commitment to preventive and remedial measures in the case of adverse environmental effects.
- Raising of the presence of the China Exim Bank's environment policy in media releases and petitions prepared by the community. This relates specifically to the documentation of environment concerns arising from the project. There could be significant support from other rights and environmental agencies to see the performance of China Exim Bank assessed as part of a wider campaign of evaluating its commitment to its environmental policies.

3.3.2 Information Exchange and Communication

Interviews with villagers indicate that they have received limited information on the project, with many of the details of the scheme being 'dripped feed' to the community. This has led to confusion amongst villagers of what they can expect as the project proceeds, raising tensions and concerns for many. This has occurred against a wider back-drop of land acquisition by outside parties, which combined with the above has heightened the overall feeling of vulnerability amongst villagers (see Box 4.1). To address this there is a need for processes that encourage the

flow and exchange of information between the company, government authorities and the local community³⁵.

There are several methods for encouraging information exchange. Currently, for the proponents of the project – the company and national government authorities – it is unclear who represents the community when it comes to engaging with local representatives. This can create wrong impressions. By consulting with the likes of the commune council, for example, the company can be left with the impression that it has discussed matters openly ‘with the villagers’. This is not necessarily correct, particularly if the commune council does not move information down to the rest of the community and, correspondingly, upward to the Company (an observation made during my fieldwork). One means for addressing this problem is for the community themselves to form a body that is given the delegated role of being their ‘ears’ and ‘voice’; receiving information from the project’s proponents and presenting the concerns of villagers to them. Such an organization needs to be sanctioned by the community and be recognized by the commune council, government authorities and the company representatives as the official voice of the community. In summary, this gives the organization two key responsibilities: (a) It should present the concerns and interests of the community – not just its members – to the project’s proponents; and, (b) the transfer of information provided to it across to the rest of the community³⁶. The group can also become the party that outside assistance groups (e.g., CEPA) can work with directly, for example, in awareness raising and strategizing workshops. Further on, I suggest a more expansive role for this community organization.

3.3.3 Awareness Raising

It was apparent during April 2008 fieldwork exercises that many villagers were unable to comprehend the range of implications of the Kirirom III scheme on their livelihoods. An example came in an interview with Mr Huy Hum (see Box 3.1), who suggested that as mitigation for the scheme, a road could be built to encourage eco-tourists to come to the site of the Pongrul Waterfall. It was mentioned to Mr Huy that if a dam was built and there was no flow in the Stueng Pongrul, that eco-tourists would not wish to come to the area. He replied that he had not thought about this. From this exchange, one amongst many, it is apparent that local villagers are still struggling to bring together the implications of the project on the local environment and their lives. The work of CEPA, in 2004 and 2005, sought to address this. It is apparent, however, that many community members are still unable to make the range of connections between the hydropower scheme and its impacts. This is not altogether surprising. As the impact section of this study has shown, the effects and their consequences can be complex and difficult to anticipate.

³⁵ It is acknowledged that this suggestion runs contrary to the sum of recent experience in Cambodia; however, arguing that it is impossible to change this pattern because of what has occurred in the past stops any movement to a future that is different – in sum it becomes self-reinforcing and forms an obstacle that is as forbidding as the processes it is railing against.

³⁶ It should be the decision of the community how they select this group. They could delegate the task to an existing committee, such as the forest committee; a move that would make use of existing social capital and community institutional arrangements. Alternatively, it could look to form a special group. There is the option, for example, under the commune council enabling legislation to form a *Commune Natural Resource Management Committee*; these institutions have the legal authority to advise commune councils on natural resource management matters within their areas and could fit into the role suggested above.

In response, there is a need for a strategy addressing the gaps in the community's knowledge and understanding that, correspondingly, is also responsive to their requests for information. There are several ways this could occur, including:

- Information exchange workshops coordinated by CEPA or a similar organization involved in hydro-power awareness raising.
- Further study tours to sites affected by hydro-development.
- Attendance of village members at regional and national workshops addressing hydro-development topics.

Decisions over which methods are used should be informed by recommendations from villagers themselves. Further, attempts should be made to assist community members to make the full range of connections between impacts and implications. Sometimes, as the example of Mr Huy (Box 3.1) illustrates, these entail complex feedbacks that may not be apparent to community members.

3.3.4 Positioning and Advocacy

One of the issues confronting the advocacy of community rights in the Prek Kampong Saom Valley is the wide range of local opinions, concerns and positions on the project. In October 2004 the community did, however, coordinate to prepare a thumb-printed petition that was passed on to the provincial council which stated the concerns of the community. The result of this effort are unknown. In the present situation it is necessary for the community to establish a clear and concise position on the project, ideally through a document that presents their endorsed views and wishes. This document should become the foundation upon which negotiation with the project's proponents is premised. There is historic precedence for this approach. A number of grass-roots groups in different parts of the world have drafted declarations that they have used to frame their negotiations with project developers. These documents have come to form powerful political and media tools for the advocacy of local community's rights. Presently, the lack of this document – or if it exists, its articulation – makes it difficult for the company or government authorities to identify a community position on the project, including the wishes for impact mitigation. Compounded by the paucity of public participation in the project process, including EIA reporting, this has contributed to a community rights vacuum.

The community may wish to re-visit its previous petition or to devise a new one as part of an inclusive community process. The format for such a document could include:

- A summary about the community, its history(s), member's livelihoods and how villagers use the local environment.
- A statement of community position towards the project, including concerns about the scheme, mitigation, and how the community would like to see the scheme proceed.
- The document could make reference to relevant human rights and environment sections of international and national law, and the environment policies of China Exim in order to reinforce the legitimacy of its requests.

- The document could detail the community's sanctioning of the organization formed for the transfer of information between itself and the company, its consultants and government agencies (see 3.3.2).

In addition, Section 3.3.2 recommended the formation of an organization to manage the exchange of information between the community and the project's proponents. It is suggested that this community organization could have its tasks broadened in order to promote villager rights. These additional roles could include:

- There is a concern that negotiations between the company, government authorities and local representatives - including decisions over the distribution of compensation - might be captured by certain local groups (e.g., sections within the commune council). To help avoid this problem transparency and accountability are crucial elements suggested in the human rights framework. To advance these elements, the community group formally suggested as the conduit for information exchange could be promoted by villagers as its representative in these negotiations; acting as a counter to effects by other parties to capture the outcomes of the process, and ensuring that the themes of the community declaration/petition are taken into account.
- In addition to the above, the group's mandate and responsibility would be set by the declaration/petition, with its members seeking to ensure that its requests are acknowledged.
- The group could become the spokes-people for any outside media activities that are undertaken to promote community interests and concerns.

3.3.5 Media and Communication

The development of the Kirirom III project is part of a wider process of environment change generated by infrastructure development in Cambodia. Decisions about these projects are centralized within Phnom Penh; the site not only of the country's state decision-making apparatus, but also the bulk of the population that benefits from the supply of additional quantities of electricity. This has lead to a paradoxical situation where, today, the most important environment in Cambodia is not a remote wilderness area, but the minds and values of Phnom Penh's citizens. It is the will and wants of this population that endorses the decisions of the RGC and accepts the role and consequences of internationally sponsored development.

Yet despite its significance very little effort has been made to inform this population of the issues and consequences of hydro-development in a clear and articulate form. What has tended to occur, instead, are brief commentaries on individual projects, inspired by periodic media releases. There exists, consequently, a wider opportunity for bringing the realities of hydro-development to the capital's population and, in doing so, influencing they way it views and responds to its impacts. Moreover, by influencing these attitudes it will be possible to develop an audience that is aware and supportive of community rights in places such as the Prek Kampong Saom Valley.

There are various ways of reaching the Phnom Penh public; although a strategy that combines several approaches is recommended to maximize the opportunities for exposure and exchange. Some of these elements could include:

- Sponsored television program. Apsara TV, in particular, is very responsive to the development and televising of programs featuring environmental themes.
- Exhibitions – A strong exhibition theme, for example, could be a multi-media production featuring words, film, pictures and photographic images from the Prek Kampong Saom area and the *Se San* catchment. A title for this show could be ‘Before the Dam .. . After the Dam’. Such an exhibition could bring together how communities use the environment (‘Before the Dam’) and how this use is subsequently affected when a dam is constructed (‘After the Dam’).
- A symbolic presentation of the community’s petition/declaration (see Section 4.2.3 [i]) to the King or a RGC key official.
- Press conference(s) with community representatives in areas affected by hydro-development.

All of the above approaches represent peaceful ways for bringing community concerns to a wider audience. In doing so they do not only build awareness, but they empower local people by permitting them to articulate their stories, concerns and hopes - all important elements of the human rights framework.

Box 3.2 World Commission on Dams (WCD)

The report of the World Commission on Dams (2000) evolved out of wide-spread concern about the impacts and controversy arising from the development of large dams across the globe. In response to these challenges, the document provided a five-part framework for large dam decision-making based on: (a) equity; (b) sustainability; (c) efficiency; (d) participatory decision-making; and, (e) accountability. Working alongside these values, the WCD conceived of a series of key recommendations, including:

- (a) The development of no dam without ‘demonstrable acceptance’ by affected communities.
- (b) Maximizing of efficiency in existing water and energy facilities;
- (c) The comprehensive and participatory assessment of people’s water and energy needs, and of the options for meeting these needs, developed prior to the commencement of any new project.
- (d) ‘A legal right to remedy’ by the state to provide reparation, or retroactive compensation, for those experiences the costs of dam construction and operation, including efforts to restore damaged ecosystems.

“Existing international laws have articulated a legal premise for a right to remedy, or reparations which is also reflected in the natural legislative frameworks of many countries . . . [T]he responsibility for initiating the process of reparation rests with the government . . . it is the State’s responsibility to protect its citizens, including their right to just compensation” (WCD, 2000).

Rights groups within Cambodia have argued that the RGC should draw on the themes and ideas of the WCD report to guide present and future dam development in this country (e.g. Middleton, 2008). It is an argument that has merit while also facing numerous challenges. It is easy to see the WCD report, for example, as part of a ‘1990’s development ethic’ that is rapidly being eroded by the ‘Beijing Consensus’ (see Section 1.3.3 [c]). In such a light one would expect the report to enjoy limited currency; a situation compounded by interacting variables within Cambodia’s own domestic political environment. Nonetheless, it is recommended here that the decision-making framework in the report does offer a template for ‘best practice’ that will promote sustainable development, and should therefore be drawn-on by the company and the RGC to guide its planning, construction and management of the Kirirom III project.

Part IV

Summary and Recommendations

4. Summary and Recommendations

4.1 Summary

Some time in the beginning of the next decade a new hydro-power scheme is scheduled to begin generating electricity in the Sre Ambel district. Located in the catchment of the Prek Kampong Saom, the scheme will supply between 18 MW of electricity to the burgeoning power market of Phnom Penh and beyond. The impacts of the construction and operation of this facility on the environment and livelihoods of the local community has been explored in this study. Some of the key impacts are anticipated to be:

- The deterioration of water quality and quantity in the Stueng Pongrul and the demise of the resources this water body provides to local villagers.
- Loss and deterioration of numerous commons areas used by villagers, including the Phnom Toub Cheang Forest, and various trapeangs and riparian habitats.
- Soil erosion and damage to other ecological services of the eastern massif of the Prek Kampong Saom Valley.
- Impacts on the social and institutional fabric of community society.
- Inflation and economic changes in the local economy, including labor market.
- Loss of land by individual households.
- An influx of in-migrants and the impacts of their arrival on the local environment.
- Flooding and disruption of water transport.
- Impacts on the morphology of the Prek Kampong Saom and Stueng Pongrul waterways.
- The increased incidence of various diseases.

The sum total of these effects will be the deterioration of the local environment systems that currently supply a range of natural resources to the local community, providing them with goods for sale and a safety net against periodic disruptions and shortages in food supply. The range of natural resources involved includes NTFPs, wood products and commons grazing areas.

As the introductory part of this study iterates the well-being of local communities in the Prek Kampong Saom is grounded in the condition of the catchment's natural resource systems. In turn, a range of governance arrangements have evolved in the Valley, including official and spirit-based institutions, to help ensure the health and sustainable exploitation of these systems. The capacity of a hydropower scheme to destroy and damage these systems, without remedial or mitigation recourse, is therefore a matter of supreme concern. The demise of natural resources

will also build substantially on the pressures many villagers presently face, caused by the recent loss of land on the western side of the Prek Kampong Saom to concessionaires. The outcome will be an increase in community vulnerability and indebtedness, facilitating a decline in the local quality of life and potential increases in village conflict.

A project that is permitted to have such effects without providing opportunities for adequate redress represents, at its most elementary level, a violation of fundamental human rights. It also contravenes the rights of the community under international laws that Cambodia has been a signatory, the Constitution of the Royal Kingdom of Cambodia (1993), and a number of other provisions in national law. Ultimately, a project that has such consequences cannot be said to be contributing to the sustainable development of Cambodia.

4.2 Recommendations

Fortunately, there exists a range of opportunities for redress that can help to ameliorate the consequences of the Kirirom III scheme, with a list of recommendations set-out below. Many of these suggestions could be undertaken as stand alone activities; however, most of them will be strengthened if they are completed in coordination with the others in the list. To assist in the interpretation of these responsibilities, the recommendations are broken down in accordance to the parties that should take the lead on each one. The categories used are: (a) the hydropower company and its consultants; (b) RGC authorities; (c) the local community; and (d) broader civil society.

4.2.1 The Hydropower Company and its Consultants

(i) Information transfer and community negotiation

Currently there is considerable uncertainty amongst the local community about the Kirirom III project. This includes information on the scale of the project, the placement of infrastructure, the scheme's operation and the schedule for its construction. This has helped to generate concern amongst villagers about how the scheme will impact on their livelihoods, a situation that has given rise to doubts about the intention of the company. In contrast, a population that is aware and informed is more likely to respond positively to the demands of the project than one that lives in fear. Moreover, this latter situation is more likely to engender community support for the project; contributing towards the acceptance of the scheme and its operators within the Prek Kampong Saom Valley. Given the investment and long-term conditions of the company's contract this is an outcome that is in its long-term economic and political interest. To facilitate this it is necessary for the company and its consultants to be open and clear on the project, using its resources to facilitate a process of information exchange with the affected parties. Further, it should seek to establish a process of regular dialogue with designated representatives recognized and sanctioned by the community (not just the commune council). This forum could also become the location where issues of impacts, mitigation and compensation are negotiated and approved.

Recommendation: The company and its consultants should endeavor to provide a regular and transparent process of information exchange with the parties affected by the construction and operation of the Kirirom III scheme. The company and its consultants should be prepared to liaise and coordinate with a community representative group, which will become the forum for upfront

exchange of information, and where negotiations over mitigation and compensation can be discussed and approved.

4.2.2 Government Authorities

(i) Environment Impact Assessment

As mentioned in Section 1.4.2, the EIA process undertaken during the Feasibility Study appears to have been rudimentary, lacking in depth and unspecific in detail. Much more information is needed on mitigation measures, including a regime of compensation for villagers affected by the project. To date, no EIA has been submitted to the Ministry of Environment.³⁷ It is recommended that the Ministry of the Environment (RGC) request a full and detailed EIA for the scheme, which includes local participation in the preparation of the document (as per Art.16 – 17 of the LawEPNRM [1996]). The new document should follow the content set down in the draft EIA guidelines previously prepared by the Ministry of the Environment, which includes the presentation of an Environment Management Plan for the scheme. The Ministry should also ensure that the final document is made available to the community for comment and input, including the opportunity for public discussion. If such a document has already been prepared, then copies of it should be circulated to the local community and interested parties as soon as possible and time made available for a meeting to discuss the document, its findings and the contents of its Environment Management Plan.

Recommendation: The Ministry of Environment require a full EIA to be prepared for the Kirirom III project prior to the commencement of construction, with regard being given to the impacts that have been discussed and summarized in this study. A public review of the EIA in the form of a consultation workshop should be undertaken with the affected community and concerned parties.

(ii) Water Licensing

Under the provisions of the recently promulgated Water Resources Management Act (2007) the operators of the Kirirom III scheme should be required to apply for two water licenses. The first of these will be for the use of water from the Stueng Pongrul, the second for the intended discharges into the Prek Kampong Saom from the diversion and tail race structures. Under the legislation, these licenses are required to impose conditions that promote ‘Integrated Water Management’, including the maintenance of ecological values in the subject waterways. Under these provisions there is the opportunity for requirements on the license holder to address some of the water issues identified in this study. This includes the dewatering of the Stueng Pongrul and the impacts of water inflows on the river banks and riparian commons of the Prek Kampong Saom. The Department of Water Resources Management and Conservation, within the Ministry of Water Resources and Meteorology, has the overall responsibility for the licensing process, including the right to place provisions on the licenses that it grants.

Recommendation: The Department of Water Resources Management and Conservation should instigate the requirements for water licenses from the operators of the Kirirom III operators. The

³⁷ While no EIA has been submitted, prior to printing of the final version of this report government officials were able to inform us that the company, CETIC, in August 2008 hired the local firm SAWAC Consultants for Development Ltd to carry out an IEIA for the project.

licenses should include consideration of the maintenance of a minimum flow in the Stueng Pongrul, using the regime suggested in this study.

(iii) Themes and approaches of the World Commission on Dam's Report (2000)

The WCD report (2000) details an approach to large-scale hydropower development that can promote sustainable outcomes for society, the RGC and affected communities in the case of the Kirirom III project (see Box 3.2, page 79). This includes an approach to the construction and operation of the scheme on the framework principles of: (a) equity; (b) sustainability; (c) efficiency; (d) participatory decision-making; and, (e) accountability; and the acknowledgement by the RGC of a 'legal right to remedy' for the Prek Kampong Saom community affected by the scheme.

Recommendation: The RGC incorporate the framework principles and approaches detailed in the WCD report (2000) into the planning, construction and operation of the Kirirom III hydropower scheme.

(iv) Compensation

This study has highlighted a variety of ways that the Kirirom III scheme is anticipated to reduce the quality and quantity of private land and commons areas. This consequence will impact on the livelihoods of local peoples, affecting their human and constitutional rights and, at the most fundamental level, their quality of life. Simultaneously, there exists provisions in international and national laws, sub-decrees, Prakas and guidelines that require or offer processes for avoiding, remedying and mitigating many of these impacts. A key instrument to consider here is the role that compensation can play in ameliorating the effects of the project on villagers. A compensation strategy overseen by RGC authorities is therefore recommended here. This should include a strategy that supplies compensation for immediate effects and those that occur through the life of the project and require on-going compensation.

Recommendation: RGC authorities should introduce a compensation regime to mitigate the adverse consequences of the Kirirom III scheme upon the local community. The desired strategy for the compensation mechanism should include: (a) a like-for-like strategy of compensation (e.g., land compensation should involve replacement property that is of equivalent size and condition); (b) equity in terms of the distribution of compensation (i.e., harmonizing the distribution of compensation with the dispersal of the impacts of the project across the community); (c) recognition within the compensation strategy of how economic and gender differences affect how impacts are experienced by different villagers; (d) assurance that the compensation process is not captured by community elites, but instead is managed in a way that is inclusive and participatory; and (e) a process of on-going compensation for effects experienced through the life of the project (e.g., on-going support for supplementary fish supply to replace the loss of fish from the Stueng Pongrul).

4.2.3 Community

(i) Community Declaration

Presently it is difficult to establish a clear and concise community position on the project *circa* 2008. It is understood that a petition was previously prepared and submitted to the provincial

governor that had been thumb-printed by a large portion of villagers in the affected area; however, the subsequent history and attention given to this document is unknown. It is also apparent from this study that currently there are diverging views amongst community members towards the scheme. This ranges from members that have strong concerns about its anticipated impacts, to those who welcome the perceived opportunities that will come from its construction and operation. If the community is to be effective in the advocacy of its rights it is necessary to go beyond this diversity and to establish a collective position towards the project, which is seen as representative of local villager attitudes. Without such an understanding it will be difficult for the community and its supporters to advocate on its behalf, as there will be no sanctioned position upon which to negotiate. One form this collective position could take is a declaration. Such a document would ideally include the following details:

The petition needs to be a detailed document that refers to the environment of the project site, how the natural resources of this environment supports the local community, anticipated impacts of the scheme, the expected scale of these impacts, and why these effects are considered to be significant. The community should also use the petition to inform the Ministry of Environment of the provisions within the law for public participation in the EIA process. A request for a reply from the Ministry to the petition should be included with the document. The community might wish to seek assistance from civil society groups to help it achieve this task.

- A summary of the local community, including history(s), member's livelihoods and how villagers use the local environment.
- A statement of community position towards the project, including concerns about the scheme, mitigation and compensation issues, and how the community would like to see the scheme proceed.
- The declaration should state a request for the Ministry of the Environment and the Ministry of Water Resources and Meteorology to require the company to, respectively, undertake a full EIA study and to apply for water licenses.
- The document should make reference to relevant human rights and environment sections of international and national law, and the environment policies of China Exim in order to reinforce the legitimacy of its requests.

A key feature of the declaration must be that it seen to endorse the view points of the community, or at least a majority within the affected area. Thumb printing or other acceptable processes to the community offer a means for conferring this legitimacy over the document. The declaration should subsequently come to form the basis of the community's position towards the scheme, providing the foundation for such activities as the negotiation of compensation and media releases.

Recommendation: The community establishes a clear and agreed position towards the construction and operation of the Kirirom III scheme and prepares a declaration that becomes the basis for its dialogue and negotiations with the company, its consultants and relevant government authorities.

(ii) Representation

Just as the community needs to have a defined position on the project, it also needs to have a defined group of members who can discuss and negotiate with the company and to be the recipients and distributors of information. Presently there is no stated body that the community has assigned this task to. As a result, what exchanges does occur is *ad hoc*, lacks continuity and does not have the official sanction of villagers. As a consequence, presently there is no organization that can promote the declaration document that is recommended above. Nor is there a sanctioned organization for the receipt of information from the company, its consultants and relevant government authorities, and who these parties can approach for negotiations, outside of the commune council. Commune councils, meanwhile, are periodically subject to political and personal whims that do not always ensure transparency.

In response, it is recommended that the community sanction the approval of a body to represent it on matters relating to the development of the Kirirom III project. The community may chose to delegate this authority to an existing organization, such as the commune council or the Community Forestry Committee, making use of their existing skills and social capital to promote efficiency and effectiveness. Alternatively, villagers may decide to form a special group to promote its concerns, including the championing of the community declaration. The key attribute of the group must be its endorsement by the community as the legitimate representative of its interests. The group, in turn, must ensure that it remains transparent and accountable to the wider community, drawing on the content of the recommended declaration document to guide its actions and speech.

Recommendation: Community members within the affected area should decide on an organization that they will approve as the party to liaise and negotiate with the company, its consultants and relevant government authorities. This group will should be recognized in the declaration document and be responsible for advocating for the outcomes that it sets out.

(iii) Registration of Land Title

The study has highlighted the vulnerability of the affected community to the acquisition of their land by outside parties. This goes beyond the Kirirom III project to include wider processes of land acquisition underway in the district. Many villagers in the affected area appear to meet the conditions for private land registration set out in the Land Law (2001), although none are known to have gone through its registration process, citing instead, authority granted by the commune council. While the granting of such title will not necessary stop the loss of land to the hydropower scheme, it will enhance the legal position of subject villagers to the right of compensation.

Recommendation: Community members should seek to obtain register title over their land through the process managed by the Ministry of Land Management, Urban Planning and Construction. This is presently a complex and time consuming process and assistance from civil society groups might be necessary to assist villagers in accomplishing this task.

4.2.4 Civil Society

(i) Awareness Raising – Part II

An observation from this study is that many villagers are still struggling to come to terms with the implications of the Kirirom III project on their livelihoods and future well-being. Thus, while some previous awareness raising has been undertaken by organizations such as CEPA in the area, a new round of discussion and information exchange would allow for some of the current knowledge gaps to be filled. Further, the awareness raising events could provide the fora for the preparation and approval of both the declaration document and the representative group, which have been recommended earlier in this section.

Recommendation: That civil society groups undertake a further round of awareness raising exercises with villagers from the Prek Kampong Saom Valley. These exercises should look to build on the work that was previously undertaken with villagers in 2004 and should also seek to fill spaces in community understanding that are raised by villagers themselves and in this study.

(ii) Public Dialogue and Engagement

The study has highlighted the importance of the Phnom Penh public as a recipient of the benefits of power development, as well as providing the political and economic base within which decisions on the use of the country's natural resources are made. It is apparent that this society is insulated from the immediate implications of hydropower development in locations such as the Prek Kampong Saom, while simultaneously there is a growing number of the city's population whom are concerned about environmental matters and wishes to learn about them (the participation of Khmers in the 2007 Environment Film Festival being illustrative of this). Thus far, national and international civil society groups have undertaken limited efforts to engage with this community on hydropower issues. As a result much of the advocacy work and assessment being undertaken has had limited impact. If concerns about hydropower development are to gain an audience and traction within Cambodia it is necessary to move pass this situation. Further, by giving communities a voice - an opportunity to articulate their concerns and plight as a consequence of hydropower development – they can be empowered; moving them from the state of passive recipients of change to one of assertive claimants of their rights.

There are a range of innovative environmental media activities that can be used to raise public awareness and promote engagement, a number of which have been list in Section 3.3.5. One galvanizing event, for example, could be the 'Before the Dam . . . After the Dam' exhibition suggested in this section. Overall, what is apparent is that if recommendations made in such documents as the World Commission of Dams (2000) report or in Middleton's (2008) recent assessment are to cause change, then the minds and values of the Phnom Penh citizenry must be engaged and influenced.

Recommendation: That civil society groups engaged in hydropower advocacy develop a collective strategy of awareness raising and engagement on hydro-development matters for the citizens of Phnom Penh. The strategy should include ways of promoting the engagement of the communities affected by hydropower development, providing them with opportunities to articulate and voice their concerns.

4.2.5 Concluding Statement

It is acknowledged here, as elsewhere in this study, that the Kirirom III project has the capacity - if developed and managed correctly - to enhance the lives of local people, while having minimal environmental impacts. Villagers themselves talk, for example, of the benefit flows of electricity, improved access and infrastructure development that they hope to see come from the scheme.

If built and operated using best practice experiences from overseas, including the application of ideas and recommendations from the World Commission on Dams (WCD, 2000) and a full compensation strategy, then Kirirom III could set the bench-mark for sustainable hydro-development within the lower Mekong region. *This is the opportunity and challenge that the company, its consultants and the relevant government authorities now face. For the sake of the people of the Prek Kampong Saom Valley and its natural environment, it is hoped that it is a challenge and opportunity that they are willing to rise to.*

Appendices

Appendix 1: Introduction to Cambodia's Legal System

The legal system in Cambodia exists within the overall structure created under the Constitution, which provides the over-arching authority for governance in the country. The government model in Cambodia is designed to provide a clear demarcation between the legislative (law making bodies); executive (ruling authority) and judicial (adjudication) sections of government³⁸. This division of authority is intended to avoid abuses of power and domination by any one authority through the creation of a series of counter-balances within the system of governance. In reality, however, the executive branch is all powerful in Cambodia; in part due to the limited ability of the other branches to counter the power of the Executive.

Cambodia has a comprehensive legal system, rather than a system based on common law (Sans pers. comm., 2008). Inherited from the time of the French Protectorate, the primary difference between the two systems is that while legislation developed under the common law system are held to support implementation and enforcement at the time they are passed, those developed under the comprehensive system are not and require further clarification under defining legislation. Within the comprehensive system, therefore, laws developed in Cambodia represent legal statements over the overall intent of the legislation, which provides guidance for the subsequent stages of implementation and enforcement. What is required, further on, are technical clarifications on how this will occur. This system has created a hierarchy of laws and regulations, with each deriving its validity and authority from the one above it; while those below offer further technical details on how those above them should be interpreted and implemented. In order, this hierarchy is:

- Constitution
- Laws
- Royal decree
- Sub-decree
- Prakas, regulations, guide lines, circulars, decisions
- Deika

Each of the above legal mechanisms has its own defined scope in which it operates. Laws and sub-decrees apply to government entities and are binding across the country (unless limited in the legislation itself); Prakas, regulations, guidelines and circulars are only binding within the ministry within which they are promulgated. Orders given by provincial governors and commune councils – deikas – are restricted to the territory of the promulgating authority, and like the other legislative devices they cannot contradict those above them in the hierarchy.

The 'comprehensive' system has several advantages in the context of Cambodia. It allows laws to be passed more quickly than might otherwise occur because time does not have to be taken to refine technical details. It also saves on the need for amendments to a law, which is typically required under a common law situation when gaps or problems within a piece of legislation become recognized. It also allows line ministries to develop the technical details for a law as they

³⁸ In Cambodia the legislative function resides in the National Assembly (lower house) and Senate (upper house); executive function resides in the position of Prime Minister and the Council of Ministers; and the judicial in various courts.

secure support from external agencies such as the World Bank and the United Nations³⁹. The disadvantages, however, are significant. The system gives the Executive the power to slow up implementation by delaying or stopping the development of elaborating legislation. This situation can be readily abused, permitting private and public authorities considerable scope to interpret the law as they wish. For example, Article 18 of the Land Law (2001) states that the buying and selling of indigenous communal land is illegal, while also permitting indigenous communities to register their communal lands. But the law itself does not define what either indigenous or indigenous land means, while a sub-decree that could provide this clarification has presently not been passed. This situation has allowed various companies to seek economic land concessions over places that are, for practical purposes, indigenous communal areas. Of more relevance to this study, the legal requirement for environment impact assessment (EIA) is set-down in the *Laws on Environmental Protection and Natural Resource Management* (1996), with further elaboration provided in an EIA sub-decree (1999). However, no official guidelines presently exist for the format or procedure of an EIA; many consultants, instead, refer to unofficial guidelines to conduct their assessments.

Besides the issue of implementation, another challenge posed by the Cambodia legislative environment is the degree to which different laws coordinate with each other. The main issue here is that laws and ministries often over-lap in areas of jurisdiction, a situation that leads to contradictory interpretations of how things, such as natural resources, should be managed and used. This failure of laws to ‘talk to each other’ has been observed in the relationships between the provisions of the Land Law (2001), the Forestry Law (2002) and the granting of concession rights. The provision for concessions is provided for in the Land Law (2001) through a 2005 sub-decree, while the Forestry Law also previously offered the opportunity for concessions on public forest estate, although this effectively ended as a legal activity following the issuing of a moratorium in 2002. At the time of the moratorium all forestry concessions reverted to natural forest protected areas, with the stipulation that they could not be converted into economic land concessions (United Nations, 2007). Despite this, numerous cases exist in Cambodia of economic land concessions being granted over forest areas using provisions within the Land Law sub-decree.

The above description highlights a legislative environment that, while conceptual sound, suffers from practical deficiencies which complicate the opportunity for communities to seek redress under the law. Simultaneously, because many laws remain unclear in terms of their legal meaning, there remains limited scope for affected parties to seek redress through the judicial process. This is because courts can only base their decisions on provisions within the law; if the law is unclear or waiting for further technical details, then their ability to pass rulings is understandably diminished. The resulting vacuum provides sectoral interests with significant scope for pursuing their interests and agendas, as they know they have the freedom *within* the law to do so. Instances from the on-going development of hydropower in Cambodia highlight this situation:

“Whilst Cambodia, on paper, has a number of strong laws that should safeguard the environment and ensure adequate protection for affected communities, in practice their effectiveness is limited due to inadequate resources and, on occasion, institutional disincentive. The endorsement by senior Cambodia politicians of extensive hydropower development plans has signaled to the government’s bureaucracy that these projects should be pushed through” (Middleton, 2008, p. 1).

³⁹ For example, the World Bank is currently assisting the Ministry of the Environment to develop a set of guidelines for the undertaking of environment impact assessments (EIAs).

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The intention to construct and operate a hydropower station – Kirirom III – in the catchment of the Prek Kampong Saom, in the Sre Ambel District of Southwest Cambodia, will give rise to a range of issues and opportunities for the local inhabitants. This study explores these matters and the options that exist for the local community to promote their rights in the hydro-development process.

Driven by international and national imperatives, the situation these villagers face are presently being repeated across Cambodia; this means that the experiences and observations of this study have a relevancy and meaning that extend beyond the hills and waterways of the Prek Kampong Saom Valley.

This study also suggests that if built and operated with proper ecological, social, economic and institutional measures in place, that the Kirirom III scheme could set the bench-mark for sustainable hydro-development in Cambodia.

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