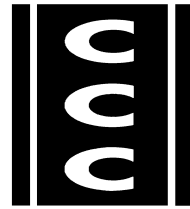


*Small-Scale  
Research Report*

គម្រោង : កម្មវិធី គាំទ្រ  
សហប្រតិបត្តិការ  
ស្របច្បាប់  
Cooperation Committee  
for Cambodia  
Comité de Coopération  
pour le Cambodge



**Indigenous Response to Depletion  
in Natural Resources**

A Study of Two Stieng Villages in Snoul District,  
Kratie Province



**Analyzing Development Issues  
Trainees (Round 14) and Team**

**September 2004**

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## **Abstract**

This ADI research seeks to trace the depletion of natural resources in two indigenous Stieng villages in Snoul District of Kratie province and to document the responses that have emerged as a result. This includes an assessment of land tenure and land productivity, livelihood strategies, and market participation. The study situates the historical trends in the two villages within a broader discussion of forest decline in Cambodia, Kratie province, and Snoul district.

The experiences of Mil and Thmar Hal Veal villages reveal a downward turn in the quality of their resource bases and the sufficiency of their natural resources. At the same time, villagers in both areas remained dependent on land and forest resources for their subsistence. To some extent, Mil village, located within the Snoul Wildlife Sanctuary, responded more creatively to the challenge of resource management. By forming supportive links with NGOs and the Ministry of Environment, Mil villagers were able to establish a community protected area within the sanctuary. This enabled them to deal more effectively with the further deterioration of their natural environment. By contrast, Thmar Hal Veal village, located within the Samling forest concession and near the Vietnam border, lacked contacts with NGOs and government officials needed to effectively counter the endemic illegal logging in the area. The downward slide in the quality of their natural resource base was likely to continue.

## **Indigenous Response to Depletion in Natural Resources: A Study of Two Stieng Villages in Snoul District, Kratie Province**

### **Problem Statement**

Recent studies undertaken by CIDSE Cambodia in Ratanakiri and Mondulakiri provinces indicate that rapid change has taken place within indigenous communities as a result of Khmer in-migration and the expansion of the market economy. In a study of two Tampuan villages in Ratanakiri province the buying up of indigenous land rights by Khmer people for the cultivation of cash crops and future speculation not only diminished natural resources for sustaining livelihoods, but also debilitated cultural and social resources needed to deal with the exigencies of change itself.<sup>1</sup> In a study of two Phnong communes in Mondulakiri province legal and illegal logging, and unregulated hunting and fishing, similarly resulted in a decline of natural resources that undermined indigenous subsistence.<sup>2</sup>

The CIDSE studies indicated that indigenous communities in the two provinces remained highly dependent on natural resources for their livelihoods. The Ratanakiri study revealed that households remained essentially subsistence swidden cultivators who supplemented their livelihoods by gathering, hunting and fishing. The Mondulakiri study pointed out that households depended primarily on forest products, hunting, and trapping and secondarily on cultivating crops to support their livelihoods. In both studies the market economy had not transformed the local residents into entrepreneurs or traders nor had it provided them with remunerative and sustained opportunities in wage work.

Indigenous households in the study areas were very much integrated into the market economy. Generally, villagers were eager to participate in market activities and derived benefits from this involvement. The changes brought about by the growth of local markets were not all detrimental to the valued life ways of the indigenous groups. This noted, market forces operating in Ratanakiri and Mondulakiri provinces nonetheless demonstrated the potential to undermine the well-being of indigenous communities. The studies argued that indigenous groups who retained control over land rights and natural resources were in a stronger position to adapt to the rapid and inevitable change, and ensure their subsistence, than those who did not.

As a result of the detailed studies conducted in Ratanakiri and Mondulakiri in recent years, policy makers and development practitioners have a more in-depth understanding of natural resources management issues confronting indigenous people in northeast Cambodia.<sup>3</sup> This is less so in the northeast province of Kratie where fewer studies have been undertaken and where indigenous groups are indeed in the minority. This Analyzing Development Issues (ADI) study seeks to contribute to the knowledge of indigenous people and natural resources management in Kratie province by focusing on two Stieng villages in Snoul district: Mil village in Khsim commune and Tamar Hal Veal village in Pir Thnou commune.

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<sup>1</sup> John P. McAndrew, *Indigenous Adaptation to a Rapidly Changing Economy: The Experience of Two Tampuan Villages in Northeast Cambodia*, (Phnom Penh: CIDSE Cambodia, December 2001).

<sup>2</sup> John P. McAndrew, Mam Sambath, Hong Kimly, and Ly Bunthai, *Indigenous Adaptation to a Decline in Natural Resources: The Experience of Two Phnong Communes in Northeast Cambodia*, (Phnom Penh: CIDSE Cambodia, September 2003).

<sup>3</sup> See also Tom D. Evans, Hout Piseth, Phet Phaktra, and Hang Mary, *A Study of Resin-Tapping and Livelihoods in Southern Mondulakiri, Cambodia, with Implications for Conservation and Forest Management*, (Phnom Penh: Wildlife Conservation Society, 2003).

Snoul district offers an interesting site for research on natural resources management issues. Since Cambodia's transition to a market economy in the early 1990s, it has suffered a depletion of natural resources principally through legal and illegal logging as well as taken steps to manage natural resources through the establishment of protected areas. This research seeks to trace the depletion of natural resources in the study area and to document the responses that have emerged as a result. This includes an assessment of land tenure and land productivity, livelihood strategies, and market participation.

## **Research Objectives**

- To trace the depletion of natural resources in the study area and to document the responses that have arisen as a result.
- To explore how land tenure and land productivity affect the development of the local communities.
- To examine the importance of natural resources in the household livelihood strategies of the villages studied.
- To gauge the extent of household participation in market activities and how this relates to the use of natural resources.

## **Key Questions**

### ***Depletion of Natural Resources and Emerging Responses***

1. When were the villages settled? What was the state of natural resources (forest, wildlife, fisheries, cultivation areas) at that time? What changes occurred during successive periods? e.g. Sihanouk regime? Pol Pot era? 1979-1992? 1993-1999? 2000-2004? Were forest and fishing resources more plentiful or less plentiful from one period to another? Were agricultural resources more productive or less productive from one period to another? What were the reasons for this?
2. What are the natural resource boundaries of the villages? Sketch the forest areas? The *chamcar* areas? The paddy land rice areas? The residential areas? The recent in-migration areas? The protected areas? The logging concession areas? The illegal logging areas? Are village land areas included in any conservation and/or protected areas established by the government? Has any legal or illegal logging occurred in the villages? In other areas that have had consequences for the villagers? Have the villages been affected by recent population increases and/or Khmer in-migration? Have the villages been affected by claims or purchases of land by outsiders for the cultivation of cash crops or land speculation? What have been the consequences of these developments?
3. Are the natural resources in the village sufficient to the needs of the villagers? Are there sufficient areas available for opening up new swidden lands? Are there sufficient areas available for opening up new paddy rice lands? Are there sufficient forest areas to acquire timber for building houses? Are there sufficient forest areas to tap resin and to gather other non-timber forest products? Are there sufficient forest areas to gather food? Are there sufficient areas to trap wildlife for home consumption? Are there sufficient areas to fish for home consumption? How does the sufficiency of natural resources affect village livelihoods?

4. What have villagers done to protect and manage their natural resources? Have they formed any committees to regulate the use of natural resources? Have they developed any rules and regulations within the village that govern the use of natural resources, i.e. timber, non-timber forest products, wildlife, fisheries, *chamcar*, and paddy areas? How do they monitor and enforce these regulations? Have they participated in any meetings or events to promote the integrity of their natural resources? Have they received any support or assistance from government or NGOs to protect and manage their natural resources?

### ***Land Tenure and Land Productivity***

1. How do the indigenous people in the two villages understand their rights to land resources? Do they distinguish between their rights to forest areas and to agricultural land? Do agricultural land areas in the villages belong to the Stieng people communally or collectively or do they belong to individual households? Do land areas that are no longer cultivated by individual households remain with those households or do they revert back to communal ownership? Do individual households have the right to sell the land they are cultivating without consulting the village chief, the elders, or the Stieng villagers as a whole? Do Stieng households in the villages sell land rights to other Stieng people? Do Stieng households in the villages sell land rights to Khmer people? Are these practices very common? Are land transfers to children more common? Are there differences between the land rights of men and the land rights of women?

2. Do households in the villages invest in the productivity of their land? Do they use high-yielding varieties? Do they use fertilizer? Insecticide? Irrigation pumps? Irrigation canals? Do they take advantage of dams or reservoirs? Do they protect their land from soil erosion? Do households cultivate high value cash crops on their *chamcar* land to increase the income earned from their land, e.g. coffee or cashew nuts? Do they practice double cropping on their paddy rice fields? Do households use land as collateral to loan money for productive investments?

### ***Livelihood Strategies***

1. Do natural resources play a major role in sustaining the livelihoods of the indigenous people in the two villages? What are their livelihood strategies? How many households are involved in swidden cultivation? Wetland rice cultivation? Pig raising? Chicken raising? Gathering food from the forest? Gathering other products from the forest? Hunting or trapping? Fishing? Making and selling goods? Buying and selling goods? Wage work? What are the relative involvements of men and women in these activities?

2. How important are various livelihood strategies for supporting indigenous households? What are the relative contributions of cultivating crops? Livestock and poultry raising? Gathering forest products, hunting, and trapping? Fishing? Making handicrafts, trading, and wage work? What are the implications of this for managing natural resources?

### ***Market Participation***

1. What has been the participation of the indigenous people in market activities? To what extent have households been involved in the buying and selling of land? Labor? Rice? Cash crops? Cattle or buffaloes? Pigs? Forest Products? Wildlife? Where are these products bought and sold? How are these products bought and sold? How does the selling of products cultivated or gathered affect indigenous households?

2. What are the closest markets to the two villages? What is the frequency of market going? What are the goods most commonly bought at the markets?



## Research Methods

The field research was conducted in two predominantly Stieng villages of Snoul district, Kratie province: Mil village in Khsim commune and Thamar Hal Veal village in Pir Thnou commune. Mil village is located within the Snoul Wildlife Sanctuary 12 kilometers off National Road 7, while Thmar Hal Veal village is located within the Samling forest concession near the Vietnam border (see map, Appendix 1).

In Mil 95 of the 147 village households were ethnically Stieng. In Thmar Hal Veal 111 of the 119 village households were ethnically Stieng. This study focused only on the Stieng populations in both villages. The trainees were divided into four teams each supervised by one ADI staff. Two teams gathered information in Mil village while the other two teams gathered information in Thamar Hal Veal village.

Three primary research methods were used: focus group interviews incorporating participatory rural assessment (PRA) approaches, survey questionnaires, and key informant interviews. Focus group interviews were conducted separately with Stieng men and women in each village. Survey questionnaires were also conducted through purposive sampling with 59 Stieng households in Mil and 61 Stieng households in Thmar Hal Veal. Key informant interviews were conducted with village chiefs, commune and provincial government officials and NGO leaders.

## Depletion of National Resources in Kratie Province and Snoul District

The depletion of natural resources in Kratie province, and more specifically in Snoul district, reflects a broader trend that has taken place within the country since the 1960s. The last 40 years have witnessed an accelerated rate of deforestation and forest degradation as political parties and military forces have increasingly used forest resources to build their power bases.

### *Forest Decline in Cambodia*

A recent Cambodia Development Resources Institute (CDRI) study places Cambodia's current forest cover at 50 to 60 per cent of the country's land area, down from about 75 per cent during the 1960s.<sup>4</sup> From the 1960s to the mid-1980s deforestation progressed at an average annual rate of about 0.5 per cent, increased to about one per cent from the mid-1980s to mid-1990s, and then rose to about 1.7 per cent since the mid-1990s (Table 1). These figures underscore the accelerated rate of deforestation i.e. the loss of forest cover that has occurred over the years. At the same time, additional data is needed to capture the extent of forest degradation i.e. the loss of productive capacity or forest quality that has accompanied this loss.

The increased rate of forest exploitation, which began in the late 1980s, accompanied Cambodia's reintegration into the global market economy but cannot be explained simply as a consequence of this. An understanding of the broader political economy is crucial. The three main political factions struggling for control of Cambodia - the Cambodian People's Party, the FUNCINPEC party, and the Khmer Rouge - were intensely involved in logging the areas under their control.<sup>5</sup> The need to fund political and military power bases which consumed the warring factions until the late 1990s meant that forest exploitation in Cambodia was conducted, for the

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<sup>4</sup> Bruce McKenney, Yim Chea, and Prom Tola, *Focusing on Cambodia's High Value Forests: Livelihoods and Management*, (Phnom Penh: Cambodia Development Resource Institute, 2004).

<sup>5</sup> Bruce McKenney and Prom Tola, *Natural Resources and Rural Livelihoods in Cambodia: A Baseline Assessment*, Working Paper 23, (Phnom Penh: Cambodia Development Resource Institute, 2002).

most part, illegally with little of the proceeds flowing into the public treasury for reconstruction and development.<sup>6</sup>

Table 1. Forest Cover and Rate of Forest Loss in Cambodia, 1960s to 2002								
Year	1960s	1973/76	1985/87	1992/93		1996/97	2000	2002
Forest Cover (000 ha)	13,277	12,711	11,852	11,284	10,859	10,638	9,245	10,379*
Forest Cover as % of Total Land Area	75.2%	71.9%	67.4%	63.6%	61.3%	60.2%	52.4%	56.5%*
Time Period of Analysis	1960s to 1985/87		1985/87 to 1996/97			1996/97 to 2000/2002		
Average Annual Rate of Deforestation	0.5%		1%			1.7%		
*These data supplied by the Department of Forestry and Wildlife (DFW) are not reliable, and may reflect an artificial increase in the extent of forest cover. Source: Bruce McKenney, Yim Chea, and Prom Tola. <i>Focusing on Cambodia's High Value Forests</i> . 2004.								

In an attempt to rationalize the logging industry and enable the state to capture more of the revenues generated from timber sales, international donors led by the International Monetary Fund (IMF) and the World Bank promoted forest management through forest concessions. From 1994 to 1997, the Royal Government of Cambodia (RGC) granted 30 forest concessions, covering 6.5 million hectares or 35 per cent of Cambodia's total land area. Some of these concessions were later cancelled. By late 2001, when a logging moratorium was put into place, 15 timber concessionaries held 21 concessions covering 4.2 million hectares or 26 per cent of the country's land area.

The granting of forest concessions in Cambodia in the mid-1990s sought to eliminate illegal logging and to generate more revenues from forest exploitation. But the forest concession system failed to do this. Illegal logging continued unabated under the concession regime and was often abetted by it.<sup>7</sup> Similarly, the forest concessions never generated the revenues expected, which in 1996 the World Bank had projected to reach US\$ 100 million annually. From 1992 to 1998 the estimated value of Cambodia's timber exports reached a staggering US\$ 2.139 billion, while the estimated government revenue during the same period was only US\$ 98.8 million.<sup>8</sup> Moreover, the effects of concession forestry on local communities were devastating, including severe forest deforestation and degradation.<sup>9</sup>

While illegal logging continued after the logging ban was imposed in 2001, the operations of large-scale forest concessions were effectively curtailed. With the long-term profitability of many concessions in question due to the degraded state of their remaining forest resources, some companies abandoned their concessions while others faced the termination of their agreements. In mid-2004 the World Bank-funded Technical Review Team assigned with evaluating the forest management plans of the forest concessions indicated that it would recommend the approval of six concessions with four (Colexim, Everbright, Timas Preah Vihear, and Cherndar Plywood) covering about 340,000 hectares in high value forest areas.<sup>10</sup> The recommendations of the Technical Review Team contrasted sharply with the policy

<sup>6</sup> Philippe Le Billon, "The Political Ecology of Transition in Cambodia 1989-1999: War, Peace and Forest Exploitation," *Development and Change*, Volume 31, Number 4, September 2000.

<sup>7</sup> See Global Witness reports from 1996 to 2002.

<sup>8</sup> Le Billon, "The Political Ecology of Transition in Cambodia 1989-1999."

<sup>9</sup> Bruce McKenney, "Questioning Sustainable Concession Forestry in Cambodia," *Cambodia Development Review*, Volume 6, Issue 1, January-March 2002.

<sup>10</sup> McKenney, Yim, and Prom, *Focusing on Cambodia's High Value Forests*. The other two concessions recommended for approval were Samrong Wood Industries and TPP Cambodia Timber Products.

options proposed by the April 2004 Independent Forest Sector Review (IFSR) funded by DANIDA, DFID, SIDA, GTZ, and the World Bank. The IFSR recommended that the concession system be closed, that the logging moratorium be continued, and that community forestry be supported.

### ***Forest Decline in Kratie Province***

In Kratie province forest exploitation began in earnest during the 1980s when a 75,000- hectare logging concession was granted to the Socialist Republic of Vietnam on a year-to-year basis.<sup>11</sup> However, it was not until the late 1980s and early 1990s when logging activities were expanded under the control of Military Region 2 (MR2) soldiers and officers. According to Global Witness, these units were involved in all stages of illegal operations including cutting, protection, transport, and export.<sup>12</sup>

As part of the national effort to reduce illegal logging, the forest concession system was reintroduced in the province. From 1994 to 1996, the RCG awarded 9 forest concessions covering 702,642 hectares in Kratie. When two of these concessions were cancelled in January 1999, the 7 remaining companies controlled 502,530 hectares in the province (see Table 2). However, these companies did little to curb illegal practices. In 2000 the Asian Development Bank (ADB) Concession Review documented numerous contractual breaches made by the 7 forest concessions operating in Kratie. These included failure to invest as the contract outlined, failure to make financial deposits, no minimum annual royalty paid, no submission of financial statement, non-compliance with Environmental Impact Assessment (EIA) rules, unacceptable forest management plan, breach of investment agreement, no submission of EIA report, inadequate technical training of staff, operations outside concession, and extensive illegal logging.<sup>13</sup> Of note, the concessionaires in Kratie cooperated closely with MR2 units perpetuating destructive and illegal logging practices.<sup>14</sup>

<b>Table 2. Forest Concessions in Kratie Province, 2002*</b>			
<b>Name of Company</b>	<b>Origin of Company</b>	<b>Area (ha) in Kratie</b>	<b>Years of Harvest Remaining</b>
GAT International Co., Ltd	Malaysia	23,475	5-6
Casotim Co., Ltd.	Cambodia/Russia	131,380	3-6
Samling International Ltd.	Malaysia	143,350	3-5
Pheapimex Fuchan Cambodia Co., Ltd	Taiwan/Cambodia	68,563	5-10
King Wood Industry Pte, Ltd	Taiwan	63,100	3
Everbright CIG Wood Co., Ltd	China	50,225	10-15
Timas Resources Ltd	Singapore	22,437	10-12
*The concessions of the Taiwan-owned Chung Shing Cambodia Co. covering 135,787 hectares in Kratie and the Cambodia-owned Thai Boon Roong Co. covering 64,325 hectares in Kratie was both cancelled in January 1999. Sources: Bruce McKenny and Prom Tola, <i>Natural Resources and Rural Livelihoods in Cambodia</i> , 2002 and Kratie Provincial Government Offices.			

By mid-2004 the World Bank-funded Technical Review Team was prepared to recommend the approval of only one concession operating in Kratie, that of Everbright CIG Wood. Ironically, in May 2001 Global Witness had called for the cancellation of the Everbright

<sup>11</sup> Grant Curtis, *Cambodia: A Country Profile*, (Stockholm: Swedish International Development Authority, 1989) cited in McKenny and Prom, *Natural Resources and Rural Livelihoods in Cambodia*.

<sup>12</sup> Global Witness, *Just Deserts for Cambodia?*, June 1997.

<sup>13</sup> Cited in Global Witness, *Deforestation Without Limits*, July 2002.

<sup>14</sup> Global Witness, *Going Places*, March 1998.

concession for logging illegally in its own concession and in the nearby Pheapimex concession. Global Witness estimated the loss of royalties in Everbright's coupe 2 alone at US\$ 250,000.<sup>15</sup>

Kratie province contains the eastern part of the Prey Long forest, which forms the largest tract of dry evergreen forest in mainland Southeast Asia. A total 183 villages in the province are located less than 5 kilometers from 83,791 hectares of evergreen or semi-evergreen forests. This close proximity of villages to large areas of high value forests makes it a priority area for improved forest management.<sup>16</sup>

### ***Forest Decline in Snoul District***

Snoul district in the southeastern part of Kratie province provides an instructive contrast between forest production and forest conservation approaches. A large part of the district falls under 143,350 hectares of the Samling concession. Another huge area of the district falls within 68,575 hectares of the Snoul Wildlife Sanctuary. In practice, the lines of demarcation are not sharply drawn for illegal logging has been endemic to the district and cuts across both the concession and sanctuary areas.

MR2 units have been at the forefront of illegal logging activities in Snoul district. Appointed to counter illegal logging in the district the MR2 units closed down small-scale operators and then pursued unlawful activities on their own. This included control of illegal logging operations in the Snoul Wildlife Sanctuary. MR2 units also engaged in illegal practices with the Samling concession.<sup>17</sup>

The Samling concession, awarded in August 1994, did not curtail illegal practices. On the contrary, in many ways, it provided a legal front that allowed illegal activities to continue. In March 1997, Global Witness reported that Samling had been buying illegal timber from MR2 units, and from local villagers, with many of the trees cut in Snoul Wildlife Sanctuary. In addition, Samling was paying the Khmer Rouge \$350 per truck per month to permit the removal of logs from the concession, payoffs estimated at over \$17,000 per month.<sup>18</sup> In January 1999 Samling ceased operations in protest over the government's increased royalty from \$14 to \$54 per cubic meter. As of mid-2004 it appeared that Samling had abandoned its operations in Kratie.

Aside from Samling, the Rethy Mecco Company established in August 1995 operated a processing plant in Snoul district about 5 kilometers from the Valoeu border checkpoint with Vietnam. In June 1997 Global Witness reported that the company was involved in illegal logging in the Snoul Wildlife Sanctuary. Logs were transported to the Rethy Mecco site and then transported to Vietnam under the protection of MR 2 forces. Global Witness noted that the company did not appear on any concession list, did not appear to have produced a master plan or annual timber harvesting plan, and certainly did not have permission for timber exploitation.<sup>19</sup> Illegal logging in the Snoul Wildlife Sanctuary was facilitated by the Samling road which cut through the protected area to link company operations in Mondulhiri province. The Samling road likewise opened up forest areas for cash crop cultivation.

The shutdown of Samling's operations in January 1999 did not stop illegal logging in Snoul district. In May 2001 Global Witness reported that luxury timber and pepper poles had been

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<sup>15</sup> Global Witness, *The Credibility Gap*, May 2001.

<sup>16</sup> See McKenney, Chea, and Prom, *Focusing on Cambodia's High Value Forests*.

<sup>17</sup> Global Witness, *Just Deserts for Cambodia?* June 1997; Global Witness, *Crackdown or Pause*, February 1999.

<sup>18</sup> Global Witness, *A Tug of War*, March 1997.

<sup>19</sup> Global Witness, *Just Deserts for Cambodia?* June 1997.

exported to Vietnam on a daily basis. The timber, which originated mostly inside the Snoul Wildlife Sanctuary, was transported by motorbike, oxcart and buffalo cart through anarchic crossings in the district. According to government officials and villagers, the commander of the border police responsible for enforcing the timber export ban had been involved in the illegal activities himself.<sup>20</sup>

In May 2004 Global Witness reported that illegal loggers hired by military, military police and police cut timber in Snoul district to sell to a businesswoman who owned a sawmill in Mondulhiri province. Global Witness also reported that this same businesswoman commissioned soldiers to carry out illegal logging inside the Snoul Wildlife Sanctuary. This operation was facilitated by a questionable permit authorized by Forest Administration officials to transport wood to the inactive Samling company.<sup>21</sup> A few months earlier in February 2004 the Global Witness project adviser had observed that illegal logging had been going on for years in and around the Snoul Wildlife Sanctuary. He added rather ironically that most of the logging now took place in the forests outside of the sanctuary since areas within had already been heavily logged.<sup>22</sup>

## **Findings and Analysis**

### ***Depletion of Natural Resources***

This section traces changes that have occurred in the natural resource habitats of both Mil and Thmar Hal Veal villages over the past 40 years. It likewise examines the current sufficiency of natural resources in both villages. The resource inventories are based on information gathered from focus group discussions conducted separately with Stieng men and women in the two villages, and on conversations held with village leaders. The current assessments of sufficiency are based on responses to the household questionnaire.

#### ***Resource Inventory 1960 to 1979***

From 1960 to 1975 forest resources were plentiful in both Mil and Thmar Hal Veal. In Mil Stieng villagers reported that timber was abundant during this period as were rattan, honey, medicinal plants, vegetables and fruits. Wildlife, including tigers and elephants, inhabited surrounding forests. Villagers also had ample lands to clear for paddy rice and swidden cultivation. The soil was fertile, rains were regular, and rice yields were enough for household consumption. Similarly, in Thmar Hal Veal forest laws in these years were respected and only old logs were cut for timber. Forest foods were also plentiful. Wildlife such as rabbits, musk deer, large lizards, wild chickens and pigs roamed close to the village and their sounds could be heard from inside houses. Villagers had easy access to land for paddy rice farming and cleared forest areas for swidden.

Under the Khmer Rouge regime Mil settlers were forced out of the village to work for the revolutionary government in another area of Khsim commune. Since the Khmer Rouge focused its efforts on irrigated rice cultivation, forest areas remained largely untouched. In Thmar Hal Veal villagers were also displaced under the rule of the Khmer Rouge. At the same time, the closed borders with Vietnam precluded the trade of forest products, which minimized forest destruction.

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<sup>20</sup> Global Witness, *The Credibility Gap*, May 2001.

<sup>21</sup> Global Witness, *Press Release*, May 2004.

<sup>22</sup> Van Roeun and Solana Pyne, "Taking Back the Trees," *The Cambodia Daily Weekend*, February 21-22, 2004.

### *Resource Inventory 1979 to 1993*

Under the Vietnamese supported governments of the 1980s the populations of Mil and Thmar Hal Veal increased, as did the exploitation of forest resources. In Mil settlers returning to the village cut timber for houses, cleared forests for cultivation, collected forest foods and products, trapped wild animals, and fished in nearby rivers and streams. The growing needs of villagers increased the level of forest exploitation but not to an unsustainable extent. By contrast, logging activities controlled by military and police ushered in a rapid decline of forest resources. In an attempt to counter the deleterious effects of logging the Snoul Wildlife Sanctuary, which encompassed Mil village, was established in 1993 by Royal Decree under the jurisdiction of the Ministry of Environment.

In Thmar Hal Veal settlers likewise returned to the village after the Khmer Rouge era to rebuild their lives. The growing population cleared forests for cultivation and cut trees for house construction. Villagers gathered forest food and forests products, and trapped wild game. As Vietnamese traders came across the border to buy forest products and wildlife, an incentive grew to exploit forest resources beyond the needs of consumption. The local cutting of logs for sale to Vietnamese businessmen proved particularly destructive. Decimated forests reduced shelters for animals and the abundance of forest foods.

### *Resource Inventory 1993 to 2004*

From the 1993 national election to the present forest resources in Mil and Thmar Hal Veal suffered a severe decline as the Samling concession and illegal entities conducted major logging operations in Snoul district, including areas located within the wildlife sanctuary. In Mil the loss of resin trees that resulted from Samling's operations substantially reduced the cash incomes of many villagers. This occurred precisely at the time when Mil villagers were coming to terms with the expanding market economy. Loss of income from resin trees reduced the buying power of villagers and led to increased sales of rice, which undermined consumption. Meanwhile forest foods except for bamboo shoots became more difficult to find. Wildlife also became scarce as game moved further into the forests. Fish supplies were depleted as villagers and outsiders resorted to illegal practices to catch fish. In an effort to counter the decline of natural resources in Mil and two nearby villages, a community protected area of 2,459 hectares was established within the wildlife sanctuary in March 2004 with the approval of the Ministry of Environment. Within the protected area villagers were allowed to cut timber for community purposes but prohibited from clearing land to expand swidden or paddy rice cultivation. This limited opportunities to expand farmland particularly as the status of the adjacent Samling concession remained unclear. Villagers reported that in recent years deforestation had caused floods and soil erosion and that soil fertility had declined.

In Thmar Hal Veal forest resources from 1993 to the present were seriously depleted by Samling operations and by illegal logging controlled by military and police. Thmar Hal Veal's proximity to the Vietnam border made it particularly vulnerable to illegal logging activities. Even in recent years after the logging ban was issued, illegal logging continued with border guards acting in collusion with Vietnamese loggers. Increasingly the villagers from Thmar Hal Veal found it more and more difficult to find timber for their own homes and began to construct their houses mainly with thatch. The gathering of forest food and products, and the trapping of wild game became more infrequent and less critical to everyday subsistence. Fish resources were virtually exhausted by illegal practices. While villagers took no steps to reverse the decline of forest resources, the Provincial Department of Rural Development (PDRD) with support from the World Food Program (WFP) constructed a US\$ 120,000 reservoir in the village in 2003 to increase the production of paddy rice. Although the long-term benefits of the reservoir could offset the losses in forest income, its immediate contribution to increased

agricultural productivity remained unclear. At the same time, the construction of the Samling road through the village opened up the area to further incursions.

#### *Current Sufficiency of Natural Resources*

Respondents to the household survey questionnaire conducted in Mil and Thmar Hal Veal indicated that, on balance, village natural resources at present tended to be more insufficient than sufficient (Table 3). At the same time household views in the two villages varied. In Mil residents generally regarded their forest resources as more adequate than their swidden and paddy rice resources. By comparison, Thmar Hal Veal residents overall deemed their swidden and paddy rice resources as more adequate than their forest resources. Residents from both villages observed their current wildlife and fishery resources as largely insufficient.

<b>Table 3. Household View of Sufficiency of Village Resources, June 2004</b>						
	<b>Mil</b>			<b>Thmar Hal Veal</b>		
	Sufficient	Somewhat Sufficient	Not Sufficient	Sufficient	Somewhat Sufficient	Not Sufficient
Timber	17	22	20	5	11	45
Non-Timber Forest Products	10	24	25	5	17	39
Forest Food	27	19	13	9	18	34
Wildlife	0	13	46	0	9	52
Fish	2	9	48	5	13	43
Swidden Land	12	8	39	24	10	27
Paddy Rice Land	8	14	37	15	12	34
	n= 59 for Mil			n=61 for Thmar Hal Veal		

Reasons given for respondent assessments reflected divergent points of view within and between villages. In Mil, those who considered forest resources as sufficient generally noted that villagers still had access to forest areas. On the other hand, those who felt that forest resources were only somewhat sufficient or not sufficient usually mentioned the decline brought about by outside loggers. The depletion of wildlife was attributed mainly to unregulated hunting, and the deterioration of fisheries primarily to illegal practices. Those who thought that swidden and paddy rice resources were sufficient indicated that areas were available for expansion. By contrast, the larger numbers who expressed that swidden and paddy rice farms were only somewhat or not sufficient pointed out that cultivation was not allowed in the community protected area and that the village population was increasing.

In Thmar Hal Veal those who regarded forest resources as sufficient generally reasoned that villagers were still able to exploit them. On the other hand, the much larger numbers who declared that forest resources were only somewhat sufficient or not sufficient normally credited the decline to the extensive logging that had occurred in the area. The depletion of wildlife was ascribed mostly to the loss of forest shelter and illegal hunting, and the destruction of fisheries predominantly to the illegal use of electric poles and poisonous chemicals. Those who stated that swidden and paddy rice resources were sufficient argued for the most part that areas were available for expansion and clearing. By contrast, those who felt that swidden and paddy rice farms were only somewhat or not sufficient largely cited the lack of draft animals - notably a reason unrelated to the land resource itself – and the increasing numbers of village people.

## ***Land Tenure and Land Productivity***

### ***Land Tenure***

In the absence of an active land market, land tenure arrangements among the Stieng people in Mil and Thmar Hal evolved slowly although they were clearly influenced by long-standing relations with Khmer people. In Mil paddy and swidden lands were cleared as new settlers moved into the village and as married couples started families of their own. Land parcels of elderly parents were normally inherited by the youngest child. Once cleared paddy rice lands were cultivated on a permanent basis and the farmers' rights of tenure were recognized by the entire village. Swidden lands were at times allowed to lie fallow but here too the tenure rights of the original cultivators were acknowledged even though others might till the plots for a season. Of note, transfers of land rights involving cash payments had occurred in recent years in the village among Stieng relatives and other Stieng people. Given the constraints of expanding farm areas in Mil as a result of being located between the community protected area in the wildlife sanctuary and the Samling concession, land values in the village were likely to rise. However, large-scale Khmer in-migration in the village was unlikely.

In Thmar Hal Veal paddy rice cultivation had been practiced for generations and resumed after the Pol Pot era. The tenure rights of those who cleared and tilled paddy rice parcels in the village were respected. Rights to swidden lands were also recognized especially once these plots had been planted to permanent crops like fruit trees and cashew nuts. While land areas for farm expansion were available around the village, paddy and swidden plots sizes of households were generally less than one hectare. This was partly due to a lack of draft animals required for cultivation tasks. In recent years land transactions involving cash payments had taken place in Thmar Hal Veal between Stieng relatives and other Stieng people. In addition, land transfers had included the sale of residential plots to eight Khmer families who had settled along the Samling road. While rapid in-migration of Khmer people in the near future was doubtful, the potential remained for further population build up along the Samling road.

### ***Land Productivity***

To date, efforts to increase the productivity of farm lands in Mil and Thmar Hal Veal had been minimal, although the construction of the reservoir in Thmar Hal Veal held promise for expanded paddy rice production. In Mil villagers relied on rain to grow their crops. They had no irrigation system although some households used portable irrigation pumps to redirect water supplies. At the same time, villagers did not use chemical fertilizer or pesticide. As a result rice yields were generally low.

In Thmar Hal Veal villagers likewise cultivated rain-fed paddy and swidden lands. In the past rain was frequent, but in recent years it had been irregular delaying the planting season. Soil fertility had likewise declined as a result of erosion. Some villagers maintained that they used chemical fertilizer to increase the yields on their farms. But not all households could afford to buy fertilizer and rice harvests suffered.

The construction of a US\$ 120,000 reservoir in Thmar Hal Veal in 2003 sought to expand paddy rice production. Initially, 11 village households chosen by lottery were allowed to clear and cultivate parcels totaling 5 hectares irrigated by the reservoir. According to the village chief the reservoir would ultimately irrigate 100 hectares of paddy rice land for village households. While the land rights would belong to the cultivators, the farmers would be required to pay 140 kilograms of paddy rice each crop season for the maintenance of the reservoir. Some Thmar Hal Veal villagers had reportedly questioned the justification for the user fee. In the case of nonpayment of irrigation fees, the land would be reallocated to others



including outsiders. Thus, the long-term benefits of the reservoir to the Stieng villagers had yet to be demonstrated.

### ***Livelihood Strategies in Mil and Thmar Hal Veal***

Livelihood strategies in Mil and Thmar Hal Veal reflect similar although somewhat diverging patterns (Table 4). Nearly all the sample households in both villages were involved in crop cultivation. However in Mil the emphasis was on paddy rice cultivation, with *chamcar* or swidden cultivation a secondary pursuit for less than half of the farmer households. In Thmar Hal Veal paddy rice and swidden cultivation were undertaken by equal numbers of sample households with some families involved in both. Raising pigs and chickens were important in both villages. Despite the decline of forest resources gathering food and other products from the forest were still practiced by a large majority of Mil households, and by a smaller majority of Thmar Hal Veal households. Hunting was not reported by many households in either village although this may be due in part to the fact that it was illegal. Fishing was very prominent in Mil and much less so in Thmar Hal Veal. By contrast, neither the making and selling of goods nor the buying and selling of goods were pursued by large numbers of households in either area. Wage work was decidedly more common in Thmar Hal Veal than in Mil with more than half of the Thmar Hal Veal sample earning from this source.

<b>Table 4. Livelihood Strategies by Household, June 2004</b>		
	<b>Mil</b>	<b>Thmar Hal Veal</b>
Crop Cultivation (Paddy rice cultivation) (Swidden cultivation)	56 (54) (21)	60 (44) (44)
Pig Raising	40	39
Chicken Raising	47	44
Gathering Food from the Forest	49	44
Gathering Other Products from the Forest	55	40
Hunting or Trapping	11	9
Fishing	53	32
Making and Selling Goods	4	0
Buying and Selling Goods	5	1
Wage Work	19	37
	n=59 for Mil	n=61 for Thamar Hal Veal

In the Mil sample of 59 households the average number of household members was 4.93, while the average number of household workers was 2.34. In Mil the average household work force was comprised of 1.14 men and boy workers and 1.2 women and girl workers. In the Thmar Hal Veal sample of 61 households the average number of household members was 5.44, while the average number of household workers was 2.54. In Thmar Hal Veal the average household work force was comprised of 1.21 men and boy workers and 1.33 women and girl workers.

### ***Crop Cultivation***

In Mil, 54 of the 59 sample households cultivated paddy rice. The average paddy area cultivated in the last crop season by the 54 households was 1.21 hectares and the average rice yield was 2.0 tons or 1.65 tons per hectare. In Mil, 21 of the sample households cultivated swidden plots. The average swidden plot size cultivated in the last crop season by the 21 households was 0.47 hectares. The average rice harvest of the 11 swidden households cultivating rice was 1.18 tons.

In Thmar Hal Veal, 44 of the 61 sample households cultivated paddy rice. The average paddy area cultivated in the last crop season by the 43 households able to respond was 0.83 hectares. The average rice yield of the 41 households able to respond was 1.87 tons or 2.25 tons per

hectare. In Thmar Hal Veal, 44 of the 61 sample households cultivated swidden plots. The average swidden plot size cultivated in the last crop season by the 42 households able to respond was 0.6 hectares. The average rice harvest of the 38 swidden households able to respond was 0.76 tons.

Crop production was a key aspect of subsistence in both villages, and one that consumed considerable time of household workers. In Mil farmers primarily pursued paddy rice cultivation, although rice yields per hectare were relatively low given the absence of fertilizer and improved technology. Given the constraints of land expansion in Mil, swidden farms were small and not pervasive. In Thmar Hal Veal households engaged rather equally in paddy and swidden cultivation, although small farm sizes limited household rice production on each. Vegetables and fruits planted on swidden farms in both villages provided nutritious food, and increasingly cashew nuts promised to become an important cash crop, particularly in Thmar Hal Veal.

#### *Raising Livestock and Poultry*

In Mil 40 of the 59 sample households raised pigs in the past year. On average each household raised 3 pigs. Similarly, 47 of the 59 Mil sample households raised chickens in the past year. On average each household raised 10 chickens, although four households raised more than 20 chickens.

In Thmar Hal Veal 39 of the 61 sample households raised pigs in the past year. On average each household raised 2.8 pigs, although two households who raised more than 20 pigs and piglets each skewed this average. At the same time, 44 of the 61 Thmar Hal Veal sample households raised chickens in the past year. On average each household raised 6.9 chickens.

With good roads leading into each village, households from Mil and Thmar Hal Veal were assured of trader and market access for the livestock and poultry they raised. For many villagers raising pigs was an important supplementary pursuit that allowed them to increase their cash incomes. Raising chickens likewise provided households with special food for celebrations and with a product that was easily traded.

#### *Gathering Forest Products*

In Mil, 49 of the 59 sample households gathered food from the forest in the past year. Thirty-seven of these households went to the forest at least once a week. The food gathered consisted of 28 different kinds of vegetables and fruits. The items collected by most households were bamboo shoots (32), rattan heart (26), mushroom (25), *plai kovy* (22), and *chong dam bang* (21).<sup>23</sup> Perhaps more importantly, 55 of 59 sample households in Mil gathered products other than food from the forest in the past year. Thirty-three of these households went to the forest at least once a week. The forest products gathered by most households were liquid resin (32), fuelwood (30), thatch (20), hard resin (13), and leaves for roofing (11). In Mil the large numbers of forest gatherers, the frequency of their trips, the diversity of their products, and the earnings received from liquid resin made forest gathering a significant livelihood strategy.

In Thmar Hal Veal food gathering was likewise prevalent. Forty-four of the 61 sample households gathered food from the forest in the past year, and 34 of these households went to the forest at least once a week. The food gatherers collected a variety of 17 kinds of vegetables and fruits. Most households gathered bamboo shoots (36), mushroom (18), *sleuk tradev* (11), and gourd (6). In Thmar Hal Veal 40 of the sample households likewise gathered products other than food from the forest in the past year. Twenty-six of these went to the forest at least

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<sup>23</sup> The numbers in parenthesis in this and subsequent sections indicate the number of households involved in this activity.

once a week. The forest products gathered by most households were fuelwood (29) and palm leaves (24). In Thmar Hal Veal, the high numbers of forest gatherers, the frequency of their activities, and the money received from the trade of palm leaves to Vietnam revealed that forest gathering still remained a critical livelihood strategy.

#### *Hunting and Trapping*

In Mil only 11 of the 59 sample households acknowledged that they had hunted or trapped in the past year, and the majority of these (7) did so infrequently i.e. only once a month or less. Nonetheless, these hunters and trappers caught and killed 15 different kind of wild game including monitor lizard, mouse deer, barking deer, turtle, monkey, porcupine, loris, wild pig, rabbit, banteng, wild chicken, snake, and civet cat. Despite the continued presence of wildlife in nearby forests, hunting and trapping by Mil villagers had, in large part, apparently ceased.

Similarly, in Thmar Hal Veal only 9 of the 61 sample households reported that they had hunted or trapped in the past year. Many of these households (4) did so only once a month. The hunters and trappers in Thmar Hal Veal caught and killed 8 kind of wild game including gray squirrel, rabbit, monitor lizard, turtle, and civet cat. In Thmar Hal Veal the diminished presence of wildlife in forests close by, reflected the low numbers of villagers engaged in hunting and trapping.

#### *Fishing*

In Mil, 53 of the 59 sample households fished in the past year. Twenty-five of these households caught fish at least once a day and another 21 households caught fish at least once a week. Fish caught by most households in Mil were *linh* (22), *srakar kdam* (19), *trei riel* (19), *trei chalang* (19), *chngva* (14), *troneil* (13), *trei kagnchos* (12), smith barb (11), *trei archkok* (10), tire track eel (9), and catfish (8). Mil's proximity to the *Prek Chlong* river which flowed into the Mekong river provided villagers with an abundant source of fish. Despite the illegal fishing activities that had reduced stocks of fish in recent years, the high numbers of households involved in this activity with regular frequency underscored the importance of fishing and fish consumption for Mil villagers.

In Thmar Hal Veal, 32 of the 61 sample households fished in the past year. Thirteen of these households caught fish at least once a week, and another 13 households caught fish at least once a month. Fish caught by most households in Thmar Hal Veal were catfish (15), *trei changva* (15), chevron snakehead (13), *trei kvanh* (9), and *trei kampleanh* (8). The major source of fish was a small stream about two kilometers from the village. The recently built reservoir had not produced a supply of fish. Compared to Mil, the number of Thmar Hal Veal households involved in fishing and the frequency of their activities was considerably less.

#### *Making and Selling, Buying and Selling Goods*

In Mil only 4 of the 59 sample households enhanced their livelihoods in the past year from making and selling goods. The products made and sold by these households were rice wine, rice bran from milling machines, boiled bamboo, and bamboo baskets. In Thmar Hal Veal none of the sample households reported that they had made and sold goods.

Similarly, in Mil only 5 of the 59 sample households earned from buying and selling goods in the past year. The items bought and sold by these households were grocery items, fish and fish paste, vegetables like eggplant and garlic, paddy rice, and medicine. In Thmar Hal Veal only one of the respondent households was engaged in buying and selling goods. This household bought and sold grocery items.

While road construction had linked indigenous villagers to growing markets, it had not transformed them into entrepreneurs or traders. The few products made and sold were for local consumption and the items bought and sold were mainly grocery items. Meanwhile, Khmer traders in the local markets continued to expand their businesses.

### *Wage Work*

In Mil 19 of the 59 sample households engaged in wage work in the past year. Most of this work was done in and around the village and involved transplanting and harvesting paddy rice, clearing and weeding swidden lands, and cutting wood and bamboo. As such it was largely short-term and seasonal.

By comparison, in Thmar Hal Veal 37 of the 61 households earned from wage work in the past year. Some of this work was likewise done in and around the village and involved transplanting, weeding, harvesting, and hand threshing paddy rice as well as clearing forests for swidden. Again much of this work was seasonal farm labor. At the same time household members from Thmar Hal Veal worked in Snoul district in the pepper plantation, in construction work, and in loading wood at a sawmill. For the most part this work too was contracted on a short-term basis and was not highly remunerative.

### *Market Participation*

#### *Buying and Selling*

Rather interestingly, the patterns of buying and selling in Mil and Thmar Hal Veal were generally more similar than different, although trends specific to each village were evident. The land market had yet to emerge in either of the two villages, although residential lots along the Samling road in Thmar Hal Veal were beginning to be sold to Khmer people. In Mil households hired other villagers to expand their rice fields, while in Thmar Hal Veal the hiring of farm labor was less common. By contrast, households in Thmar Hal Veal took advantage of more opportunities in wage work. In both villages, the large numbers of households that bought rice reflected rice shortages. In Mil, more so than in Thmar Hal Veal, rice was sold to buy goods. Rather surprisingly in the two predominantly farming villages, more households bought cash crops than sold them. The trade of cattle and buffaloes was much higher in Mil than in Thmar Hal Veal, while the buying and selling of pigs was more equal. Situated in the community protected area of the Snoul Wildlife Sanctuary, it was not surprising that more households in Mil sold forest products. At the same time, the high numbers of households in both villages that bought wildlife indicated that a market for wild game thrived in Snoul district (Table 5).

Table 5. Buying and Selling by Household,* June 2004				
	Mil		Thmar Hal Veal	
	Bought	Sold	Bought	Sold
Land	6	0	6	2
Labor	21	19	13	37
Rice	42	25	46	11
(Paddy)	(18)	(25)	(14)	(11)
(Milled)	(36)	(0)	(44)	(0)
Cash Crops	28	14	22	8
Cattle or Buffalo	10	24	9	5
Pigs	29	27	21	24
Forest Products	6	25	11	11
Wildlife	34	5	23	0
	n=59 for Mil		n=61 for Thmar Hal Veal	
* Data for the buying and selling of land includes the past five years, while data for the buying and selling of all other items includes only the past year				

### *Land*

In Mil six households in the sample of 59 had bought land in the past five years. Four households had bought *chamcar* land and two households had bought residential land. The sizes of the four *chamcar* plots were all 1.5 hectares. The sizes of the two residential plots were 750 square meters and 1,500 square meters. Three of the plots were bought from relatives and three of the plots were bought from other Stieng. None of the households in the Mil sample had sold land in the past five years.

In Thmar Hal Veal six households in the sample of 61 had bought land in the past five years. One of these six households had bought three plots of land, and the others one plot each, so the total plots bought numbered eight. Of the eight plots, four were *chamcar* land, one was paddy rice land, and three were residential land. The sizes of the four *chamcar* plots were 0.2 hectares, 0.4 hectares, and two plots at 0.5 hectares. The size of the one paddy rice plot was 0.5 hectares. The sizes of the three residential plots were 40 square meters, 200 square meters, and 0.5 hectares. Four of the plots were bought from relatives and four of the plots were bought from other Stieng.

Of note, in Thmar Hal Veal two of the sample households had sold land in the past five years. Both had sold residential land. One plot was 50 square meters and the other was 180 square meters. These plots were sold to Khmer people.

### *Labor*

In Mil 21 of the 59 sample households had hired other villagers to work for them in the past year. The work largely consisted of expanding paddy rice fields. Other work involved transplanting, harvesting and threshing on paddy rice lands, and clearing and planting on *chamcar* farms. As mentioned earlier 19 of the households surveyed in Mil had worked for wages in the past year.

In Thmar Hal Veal only 13 of the 61 sample households had hired other villagers to work for them in the past year. The work was transplanting, weeding and harvesting on paddy rice lands. As noted earlier, 37 of the 61 households surveyed in Thmar Hal Veal had worked for wages in the past year.

### *Rice*

In Mil 42 of the 59 sample households bought milled and/or paddy rice in the past year. While 36 households had bought milled rice, only 18 households had bought paddy rice. The average quantity of milled rice bought by the 36 households was 244 kilograms. The average quantity of paddy rice bought by the 18 households was 414 kilograms. By comparison, in Mil 25 of the sample households sold paddy rice in the past year, with the average amount sold amounting to 336 kilograms.

In Thmar Hal Veal 46 of the 61 sample households bought milled and/or paddy rice in the past year. While 44 households had bought milled rice, only 14 households had bought paddy rice. The average quantity of milled rice bought by the 44 households was 240 kilograms. The average quantity of paddy rice bought by the 14 households was 205 kilograms. By contrast, in Thmar Hal Veal 11 of the sample households sold paddy rice in the past year, with the average amount sold amounting to 193 kilograms.

### *Cash Crops*

In Mil 28 of the 59 sample households bought cash crops in the past year. Crops bought by households were eggplant, cucumber, cabbage, water convolvulus, sponge gourd, pumpkin, corn, tomatoes, green bean, cauliflower, garlic, pineapple, and bottle gourd. By contrast, 14 of

the sample households in Mil sold cash crops in the past year. Crops sold by households were banana, sponge gourd, corn, eggplant, sweet potato, coconut, cucumber, bean, bottle gourd, cashew, mango, cassava, sesame, pumpkin, orange, betel, gourd, pineapple, and jackfruit.

In Thmar Hal Veal 22 of the 61 sample households bought cash crops in the past year. Crops bought by households were rambutan, cabbage, tomato, cucumber, water convolvulus, corn, long bean, banana, jackfruit, coconut, mango, pineapple, and sugar cane. By comparison, only 8 of the sample households in Thmar Hal Veal sold cash crops in the past year. Cash crops sold by households were gourd, cucumber, pumpkin, pepper, sesame, cabbage, long bean, water convolvulus, taro and corn.

#### *Livestock*

In Mil 10 of the 59 sample households bought cattle or buffalo in the past year and 24 of the sample households sold cattle or buffalo in the past year. The average number of cattle or buffalo bought was 1.3 and the average number sold was 1.8. In Thmar Hal Veal 9 of the 61 sample households bought cattle or buffalo in the past year and 5 of the sample households sold cattle or buffalo in the past year. The average number of cattle or buffalo bought was 1.7 and the average number sold was 3.4.

In Mil 29 of the 59 sample households bought pigs in the past year and 27 of the sample households sold pigs in the past year. The average number of pigs bought was 2.5 and the average number sold was 2.1. In Thmar Hal Veal 21 of the 61 sample households bought pigs in the past year and 24 of the sample households sold pigs in the past year. The average number of pigs bought was 2.2 and the average number sold was 3.2.

#### *Forest Products*

In Mil 6 of the 59 sample households bought forest products in the past year. Forest products bought by households were vegetables, fruits, thatch, bamboo, and wild chicken. By comparison, 25 of the sample households sold forest products in the past year. Forest products most often sold were liquid resin and hard resin. Other forest products sold were vegetables, fruits, leaves, bamboo, and thatch.

In Thmar Hal Veal 11 of the 61 sample households bought forest products in the past year. Forest products bought by households were bamboo shoots, *chang dambung*, mushroom, potato, and other vegetables. By comparison, 25 of the sample households sold forest products in the past year. Forest products most often sold were bamboo shoots and palm leaves. Other forest products sold were gourd, rattan heart, *chang dambung*, *chong tnhery*, *svay pong krang*, and resin.

#### *Wildlife*

In Mil 34 of the 59 surveyed households bought wildlife in the past year. Wild game bought by households was sambar deer, barking deer, mouse deer, monitor lizard, turtle, and wild chicken. Only 5 of the surveyed households in Mil acknowledged that they had sold wildlife in the past year. Wild game sold by households was porcupine, turtle, monitor lizard, barking deer, monkey, loris, banteng, chicken, and snake.

In Thmar Hal Veal 23 of the 61 surveyed households bought wildlife in the past year. Wild game bought by households was wild pig, deer, sambar deer, civet cat, rabbit, monitor lizard, and squirrel. None of the surveyed households in Thmar Hal Veal reported that they had sold wild game in the past year.

### *Market Going*

In Mil 54 of the 59 households surveyed bought goods at the market. Rather surprisingly, 48 of the respondent households mentioned the large market in Snoul district center 23 kilometers away as that most frequented. The other 6 market-going households mentioned the smaller market in Khsim commune center 11 kilometers away as that most frequented. At the same time, market going from Mil village was rather infrequent. Only 31 of the 54 market-going respondents went to the market at least once a month. This may be partly explained by the frequently of traders going into the village. Goods purchased at the market were generally manufactured items for eating, cooking, clothing, and everyday home use.

In Thmar Hal Veal all 61 of the households surveyed bought goods at the market. Not surprisingly, all but one household mentioned the market in Snoul district center 8 kilometers away as that most frequented. Overall market going from Thmar Hal Veal was quite frequent. A total 55 of the 61 households interviewed went to the market at least once a month. Goods purchased at the market were likewise largely manufactured products for eating, cooking, clothing, and everyday home use.

### ***Organized Village Responses to Natural Resource Depletion***

The findings and analysis of this study have thus far traced the depletion of natural resources in Mil and Thmar Hal Veal, and taken a closer look at consequences for land tenure and land productivity, livelihood strategies, and participation in markets. This section now examines the organized responses of Mil and Thmar Hal Veal villages to the decline of their natural habitats.

#### *Community Responses in Mil village*

The impetus for organized community activity in Mil village came from the Cambodian NGO *Satrei Santepheap Daoembei Parethan* (SSP) or Women Peace for Environment. In 2001 the NGO conducted an assessment of resin tapping and its contributions to livelihoods in Khsim commune. As a result of this survey, a group of community organizers was formed for the protection of the environment in the commune. This group in turn organized forest committees in the 8 commune villages, including Mil village. The commune organizers provided training to the forest committees and villagers on natural resource conservation and the rights and obligations of people to protect their habitats. As a result, villagers began to patrol their forest areas and mobilized themselves to counter the activities of illegal loggers. The forest committees also discussed resin tree protection with Samling concession officials.

Efforts to initiate community forest management activities were particularly successful in Mil, Daung, and Khsim Khnong villages located within the Snoul Wildlife Sanctuary. Here SSP and the commune organizers supported the formation of a 2,459 hectare community protected area within the sanctuary that comprised the forest areas of the three villages. The site was officially established in March 2004 with the approval of the Ministry of Environment under the respective signatures of the three-village area committee, the Provincial and District Governors, the Khsim Commune Council, and the Provincial Department of the Environment among others. The Statute placed the protected area under the management of the three villages for the benefit of the entire three communities. The people were given the obligation to monitor and protect the area, and to report any illegal operations that took place inside it. The villagers with the permission of the committee were allowed to collect non-timber forest products for family use and to cut timber for community purposes. They were likewise permitted to gather resin under instructions provided by the Ministry of Environment. They were not allowed to clear and expand farm areas, to trap or hunt wildlife, to cut trees for poles, fuelwood, or charcoal, and to engaged in illegal fishing practices. While not mentioned in the Statute the villagers from Mil understood that they could cut timber for houses in the protected areas with permission from the committee.

### *Community Responses in Thmar Hal Veal village*

In contrast to Mil, the depletion of forest resources in Thmar Hal Veal had left the villagers despondent and immobilized. When staff from the Provincial Department of the Environment requested the help of Thmar Hal Veal villagers to reforest degraded areas, the village leaders replied, “Let those who cut the trees, replant the trees.” Without support from NGOs promoting community forestry and government officials acting to ensure the enforcement of community statutes, it was unlikely that Thmar Hal Veal villagers would take active steps to reverse the decline.<sup>24</sup> Illegal logging backed by powerful actors was just too pervasive in the area.

If Thmar Hal Veal villagers lacked an organized response to forest decline, they did organize a committee to manage the recently built reservoir in the village designed to increase agricultural production. This committee was charged with overseeing the distribution by lottery of land parcels in the reservoir area and the collection of irrigation fees after each crop season. Thmar Hal Veal villagers had strong contacts with the Provincial Department of Rural Development (PDRD) which built the reservoir and also widened the road within the village.

#### **The Story of Mom Sokin**

Mom Sokin is the leader of the volunteer forestry group that has been actively involved in forming forest committees and awakening people to the importance of forest protection in the 8 villages of Khsim commune. She was a key actor in the formation of the 2,459 hectare community protected area in Mil, Daung, and Khsim Khnong villages. Sokin often visits the three villages to provide support to the forest committees and to build the capacity of the villagers in community forest management. The committees have been aided in their patrol of the protected area through the donation of two motorbikes: one from H.E. Dr. Mok Mareth of the Ministry of Environment and the other from the NGO, CWAR. Mom Sokin and her group have likewise been assisted by mobile phones, which they use to mobilize action against the illegal transport of logs.

Led by Mom Sokin the forestry group has courageously intervened to thwart illegal loggers in Khsim commune. Even at night the group will converge on trucks transporting logs out of the commune. They will demand to see the permits and take photographs of the timber loads. Then they will confiscate the trucks, chainsaws, and logs until the government authorities come to investigate. In June 2004 the group seized 60 logs that were illegally cut in the community protected area. These logs were kept at the home of a forest committee member for future community use. Logs captured outside of the community protected area are surrendered to government officials.

Not surprisingly, Mom Sokin and her group have been threatened numerous times. In 2003 after placing cement markers to identify boundaries of the Snoul Wildlife Sanctuary Sokin came across a broken marker with a message that read: “Mom Sokin, don’t be strong. Be careful. You will be killed before your time.”\* Despite such threats Sokin and her group remain steadfast for they enjoy the support of the people. Sokin likewise counts on the personal backing of the Snoul Deputy District Chief who also comes at night to lend his support to investigations. Sokin’s group coordinates closely with the Khsim Commune Council and the Provincial Department of the Environment. Through its strong links with the NGO *Satrei Santepheap Daoembei Parethan* the group has become involved in the National Forestry Network organized by the NGO Forum in Phnom Penh. These broad networks of support enable the group to pursue its work, notwithstanding the real dangers it entails.

While the irrepressible efforts of Mom Sokin and her group have achieved some success, illegal logging persists in Khsim commune and is likely to continue without a total dismantling of the corrupt system which sustains it. Meanwhile the voice of Mom Sokin and other community leaders across the country are gaining a national hearing. Sokin’s message is as compelling as it is self-evident, “If we do not advocate for the protection of the forest, everyone will suffer.”

\* See Van Roeun and Solana Pyne, “Taking Back the Trees: Grassroots Group Combats Illegal Logging in Its Own Backyard,” *The Cambodia Daily Weekend*, February 21-22, 2004.

<sup>24</sup> McKenney, Chea, and Prom, *Focusing on Cambodia’s High Value Forests* argue that there is a need to identify community forestry “patrons” within government who can ensure tenure security and the enforcement of community forest rules.



## Conclusions

Since the late 1980s forest decline in Cambodia had proceeded at an accelerated rate as political parties and military forces increasingly used forest resources to build their power bases. In the mid-1990s international donors, in an attempt to reverse this trend, promoted forest concessions as a means to eliminate illegal logging and to generate more government revenue. This attempt to rationalize the logging industry failed to achieve its purpose. By 2001, when a national logging ban was imposed, the concession system had failed to generate the revenues projected and illegal logging remained largely unchecked in many areas. Moreover, deforestation and forest degradation had taken a severe toll on local village communities.

In Kratie forest concessions granted to 7 companies covered more than a half a million hectares of provincial land. These corporate concessions cooperated closely with Military Region 2 units in destructive and illegal logging operations. The Samling concession which operated in Snoul district covered a total 143,350 hectares but nevertheless carried out illegal logging activities in the adjacent 75,000 hectare Snoul Wildlife Sanctuary. As of mid-2004, illegal logging operations still continued in Snoul district.

The legally sanctioned operations of the Samling concession and the illegal logging activities perpetuated by military and police forces had devastating consequences for villages in Snoul district. This study undertaken in Snoul district provides extensive documentation on the depletion of natural resources in two predominantly indigenous Stieng villages. The experiences of Mil village in Khsim commune and Thmar Hal Veal village in Pir Thnou commune revealed a downward trend in the quality of their resource bases and the sufficiency of their resources. This decline had exacerbated the incidence of poverty in both villages. But although natural resources had diminished in both areas, villagers remained dependent on land and forest resources for their subsistence. Increasing population pressure would only make the situation more difficult.

To some extent, Mil village located in the Snoul Wildlife Sanctuary had responded more creatively to the challenge of resource management in a highly contested forest area. By forming supportive links with NGOs and the Ministry of the Environment, Mil villagers were able to establish a community protected area within the sanctuary. This enabled them to deal more effectively with the threat of illegal logging and to impede the further deterioration of their natural environment. In Mil forest gathering and fishing were still important livelihood pursuits. At the same time, constraints on the expansion of agricultural land made their prospects for improved livelihoods and quality of life uncertain.

By contrast, Thmar Hal Veal village located within the forest concession along the Samling road and near the Vietnam border had not been able to respond proactively to the ongoing decline of their natural resource base. Thmar Hal Veal villagers lacked contacts with NGOs and government officials, needed to effectively counter the endemic illegal logging in the area. As a consequence, the downward slide in the quality of their natural resource base was likely to continue. The recent construction of a reservoir in Thmar Hal Veal held promise for the expansion of paddy rice cultivation in the village. But the capacity of the reservoir to provide sufficient water supplies remained unclear, as did the effects of forest decline on the levels of rainfall and conditions of soil erosion. Meanwhile, Thmar Hal Veal's location along the Samling road made it vulnerable to future encroachment by Khmer settlers and traders.

While Mil and Thmar Hal Veal villagers struggled to respond effectively to the market forces and expressions of political power that surrounded them, the outlook for the future was

disheartening but not totally bleak. The apparent decision of Samling to abandon its forest concession in Snoul district provided an exciting opportunity for experimentation in forestry management. One challenging alternative recently endorsed by the Independent Forest Sector Review (IFSR) has been termed Partnership Forestry. This is a decentralized approach to forest management focused on a partnership between Commune Councils and the Forestry Administration. The key features of the partnership are that it: 1) covers all forest and products within the Commune Council boundaries; 2) secures long-term rights over the resource; and 3) is governed by a Commune Forest Plan that includes areas under community forestry arrangements, products under individual or family management e.g. resin trees, and areas managed through contractors or bidding coupes. Revenue from small-scale timber production is used to fund local development. The IFSR argues that Partnership Forestry - by establishing prior rights to communes, and by legitimizing informal revenue collection and bringing it under public commune control - acts as an incentive for sustainable forest management. It provides communes with an incentive to protect against illegal logging and to put demands on the state to prevent the removal of their assets.

A recent CDRI study likewise promotes “commercial” community forestry in high value forest areas as an approach to make community management of forest resources more attractive.<sup>25</sup> This alternative focuses on reducing burdensome taxes on the trade of non-timber forest products and permits communities to benefit commercially from timber resources under simple but sustainable approaches. The research argues that economic benefits are key to the development of community forestry approaches which are environmentally and financially sustainable and contribute meaningfully to poverty reduction.

Certainly, efforts to reverse the destructive trends of recent years in Snoul district and to empower villagers, particularly indigenous groups, to regain control over natural resources will be met by opposing self-interests. At the same time the national government's avowed commitment to eradicate poverty and to decentralize local governance lends support to alternative approaches, which place local communities at the center of natural resources management.

## **Recommendations**

The findings and conclusions of this study poignantly illustrate how micro experiences of natural resource depletion are inextricably linked to macro political economic forces and actions. Efforts to reverse debilitating trends must then be enacted at several levels and involve the concerted efforts of local communities, NGOs, and government.

### ***Local Communities***

- Mil villagers should strengthen their links with local and national government officials who can enforce the laws against illegal logging and ensure support for community forestry. Thmar Hal Veal villagers should establish these links.
- Thmar Hal Veal villagers, with support from NGOs, should consider how they could prevent the further depletion of their forest and land resources. This could entail the development of a community forestry program.

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<sup>25</sup> McKenney, Chea, and Prom, *Focusing on Cambodia's High Value Forests*.

- Mil and Thmar Hal Veal villagers should take steps to eliminate illegal fishing practices in their communities. Local action could be reinforced through Commune Council orders or *deika*.
- Mil and Thmar Hal Veal villagers, with support from NGOs and government officials, should explore ways to increase land tenure security in their communities.
- Mil and Thmar Hal Veal villagers, with support from NGOs and government officials, should introduce environmentally sound agricultural techniques to increase the productivity of paddy rice and swidden lands.

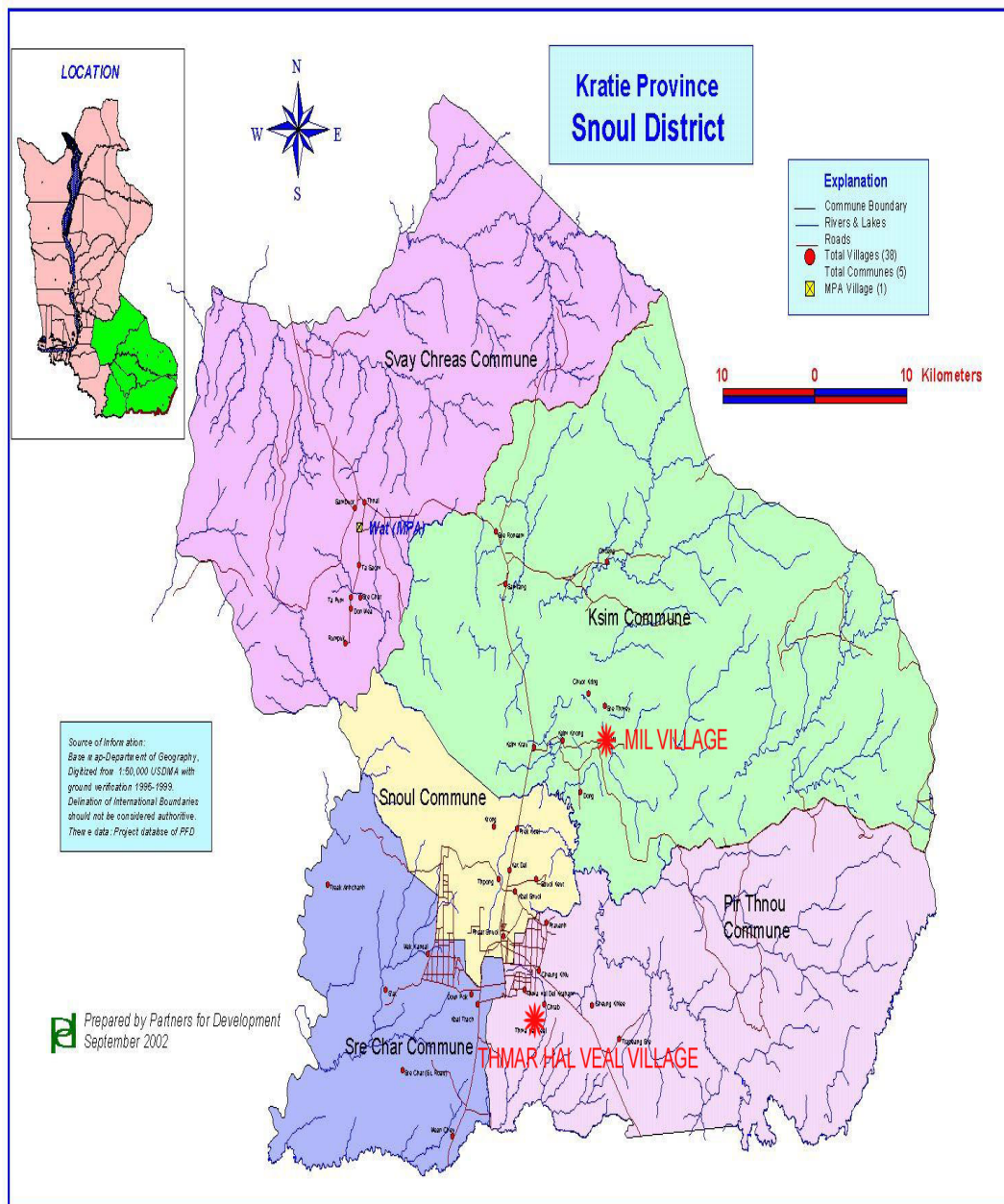
### ***NGOs***

- The NGO, *Satrei Santepheap Daoembei Parethan* (SSP), based in Kratie should expand its support of community forestry to other areas of Snoul district including Thmar Hal Veal village.
- NGOs working in Kratie should incorporate an appreciation of natural resource management issues into their diverse strategies for development, particularly in high value forest areas.
- NGOs working in Kratie should strengthen their involvement in national NGO movements advocating for the cancellation of forest concessions and the elimination of illegal logging. This should include support for more decentralized approaches in forestry management such as Partnership Forestry.
- NGOs working in Kratie should support efforts of Stieng and other indigenous people to augment their land tenure security.
- NGOs working in Kratie should collaborate with government to increase agricultural productivity in predominantly indigenous villages such as Mil and Thmar Hal Veal.

### ***Government***

- Government should cancel the Samling forest concession in Kratie.
- Government should take stronger steps to eliminate illegal logging in Snoul district including a crackdown on government officials who support it.
- Government should provide the Ministry of Environment with sufficient resources to expand its program of community protected forest areas in Snoul district.
- Government should introduce more decentralized approaches to forestry management in Snoul district such as Partnership Forestry.
- Government should strengthen the land tenure of indigenous Stieng communities in Snoul district through communal or individual land titling.

## Appendix 1. A Map of Study Location



## Appendix 2. Indigenous Household Interview Questionnaire

Name of Interviewer: \_\_\_\_\_  
Name of Interviewee: \_\_\_\_\_

Date of Interview: \_\_\_\_\_  
Checked by: \_\_\_\_\_

### 1. Background

- 1.1 Name of village  
Mil \_\_\_\_\_  
Thmar Hal Veal \_\_\_\_\_
- 1.2 Name of commune  
Khsim \_\_\_\_\_  
Pir Thnou \_\_\_\_\_
- 1.3 Ethnic origin of household  
Stieng \_\_\_\_\_  
Stieng/Khmer \_\_\_\_\_  
Khmer \_\_\_\_\_  
Other (specify) \_\_\_\_\_
- 1.4 How many people live in this household? write number \_\_\_\_\_ ##
- 1.5 Is the head of the household a man or a woman?  
Man \_\_\_\_\_  
Woman \_\_\_\_\_
- 1.6 How many people in this household are able to work and contribute to its livelihood? Total hh workers \_\_\_\_\_ ##
- 1.7 How many of the total household workers are men/boys? Total men/boy workers \_\_\_\_\_ ##
- 1.8 How many of the total household workers are women/girls? Total women/girl workers \_\_\_\_\_ ##

### 2. Livelihood Strategies

- 2.1 Did your household cultivate any wet rice (paddy) land in the last crop season?

Yes \_\_\_\_\_  
No \_\_\_\_\_

2.2 If yes, how many hectares of wet rice (paddy) land did your household cultivate in the last crop season?

Hectares cultivated    \_\_\_\_\_ ##  
Not applicable        \_\_\_\_\_

2.3 How many *pot* of rice (12 kilograms) did your household harvest on your wet rice (paddy) land in the last crop season?

Number of *pot* harvested    \_\_\_\_\_ ##  
Not applicable                \_\_\_\_\_

2.4 Did your household cultivate *chamcar* land in the last crop season?

Yes                                \_\_\_\_\_  
No                                 \_\_\_\_\_

2.5 If yes, how many hectares of *chamcar* land did your household cultivate in the last crop season?

Hectares cultivated    \_\_\_\_\_ ##  
Not applicable        \_\_\_\_\_

2.6 How many *pot* of rice (12 kilograms) did your household harvest on your *chamcar* land in the last crop season?

Number of *pot* harvested    \_\_\_\_\_ ##  
Not applicable                \_\_\_\_\_

2.7 Did your household raise pigs in the past year?

Yes                                \_\_\_\_\_  
No                                 \_\_\_\_\_

2.8 If yes, how many pigs did your household raise in the past year?

Number of pigs                \_\_\_\_\_ ##  
Not applicable                \_\_\_\_\_

2.9 Did your household raise chickens in the past year?

Yes                                \_\_\_\_\_  
No                                 \_\_\_\_\_

2.10 If yes, how many chickens did your household raise in the past year?

Number of chickens \_\_\_\_\_  
Not applicable \_\_\_\_\_

2.11 Does your household gather food from the forest?

Yes \_\_\_\_\_  
No \_\_\_\_\_

2.12 If yes, how often does your household gather food from the forest?

At least once a day \_\_\_\_\_  
At least once a week \_\_\_\_\_  
At least once a month \_\_\_\_\_  
At least once every six months \_\_\_\_\_  
At least once every year \_\_\_\_\_  
Hardly ever \_\_\_\_\_  
Never \_\_\_\_\_

2.13 If yes, what food did your household gather from the forest in the past year?

write names of food gathered \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ Not applicable

2.14 Besides food does your household gather other products from the forest? (For example, liquid resin, timber, fuelwood, thatch, etc.)

Yes \_\_\_\_\_  
No \_\_\_\_\_

2.15 If yes, how often does your household gather other products from the forest?

At least once a day \_\_\_\_\_  
At least once a week \_\_\_\_\_  
At least once a month \_\_\_\_\_  
At least once every six months \_\_\_\_\_  
At least once every year \_\_\_\_\_  
Hardly ever \_\_\_\_\_  
Never \_\_\_\_\_

2.16 If yes, what other products did your household gather from the forest in the past year?

write names of other forest products gathered

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not applicable

2.17 Does your household hunt or trap wild animals?

Yes \_\_\_\_\_  
No \_\_\_\_\_

2.18 If yes, how often does your household hunt or trap wild animals?

At least once a day \_\_\_\_\_  
At least once a week \_\_\_\_\_  
At least once a month \_\_\_\_\_  
At least once every six months \_\_\_\_\_  
At least once every year \_\_\_\_\_  
Hardly ever \_\_\_\_\_  
Never \_\_\_\_\_

2.19 If yes, what animals did your household hunt or trap in the past year?

write names of animals hunted or trapped

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not applicable

2.20 Does your household fish?

Yes \_\_\_\_\_  
No \_\_\_\_\_

2.21 If yes, how often does your household fish?

At least once a day \_\_\_\_\_  
At least once a week \_\_\_\_\_  
At least once a month \_\_\_\_\_  
At least once every six months \_\_\_\_\_  
At least once every year \_\_\_\_\_  
Hardly ever \_\_\_\_\_  
Never \_\_\_\_\_



2.22 If yes, what type of fish did your household catch in the past year?

write names of fish caught

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not applicable

2.23 Did your household earn money from making and selling goods to other people in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

2.24 If yes, what type of goods did your households make and sell in the past year?

write names of goods made and sold

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not applicable

2.25 Did your household earn money from buying goods from villagers and selling them to middlemen, or in the market, or to other villagers or from buying goods from the market and selling them to villagers in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

2.26 If yes, what type of goods did your household buy from other villagers and sell to middlemen or in the market or to other villagers or from buying goods from the market and selling them to villagers in the past year?

write names of bought and sold

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not applicable

2.27 Did members of your household earn wages by working for other people in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

2.28 If yes, what type of work did your household do for wages in the past year?

write names of work done for wages

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not applicable

### 3. Buying and Selling, Participation in the Market

3.1 Has your household sold any land in the past five years?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.2 If yes, what type of land did your household sell in the past five years? (Check all that apply.)

*Chamcar* land \_\_\_\_\_  
Paddy rice land \_\_\_\_\_  
Residential land \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.3 If yes, how many hectares of *chamcar* land or paddy rice land or square meters of residential land did your household sell in the past five years?

Hectares of *chamcar* land \_\_\_\_\_  
Hectares of paddy rice land \_\_\_\_\_  
Square meters of residential land \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.4 If yes, to whom did you sell the land?

Relative \_\_\_\_\_  
Other Stieng \_\_\_\_\_  
Khmer \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.5 Has your household bought any land in the past five years?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.6 If yes, what type of land did your household buy in the past five years? (Check all that apply.)

<i>Chamcar</i> land	_____
Paddy rice land	_____
Residential land	_____
Not applicable	_____

3.7 If yes, how many hectares of *chamcar* land or paddy rice land or square meters of residential land did your household buy in the past five years?

Hectares of <i>chamcar</i> land	_____
Hectares of paddy rice land	_____
Square meters of residential land	_____
Not applicable	_____

3.8 If yes, from whom did you buy the land?

Relative	_____
Other Stieng	_____
Khmer	_____
Not applicable	_____

3.9 Has your household hired other villagers to work for you for wages in the past year?

Yes	_____
No	_____

3.10 If yes, what work did your household hire other villagers to do for you for wages in the past year?

write names of work hired for wages	_____
	_____
	_____
	_____
	_____
	_____ Not Applicable

3.11 Has your household sold any paddy rice in the past year?

Yes	_____
No	_____

3.12 If yes, how many *pot* (12 kilograms) of paddy rice did your household sell in the past year?

*Pot* of paddy rice sold \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.13 Has your household bought any paddy rice in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.14 If yes, how many *pot* (12 kilograms) of paddy rice did your household buy in the past year?

*Pot* of paddy rice bought \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.15 Has your household bought any milled rice in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.16 If yes, how many kilograms of milled rice did your household buy in the past year?

Kilograms of milled rice bought \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.17 Has your household sold any cattle or buffaloes in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.18 If yes, how many cattle or buffaloes did your household sell in the past year?

Number of cattle or buffalo sold \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.19 Has your household bought any cattle or buffaloes in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.20 If yes, how many cattle or buffaloes did your household buy in the past year?

Number of cattle or buffalo bought \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.21 Has your household sold any pigs in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.22 If yes, how many pigs did your household sell in the past year?

Number of pigs sold \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.23 Has your household bought any pigs in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.24 If yes, how many pigs did your household buy in the past year?

Number of pigs bought \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.25 Has your household sold any cash crops in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.26 If yes, what cash crops did your household most often sell in the past year?

write names of cash crop most often sold \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ Not Applicable

3.27 Has your household bought any cash crops in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.28 If yes, what cash crops did your household most often buy in the past year?

write names of cash crop most often bought \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ Not Applicable

3.29 Has your household sold any forest products in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.30 If yes, what forest products did your household most often sell in the past year?

write names of forest products most often sold \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ Not Applicable

3.31 Has your household bought any forest products in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.32 If yes, what forest products did your household most often buy in the past year?

write names of forest products most often bought \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ Not Applicable

3.33 Has your household sold any wildlife in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.34 If yes, what wildlife did your household most often sell in the past year?

write names of forest products most often sold

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not Applicable

3.35 Has your household bought any wildlife in the past year?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.36 If yes, what wildlife did your household most often buy in the past year?

write names of wildlife most often bought

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not Applicable

3.37 Does your household buy goods at the market?

Yes \_\_\_\_\_  
No \_\_\_\_\_

3.38 If yes, what is the market where your household buys most of its goods?

write name of most frequented market \_\_\_\_\_  
Not applicable \_\_\_\_\_

3.39 If yes, how often does your household go to this market?

At least once a day \_\_\_\_\_  
At least once a week \_\_\_\_\_  
At least once a month \_\_\_\_\_  
At least once every six months \_\_\_\_\_  
At least once a year \_\_\_\_\_  
Hardly ever \_\_\_\_\_  
Never (NA) \_\_\_\_\_

3.40 What were the major items that your household bought in this market in the past year?

write names of major items bought

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Not Applicable

#### 4. Sufficiency of Village Natural Resources

4.1 Do you think that the village resources of forest timber for house construction are:

Sufficient \_\_\_\_\_  
Somewhat sufficient \_\_\_\_\_  
Not sufficient \_\_\_\_\_

4.2. Please explain the reason for your answer?

4.3 Do you think that the village resources of non-timber forest products (e.g. resin, firewood, thatch, etc.) are:

Sufficient \_\_\_\_\_  
Somewhat sufficient \_\_\_\_\_  
Not sufficient \_\_\_\_\_

4.4. Please explain the reason for your answer?

4.5 Do you think that the village resources of forest food (e.g. bamboo shoots, wild fruit, etc.) are:

Sufficient \_\_\_\_\_  
Somewhat sufficient \_\_\_\_\_  
Not sufficient \_\_\_\_\_

4.6. Please explain the reason for your answer?

4.7 Do you think that the village resources of wildlife for home consumption are:

Sufficient \_\_\_\_\_  
Somewhat sufficient \_\_\_\_\_  
Not sufficient \_\_\_\_\_



4.8 Please explain the reason for your answer?

4.9 Do you think that the village resources of fish for home consumption are:

Sufficient	_____
Somewhat sufficient	_____
Not sufficient	_____

4.10 Please explain the reason for your answer?

4.11 Do you think that the village resources of *chamcar* land are:

Sufficient	_____
Somewhat sufficient	_____
Not sufficient	_____

4.12 Please explain the reason for your answer?

4.13 Do you think that the village resources of paddy rice land are:

Sufficient	_____
Somewhat sufficient	_____
Not sufficient	_____

4.14 Please explain the reason for your answer?

### Appendix 3: Focus Group Interview for Indigenous Villagers

Name of Interviewer: \_\_\_\_\_

Date of Interview: \_\_\_\_\_

Name of Recorder: \_\_\_\_\_

Checked by: \_\_\_\_\_

#### Focus Group Interview for Indigenous Villagers

##### *Village Background*

1. Name of the village? When was the village established? Where did the people come from? What have been the changes (increases and decreases) in the household population over time? How many households now live in the village? How many of the total households are Stieng? How many are Khmer? How far is the village from Snoul district center? Describe briefly how the Stieng people came to be integrated into Khmer ways?

##### **Depletion of Natural Resources and Emerging Responses**

*(Use PRA approaches to elicit the data).*

##### 1. Village Resources

What was the state of natural resources at the time the village was settled? Describe separately for timber, non-timber forest products (resin, bamboo, thatch, honey, etc.), forest food (bamboo shoots, wild fruits, etc.), wildlife, fisheries, *chamcar* lands, and paddy rice land. What changes occurred during successive periods? e.g. Sihanouk regime? Pol Pot era? 1979-1992? 1993-1999? 2000-2004? Were timber, non-timber forest products, forest food, wildlife, fisheries, *chamcar* and paddy rice lands more plentiful or less plentiful from one period to another? What were the reasons for this? How did this affect changes in household livelihood strategies?

#### Inventory of Village Resources – How Plentiful?

Resource	Sihanouk Regime	Pol Pot era	1979-1992	1993-1999	2000-2004
Population					
Forest timber					
NTFP/resin					
Forest food					
Wildlife					
Fishing					
<i>Chamcar</i> lands					
Paddy rice lands					

Note: Ask the villages to discuss and come to a consensus about the state of village resources and then have the facilitator mark onto the flip chart to indicate the state of resources over time. Use the following legend:

- 4 represents *very plentiful*
- 3 represents *plentiful*
- 2 represents *somewhat plentiful*
- 1 represents *not plentiful*
- 0 represents *no resource*

The reasons for the changes from one period to another should be discussed in detail.

Were *chamcar* and paddy rice lands more productive or less productive from one period to another? What were the reasons for this?

### Productivity of Village Agricultural Resources

Resource	Sihanouk Regime	Pol Pot era	1979-1992	1993-1999	2000-2004
<i>Chamcar</i> lands					
Paddy rice lands					

Note: Ask the villages to discuss and come to a consensus about the productivity of agricultural resources and then have the facilitator mark onto the flip chart to indicate the productivity of the resource over time. Remember to write the number of pebbles that are placed in each of the boxes so that there will be a record for later. Use the following legend:

- 4 represents *very productive*
- 3 represents *productive*
- 2 represents *somewhat productive*
- 1 represents *not productive*
- 0 represents *no resource*

The reasons for the changes from one period to another should be discussed in detail.

## 2. Village Map

What are the boundaries of the village? Sketch the forest areas? The protected areas? The logging concession areas? The illegal logging areas? The rivers and ponds? The *chamcar* areas? The paddy land rice areas? The village roads? The residential areas? The encroachment areas?

Note: Ask the villagers to map the following areas using different color pens, rice grains, pieces of wood, pieces of leaves, etc. Mark the following:

- Village boundaries
- Forest areas
- Spirit forest areas
- Protected areas
- Logging concession areas
- Illegal logging areas
- Rivers and ponds
- *Chamcar* areas
- Paddy rice land areas
- Village roads
- Residential areas
- Encroachment areas

Are village lands included in any conservation and/or protected areas established by the government? Has any legal or illegal logging occurred in the village? Or in areas outside of the village that have consequences for local residents (e.g. resin tapping areas)? Have the villages been affected by recent population increases and/or Khmer in-migration? Have the villages been affected by claims or purchases of land by outsiders for the cultivation of cash crops or land speculation? What have been the consequences of each of these developments?

### 3. Sufficiency of Village Natural Resources

Are the natural resources in the village sufficient to the needs of the villagers? Are there sufficient areas available for opening up new swidden lands? Are there sufficient areas available for opening up new paddy rice lands? Are there sufficient forest areas to acquire timber for building houses? Are there sufficient forest areas to tap resin and to gather other non-timber forest products? Are there sufficient forest areas to gather food? Are there sufficient areas to trap wildlife for home consumption? Are there sufficient areas to fish for home consumption? How does the sufficiency of natural resources affect village livelihoods?

#### Sufficiency of Village Resources June 2004

Resource	Sufficient	Somewhat sufficient	Not sufficient	Reasons why
Forest timber				
NTFP/resin				
Forest food				
Wildlife				
Fishing				
<i>Chamcar</i> lands				
Paddy rice lands				

Note: Ask the villages to discuss and to determine the sufficiency of village resources. Have the facilitator mark on the flip chart one the following headings: sufficient, somewhat sufficient, or not sufficient. Discuss the reasons for the placement in detail.

How does the sufficiency of natural resources affect village livelihoods?

### 4. Management of Village Resources

What have villagers done to protect and manage their natural resources? Have they received any training in the management of natural resources? From whom? NGOs? Government? Have they formed any committees to regulate the general use of natural resources? Have they formed any committees to regulate the specific use of natural resources, e.g. protected area committees, reservoir management committees? Have they developed any rules and regulations within the village that govern the use of natural resources, i.e. timber, non-timber forest products, forest food, wildlife, fisheries, *chamcar*, and paddy areas? How do they monitor and enforce these regulations? Have they participated in any meetings or events to promote the integrity of their natural resources? Have they received any support or assistance from government or NGOs to protect and manage their natural resources?

Note: Ask the villagers to list the various people and groups *within* the village that are involved in the management of natural resources. List the key players. Discuss these relationships in detail.

Next ask the villagers to list the various people and groups *outside* of the village that are involved in the management of natural resources. Discuss the relationships of the people and groups outside the village to people and groups inside the village.

### Land Tenure and Land Use Management

1. How did the Stieng people acquire their land resources? How do the Stieng people transfer land from one generation to the next? Are land areas of the Stieng and Khmer in the village separated? How do the Stieng people in the village understand their rights to land resources?

Is there a difference between their rights to forest areas and to agricultural land? Do agricultural land areas in the villages belong to the Stieng people communally or collectively or do they belong to individual households? Do land areas that are no longer cultivated by individual households remain with those households or do they revert back to communal ownership? Do individual households have the right to sell the land they are cultivating without consulting the village chief, the elders, or the Stieng villagers as a whole? In this village do Stieng households sell land rights to other Stieng people? In this village do Stieng households sell land rights to Khmer people? Are these practices very common? Are land transfers to children more common? Are there differences between the land rights of men and the land rights of women?

2. Do village households make investments in their agricultural land to make it more productive? Do they use high-yielding varieties? Do they use fertilizer? Insecticide? Irrigation pumps? Irrigation canals? Do they take advantage of dams or reservoirs? Do they protect their land from soil erosion? Do households cultivate high value cash crops on their *chamcar* land to increase the income earned from their land, e.g. coffee or cashew nuts? Do they practice double cropping on their paddy rice fields? Do households use land as collateral to loan money for productive investments?

### **Livelihood Strategies**

1. Do natural resources play a major role in sustaining the livelihoods of the indigenous people in the village? Explain? What are the livelihood strategies of the indigenous people in the village? What is the particular work of men in these livelihood strategies? What is the particular work of women in these livelihood strategies?

2. How important are various livelihood strategies for supporting indigenous households? What are the relative contributions of cultivating crops? Livestock and poultry raising? Gathering forest products, hunting, and trapping? Fishing? Making handicrafts, trading, and wage work? What are the implications of this for managing natural resources?

### **Market Participation**

1. What has been the participation of the indigenous people in market activities? To what extent have households been involved in the buying and selling of goods? e.g. Land? Labor? Rice? Cash crops? Cattle or buffaloes? Pigs? Forest products? Wildlife? Where are these products bought and sold? Do middlemen come to the village to buy and sell goods? Do villagers transport goods to the markets themselves? How does the buying and selling of goods affect the amount of food available for good health and nutrition? Does the sale of *chamcar* crops, food gathered from forest, wildlife, and fish lessen the amount of food available for household consumption? Does the sale of goods such as resin and palm leaves increase cash income to buy more food?

2. What is the closest market to the village? How far away is it? What is the frequency of market going? What are the goods most commonly bought at the markets?

## **Appendix 4. ADI Trainee and Team Researchers**

### **ADI Trainee Researchers (Round 14)**

Hout Vimean	CONCERN
Bun Narin	CONCERN
Sar Davy	Project Against Domestic Violence
Chea Bora	World Vision Cambodia
Tang Kea	Cambodia Trust
Hok Ly	Cambodia Trust
Neuv Chantha	Oxfam Community Aid Abroad
Nhem Vannayouth	Lutheran World Federation
Khiev Sothy	Lutheran World Federation
Nuon Borin	Lutheran World Federation
Soy Kim Sorn	Lutheran World Federation
Chhum Syrom	Vicheasthan Bandosbondal Neakropkrong Kangea Aphivath (VBNK)
Kong Sedth	Vicheasthan Bandosbondal Neakropkrong Kangea Aphivath (VBNK)
Eng Chheang Hong	Enfants et Developpement
Po Tieng	Development Association of Cambodia
Meas Chin Chakriya	Khmer Youth Association
Chea Sokny	Rural Association for the Development of the Economy
Outh Renne	Youth for Peace
Keo Mara	Cambodian Health Education Development
Choun Sam Ath	Kratie Women's Welfare Association

### **ADI Team Researchers**

Oeur Il	Cooperation Committee for Cambodia/ADI Project
Seng Savuth	Cooperation Committee for Cambodia/ADI Project
Ang Sopha	Cooperation Committee for Cambodia/ADI Project
Hor Sakphea	Cooperation Committee for Cambodia/ADI Project
John McAndrew	Cooperation Committee for Cambodia/ADI Project