



Improvement of the Sustainable Management and Utilization of  
Non-Timber Forest Products in Cambodia  
PD 275/04 Rev.3 (1)

**Technical Report**  
**Marketing Assessment**

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Host Government  
FORESTRY ADMINISTRATION  
MINISTRY OF AGRICULTURE FORESTRY  
AND FISHERIES

Executing Agency  
Community Forestry Office  
Forestry Administration

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# 1. Introduction

The primary purpose of this project is to contribute to the alleviation of poverty in targeted forest areas in fifteen villages in four provinces in Cambodia. The means of accomplishing this purpose will be by increasing the flows of benefits to local communities involved with the collection and marketing of Non-Timber Forest Products (NTFPs). A reference map of Cambodia showing the relative locations of the four targeted provinces of the project is provided in Annex A.

The targeted areas selected in the pre-project information-gathering phase of the project included three villages in Kampong Thom province (Cheam Svay, Sam Orng, and Tum Or), five villages in Kampong Chhnang province (Kanchorng, Svay Bakav, Saray Andet, Oroung, and Svay Kroam), three villages in Rattanakiri province (Somkul, Somtrak, and Somkaninh), and four villages in Mondulhiri province (Pou Kroch, Pou Radet, Pou Loung, and Pou Kreng). Those areas, collectively, represent a broad diversity of NTFP resource and market conditions in the country.

In the pre-project phase of the study, preliminary survey questionnaires identified several different mixes of NTFPs that were used by households for personal consumption and/or collected and sold to enhance household incomes. One of the primary purposes of the Socio-Economic International Expert's project interventions was to expand and refine this information by developing a more comprehensive understanding of marketing chains for NTFPs and the interactions of market participants. This, as well as other initiatives, was expected to provide an informed basis for several project interventions, including the development of sustainable management plans for selected NTFPs to increase local communities' incomes.

The primary objectives in undertaking this assignment included:

- Reviewing pre-project and project documents;
- Organizing selected meetings with representatives of current projects linked to NTFP activities and reviewing the results of previous projects associated with NTFP uses;
- Developing, field-testing, and administering structured survey questionnaires directed at NTFP market participants;
- Providing training on sampling methodology and the administration of structured questionnaires to Community Forestry and project field staff of the Forestry Administration. This included training to ensure that interviewers fully understood the meaning and intent of the questions developed for each of the questionnaires and recognized the importance of establishing effective communication channels with interviewees to optimize information flows during interviews, as well as subsequent training to review the forms of the questionnaires and the procedures for sampling populations of collectors, traders, processors, and wholesalers/retailers;
- Compiling the information recorded on the structured questionnaires and organizing the quantitative information using Excel spreadsheets;
- Analyzing and interpreting information collected and data compiled from the administration of the structured questionnaires;
- Developing and supervising the administration of a specialized market survey questionnaire for determining the presence of NTFPs in Phnom Penh and other larger provincial markets; and
- Developing conclusions and recommendations on the basis of the analyses and interpretation of the survey information and results of the specialized market survey to guide project interventions.

## 2. Methodology

The approach to developing estimates of current and potential NTFP markets within each of the fifteen targeted villages consisted of the following actions:

- 1) The development of a set of survey questionnaires to collect market information on collectors, wholesalers, traders, and processors of NTFPs. The English versions of those questionnaires are provided in Annex B;
- 2) The application of a statistically consistent system for administering the questionnaires to a random sample of collectors and representative groups of traders, wholesalers, and processors in each of the targeted villages. The primary aim in each of the surveys was to administer the questionnaires to: (1) a representative sample that consisted of 20% of the number of families in each of the targeted villages that belonged to a community forestry group and identify those who collected NTFPs; and (2) representative groups of wholesalers, processors, and traders. In those villages in which there were no community forestry groups, 20% of the total number of village families was selected to be the planned sample size. Each of the samples was obtained through random selection of families along each of the village roads along which villagers in a targeted area were located;
- 3) The administration of the questionnaires in each of the targeted villages. The sampled information that was collected in the questionnaires on local markets and NTFP value chains was supplemented by information obtained through more informal means, as well as by means of a specialized market survey designed to provide supplemental information on the availability of NTFPs in representative markets in Phnom Penh, Kompong Thom town, and Kompong Chhnang town. The English version of this specialized market survey is provided in Annex C;
- 4) The analysis of the information collected in the questionnaires. The supporting tables that were developed on the basis of the questionnaires that were administered in each of the targeted villages provide the sample results, as well as the expanded estimates for the populations of community forestry families, or village families, in each village. Those estimates were obtained from the sample results by use of the following formulations:

$$(1) n_{cp} = (n_{cs} / n) \cdot p$$

where:

$n_{cp}$  = the estimated number in the population of community forestry families (village families) in a particular village that collect a particular NTFP;

$p$  = the population of community forestry families (village families) in a particular village;

$n$  = the sample size associated with the population of community forestry families (village families) in that village; and

$n_{cs}$  = the number in the sample of community forestry families (village families) in a particular village that collect a particular NTFP.

$$(2) a_{cp} = (n_{cp} / n_{cs}) \cdot a_{cs}$$

where:

$a_{cp}$  = the estimated amount of a particular NTFP that a population of community forestry families (village families) in a particular village collect;

$n_{cp}$  = the estimated number in the population of community forestry families (village families) in a particular village that collect a particular NTFP;

$n_{cs}$  = the number in the sample of community forestry families (village families) in a particular village that collect a particular NTFP; and

$a_{cs}$  = the amount of a particular NTFP that a sample of community forestry families (village families) in a particular village collect.

$$(3) v_p = a_{cp} \cdot p_m$$

where:

$v_p$  = the estimated value of a particular NTFP collected in a particular village;

$a_{cp}$  = the estimated amount of a particular NTFP that a population of community forestry families (village families) in a particular village collect; and

$p_m$  = the weighted mean price in a sample of a particular NTFP that is sold by collectors in a particular village.

- 5) The development of conclusions and recommendations on the basis of the market analyses. In the assessment of those results, it was understood that the numbers recorded for 2008 were representative only since the surveys to administer the questionnaires were conducted at different periods of time between September and November 2008 in each of the villages. They provided a reasonable basis for describing the extent of each NTFP market, though, when considered in combination with the more complete, although perhaps somewhat less accurate, numbers provided for 2007 and 2006.

### **3. Collection of Data**

The primary data that were compiled in the survey questionnaires in each of the villages were consolidated into a series of summary tables designed to facilitate the analysis and interpretation of the data that were collected.

## 4. Market Assessments

### 4.1. Kompong Thom

#### 4.1.1. Cheam Svay

The current markets for NTFPs in Cheam Svay were dominated by resin, both liquid and dry resin, but particularly liquid resin as summarized by the figures provided in tables 1 and 2.

Table 1. Collection of Liquid Resin in Cheam Svay.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	17	41,650	803	85	208,250	167,224,750
2007	17	39,450	606	85	197,250	119,533,500
2006	17	33,550	476	85	167,750	79,849,000

\* Based on a sample size of 24.

\*\* Based on 120 community forestry families.

Table 2. Collection of Dry Resin in Cheam Svay.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	14	2,370	1,496	70	11,850	17,727,600
2007	14	1,590	961	70	7,950	7,639,950
2006	14	910	674	70	4,550	3,066,700

\* Based on a sample size of 24.

\*\* Based on 120 community forestry families.

The amount of liquid resin collected in Cheam Svay had been increasing substantially in the past few years and in 2008 may have surpassed 210,000 kg, which at the current market price was worth almost 170 million riels, or \$42,500 at an exchange rate of \$1.00 = 4,000 riels. That would have represented an annual per capita income of more than \$350 to each community forestry family in Cheam Svay.

The dry resin commanded a higher market price and the amount that was collected in Cheam Svay, while much less than the amount of liquid resin, was also expanding and in 2008 would have surpassed 12,000 kg, which would have been worth some 18 million riels, or \$4,500. This would have represented an annual per capita income level for every community forestry family of more than \$35.

A disproportionate amount of the liquid resin that was reported to be collected in the Cheam Svay sample was apparently provided by a few very large-scale collectors as table 3 demonstrates. Four individuals, or less than 25% of those collectors that were sampled, collected almost 75% of the liquid resin accounted for in the sample.

Table 3. Cumulative Shares of Liquid Resin Collected in the Cheam Svay Sample.

Cumulative Amount Collected (kg)	Cumulative Number of Collectors	Cumulative Per Cent of Total Amount Collected
12,000	1	29
22,000	2	53
28,000	3	67
31,000	4	74
34,000	5	82
35,800	6	86
37,300	7	90
...	...	...
41,650	17	100

The trend in concentration was similar among the collectors of dry resin, as table 4 shows, but the individuals that controlled the collection of dry resin were not necessarily the same ones as those who controlled the collection of liquid resin. Three of the collectors of dry resin, representing only a little more than 20% of those collectors who were sampled, accounted for more than 75% of the amount of dry resin that was reported to be collected.

Table 4. Cumulative Shares of Dry Resin Collected in the Cheam Svay Sample.

Cumulative Amount Collected (kg)	Cumulative Number of Collectors	Cumulative Per Cent of Total Amount Collected
900	1	38
1,400	2	59
1,800	3	76
...	...	...
2,370	14	100

A little less than 10% of the liquid resin that was reported to be collected in the Cheam Svay sample originated solely in community forestry areas. More than 60% of the liquid resin that was collected originated completely outside of community forestry areas, while almost another 30% originated at sites that were reported to be either in or out of community forestry areas. The mean reported distance to liquid resin collecting sites outside of community forestry areas was almost 30 km, while the mean distance to collecting sites that were reported to be either in or out of community forestry areas was 8 km.

The distances to collecting sites reported for dry resin were comparable. More than 40% of the dry resin that was reported collected in the Cheam Svay sample originated completely outside of community forestry areas, while more than 50% originated at sites that were reported to be either in or out of community forestry areas. The mean distance to dry resin collecting sites outside of community forestry areas was almost 30 km, while the mean distance to collecting sites that were reported to be either in or out of community forestry areas was 12 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of liquid resin and dry resin in Cheam Svay indicated that:

- They were unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain;
- Loans or cash advances from traders were not uncommon and were repaid by discounting selling prices of resin to traders;



- Very few of the collectors appeared to understand the marketing chain or the effects of pricing information on marketing decisions very well;
- None of the collectors commented on constraints to increasing outputs of liquid resin or dry resin; and
- Collectors were almost unanimous in their opinion that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

In the administration of the survey questionnaires, wholesalers of liquid resin or dry resin were distinguished from traders on the basis of the locations of their business operations. Wholesalers were considered to be lower levels of traders whose business transactions were conducted closer to one of the targeted project villages in Kompong Thom. The marketing information that was provided by traders is, as a result, much more inclusive of marketing chains that extend from the three targeted villages in Kompong Thom rather than from a single marketing chain extending from Cheam Svay.

The pricing information provided on liquid resin in tables 5 and 6, and dry resin in tables 7 and 8, which was generally consistent with the pricing information that was reported by collectors in tables 1 and 2, respectively, suggests mark-ups of more than 35% for liquid resin and 25% to 30% for dry resin as the products move through marketing chains that branch from collectors through wholesalers and traders.

Table 5. Value Added by Wholesalers of Liquid Resin in Cheam Svay.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	5	18,300	969 (1,325)	17,732,700 (24,247,500)	36.7
2007	5	25,900	565 (857)	14,633,500 (22,196,300)	51.7
2006	5	19,700	437 (697)	8,608,900 (13,730,900)	59.5

Table 6. Value Added by Traders of Liquid Resin in Cheam Svay.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	6	84,000	1,096 (1,518)	92,064,000 (127,512,000)	38.5
2007	6	101,000	728 (1,022)	73,528,000 (103,222,000)	40.4
2006	6	101,000	684* (959)*	56,772,000* (79,597,000)*	40.2

\* Based on 83,000 kg bought and sold and a sample size of 5.

Table 7. Value Added by Wholesalers of Dry Resin in Cheam Svay.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	4	6,800	1,463 (2,007)	9,948,400 (13,647,600)	37.2
2007	4	10,000	900 (1,400)	9,000,000 (14,000,000)	55.6
2006	4	15,180	744 (1,110)	11,293,920 (16,849,800)	49.2

Table 8. Value Added by Traders of Dry Resin in Cheam Svay.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	6	31,200	1,669 (2,081)	52,072,800 (64,927,200)	24.7
2007	6	32,200	1,356 (1,717)	43,663,200 (55,287,400)	26.6
2006	6	32,200	1,329* (1,665)*	36,148,800* (45,288,000)*	25.3

\* Based on 27,200 kg bought and sold and a sample size of 5.

In response to the market-oriented survey questions that were incorporated into the questionnaires, traders of liquid resin and dry resin collected in Cheam Svay and in Sam Orng, as well, reported that:

- The quality of liquid resin and dry resin purchased by traders was generally medium to good;
- Informal fees were apparently commonly paid to various government officials at different stages of the marketing chain;
- Loans or cash advances to collectors were provided by some 30% of the traders and were repaid by discounting purchase prices of resin from collectors;
- Sales of liquid resin and dry resin purchased by traders from collectors were directed to other traders, wholesalers, and end-users in the next stage of the value chain; and
- Most of the traders concurred that the demand for liquid resin and dry resin would continue to expand.

#### 4.1.2. Sam Orng

The markets for NTFPs in Sam Orng were also dominated by liquid resin, as well as much smaller amounts of dry resin, as shown in tables 9 and 10.

Table 9. Collection of Liquid Resin in Sam Orng.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	13	17,450	947	81	108,727	102,964,469
2007	13	18,610	705	81	115,955	81,748,275
2006	13	22,210	480	81	138,385	66,424,800

\* Based on a sample size of 23.

\*\* Based on 143 community forestry families.

Table 10. Collection of Dry Resin in Sam Orng.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	4	270	1,611	25	1,688	2,719,368
2007	4	360	662	25	2,250	1,489,500
2006	4	400	600	25	2,500	1,500,000

\* Based on a sample size of 23.

\*\* Based on 143 community forestry families.

The amount of liquid resin collected in Sam Orng during the past few years appeared to be relatively stable and in 2008 it should have again surpassed 115,000 kg, which at the current market price would have been worth almost 110 million riels, or \$27,500. That would have represented an annual per capita income of more than \$190 for each community forestry family in Sam Orng.

The amount of dry resin collected, which although sold at a much higher price than that of liquid resin, was relatively small and even if it were to have surpassed 2,000 kg in 2008 would still have only been worth a little more than 3.2 million riels, or \$800, at the current market price. That would have only represented an annual per capita income of \$5.50 for every community forestry family in Sam Orng.

The distribution among collectors of liquid resin in the Sam Orng sample was dominated, as in Cheam Svay, by a few very large-scale collectors, as table 11 demonstrates. One individual accounted for more than 40% of the liquid resin reported in the sample, and six individuals, or less than 50% of those collectors that were sampled, accounted for almost 90% of the liquid resin that was reported to be collected.

Table 11. Cumulative Shares of Liquid Resin Collected in the Sam Orng Sample.

Cumulative Amount Collected (kg)	Cumulative Number of Collectors	Cumulative Per Cent of Total Amount Collected
7,500	1	43
10,500	2	60
12,100	3	69
13,300	4	76
14,500	5	83
15,500	6	89
...	...	...
17,450	13	100

Some 15% of the liquid resin that was reported collected in the Sam Orng sample originated solely in community forestry areas, while almost 80% originated completely outside of those areas. The mean distance to liquid resin collecting sites outside of community forestry areas was a little more than 10 km, much less than in Cheam Svay, while the mean distance to collecting sites that were solely in community forestry areas was 5 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of liquid resin in Sam Orng indicated that:

- They were unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain;
- Loans or cash advances from traders were not common, but for those that were provided were repaid by discounting selling prices of resin to traders;
- None of the collectors seemed to understand the marketing chain or the effects of pricing information on marketing decisions very well;
- A few of the collectors commented on constraints to increasing outputs of liquid resin, primarily with regard to the young ages of some resin trees, the large numbers of tapping holes in some older resin trees, and the indiscriminate harvesting of resin trees; and
- Most of the collectors were of the opinion that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

The pricing information on wholesalers that is provided on liquid resin in table 12, which is generally consistent with the range of prices reported by collectors in Sam Orng, as well as the pricing information on traders in table 13, which is generally consistent with the pricing information that was provided on collectors in table 9, suggest mark-ups of 20% - 40% as liquid resin moves through the marketing chain that branches from collectors through wholesalers and traders.

Table 12. Value Added by Wholesalers of Liquid Resin in Sam Orng.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	1	2,000	1,500 (1,800)	3,000,000 (3,600,000)	20.0
2007	1	3,000	700 (900)	2,100,000 (2,700,000)	28.6
2006	1	N/A	N/A	N/A	N/A

Table 13. Value Added by Traders of Liquid Resin in Sam Orng.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	6	84,000	1,096 (1,518)	92,064,000 (127,512,000)	38.5
2007	6	101,000	728 (1,022)	73,528,000 (103,222,000)	40.4
2006	6	101,000	684* (959)*	56,772,000* (79,597,000)*	40.2

\* Based on 83,000 kg bought and sold and a sample size of 5.

The responses of traders of liquid resin collected in Sam Orng, as well as in Cheam Svay, to the market-oriented survey questions that were included in the questionnaires, revealed that:

- The liquid resin purchased by traders was generally of medium to good quality;
- Informal fees were apparently commonly paid to various government officials at different stages of the marketing chain;
- Loans or cash advances to collectors were provided by about 30% of the traders and were repaid by discounting purchase prices of resin from collectors;
- Sales of liquid resin purchased by traders from collectors were directed to other traders, wholesalers, and end-users in the next stage of the value chain; and
- Most of the traders concurred that the demand for liquid resin would continue to expand.

#### 4.1.3. Tum Or

The markets for NTFPs in Tum Or were dominated by dry resin, as indicated in table 14. While there was no liquid resin reported to be collected in the sample, there was evidence of a small-scale processor who was producing torches.

Table 14. Collection of Dry Resin in Tum Or.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	5	1,958	995	16	6,266	6,234,670
2007	5	2,435	698	16	7,792	5,438,816
2006	5	3,200	500	16	10,240	5,120,000

\* Based on a sample size of 35.

\*\* Based on 114 community forestry families.

The amount of dry resin collected in Tum Or during the past several years has apparently been declining, but in 2008 may have surpassed 7,500 kg worth more than 7 million riels, or \$1,750. That would have represented an annual per capita income level for every community forestry family of a little more than \$15.

The predominant amount of the dry resin that was reported to be collected in the Tum Or sample was provided by one individual, as table 15 demonstrates. That individual accounted for over 90% of the dry resin reported in the sample.

Table 15. Cumulative Shares of Dry Resin Collected in the Tum Or Sample.

Cumulative Amount Collected (kg)	Cumulative Number of Collectors	Cumulative Per Cent of Total Amount Collected
1,800	1	92
1,896	2	97
...	...	...
1,958	5	100

A little more than 2% of the dry resin that was reported collected in the Tum Or sample originated solely in community forestry areas, while more than 90% originated at sites that were reported to be either in or out of community forestry areas. The mean distance to dry resin collecting sites that were reported to be either in or out of community forestry areas was 7 km, while the mean distance to collecting sites that were located in community forestry areas was 5 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of dry resin in Tum Or indicated that:

- They were unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain;
- There were no reports of loans or cash advances from traders;
- None of the collectors appeared to understand the marketing chain or the effects of pricing information on marketing decisions very well;
- None of the collectors commented on constraints to increasing outputs of dry resin; and
- While many of the collectors were of the opinion that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization, more than 70% did not respond to this question.

The pricing information provided on dry resin in tables 16 and 17, which considering the economic concentration of collectors appears to be broadly representative of the pricing information that was reported on collectors in table 14, is indicative of significant mark-ups as dry resin moves through the marketing chain that branches from collectors through wholesalers and traders. The relatively small amounts of dry resin that were bought and sold by wholesalers compared to those that were bought and sold by traders suggest mark-ups of about 25%.

Table 16. Value Added by Wholesalers of Dry Resin in Tum Or.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	2	840 (770)	1,000 (1,491)	840,000 (1,148,070)	49.1
2007	2	1,700	524 (1,200)	890,800 (2,040,000)	129.0
2006	2	N/A	N/A	N/A	N/A

Table 17. Value Added by Traders of Dry Resin in Tum Or.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	6	31,200	1,669 (2,081)	52,072,800 (64,927,200)	24.7
2007	6	32,200	1,356 (1,717)	43,663,200 (55,287,400)	26.6
2006	6	32,200 (27,200)	1,232* (1,665)*	33,510,400* (45,288,000)*	35.1

\* Based on 27,200 kg bought and sold and a sample size of 5.

The responses of traders of dry resin collected in Tum Or, Cheam Svay, and Sam Orng to the market-oriented survey questions that were included in the questionnaires, revealed that:

- The dry resin purchased by traders was generally of medium to good quality;
- Informal fees were apparently commonly paid to various government officials at different stages of the marketing chain;
- Loans or cash advances to collectors were provided by about 30% of the traders and were repaid by discounting purchase prices of resin from collectors;
- Sales of dry resin purchased by traders from collectors were directed to other traders, wholesalers, and end-users in the next stage of the value chain; and
- Most of the traders concurred that demand for dry resin would continue to increase.

## 4.2. Kampong Chhnang

### 4.2.1. Kanchorng

There were four active markets for NTFPs that were collected in Kanchorng in which collectors were selling mushrooms, other fungus, bamboo shoots, and medicinal plants. The market transactions associated with each of those NTFPs over several of the past years are summarized in tables 18 through 21, respectively.

Table 18. Collection of Mushrooms in Kanchorng.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	35	340 (213)	9,782	174	1,059	10,359,138
2007	35	415 (391)	7,101	174	1,944	13,804,344
2006	35	450.5 (439.5)	5,876	174	2,185	12,839,060

\* Based on a sample size of 41.

\*\* Based on 204 community forestry families.

Table 19. Collection of Other Fungus in Kanchorng.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	17	361 (346)	3,396	85	1,730	5,875,080
2007	17	521 (516)	1,680	85	2,580	4,334,400
2006	17	478 (473)	1,426	85	2,365	3,372,490

\* Based on a sample size of 41.

\*\* Based on 204 community forestry families.

Table 20. Collection of Bamboo Shoots in Kanchorng.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	10	794.5 (767)	1,529	50	3,835	5,863,715
2007	10	696 (694)	1,446	50	3,470	5,017,620
2006	10	472 (467)	1,379	50	2,335	3,219,965

\* Based on a sample size of 41.

\*\* Based on 204 community forestry families.

Table 21. Collection of Medicinal Plants in Kanchorng.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	10	1,246 (1,120)	381	50	5,600	2,133,600
2007	10	893 (880)	280	50	4,400	1,232,000
2006	10	872 (850)	259	50	4,250	1,100,750

\* Based on a sample size of 41.

\*\* Based on 204 community forestry families.

The marketing chain for each of these NTFPs was characterized by an apparent absence of intermediary wholesalers and traders, presumably as a result of the perishability of these products.

The results of the sample surveys suggested that the selling prices of each of these products has been steadily rising over the past few years, particularly the prices of other fungus and mushrooms, and in 2008 in particular, medicinal plants, as shown in table 22.



Table 22. Increases in Mean Selling Prices of NTFPs Collected in Kanchorng.

Year	Increases in Mean Selling Prices of Mushrooms	Increases in Mean Selling Prices of Other Fungus	Increases in Mean Selling Prices of Bamboo Shoots	Increases of Mean Selling Prices of Medicinal Plants
2007 – 2008	38%	102%	6%	36%
2006 – 2007	21%	18%	5%	8%

The amounts of bamboo shoots and medicinal plants that were collected in Kanchorng had been increasing as prices advanced during some of the past several years. The collectors of mushrooms and other fungus, however, appeared to be marketing less and consuming more of those products, perhaps as a result of higher prices which were allowing them to maintain incomes comparable to those of more recent years without increasing the amounts of those products that were marketed.

The estimated market value of each of the products is presented in table 23, along with estimates of each of the product's contributions to the annual per capita income of community forestry families in Kanchorng.

Table 23. Market Values of NTFPs Collected in Kanchorng in 2008.

NTFP	Estimated Total Amount Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Value (riels)	Contribution to Annual Per Capita Income of Community Forestry Families
Mushrooms	1,059	9,782	10,359,138	\$12.70
Other Fungus	1,730	3,396	5,875,080	\$7.20
Bamboo Shoots	3,835	1,529	5,863,715	\$7.19
Medicinal Plants	5,600	381	2,133,600	\$2.60

The cumulative contribution of the mushrooms, other fungus, bamboo shoots, and medicinal plants that were collected and marketed in Kanchorng to annual per capita income levels of community forestry families was about \$30. Nearly 70% of that value was accounted for by mushrooms and other fungus, with bamboo shoots accounting for about another 25%, and medicinal plants accounting for the remainder of the value.

One hundred percent of the mushrooms and other fungus, 90% of the medicinal plants, and 80% of the bamboo shoots that were reported to be collected in the Kanchorng sample originated at sites that were inside the community forestry area with a mean distance to those sites of about 1 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, the collectors of mushrooms, other fungus, bamboo shoots, and medicinal plants in Kanchorng indicated that:

- None of the collectors commented on constraints to increasing outputs of mushrooms, other fungus, bamboo shoots, and medicinal plants; and
- Collectors were almost evenly divided, if not uncertain, in their opinion that a collector's organization would be useful for increasing collectors' incomes and if they would be willing to participate in such an organization.

Other than mushrooms, other fungus, bamboo shoots, and medicinal plants, there were only a few other NTFPs that were reported to be collected in Kanchorng and, for the most part, the amounts of those products that were reported to be collected were very small and

the proportions of those that were collected and marketed were even smaller. Included among those NTFPs were rattan, tree leaves, potatoes, bamboo poles, fruits, and vines.

#### 4.2.2. Svay Bakav

The markets for NTFPs that were collected in Svay Bakav were dominated almost entirely by bamboo shoots, with some smaller markets for medicinal plants as well. A summary of the prices and quantities exchanged over three of the past several years in each of these markets is provided in tables 24 and 25, respectively.

Table 24. Collection of Bamboo Shoots in Svay Bakav.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	6	628 (600)	1,500	30	3,000	4,500,000
2007	6	1,013 (1,000)	820	30	5,000	4,100,000
2006	6	814 (800)	562	30	4,000	2,248,000

\* Based on a sample size of 48.

\*\* Based on 241 community forestry families.

Table 25. Collection of Medicinal Plants in Svay Bakav.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	6	349 (342)	359	30	1,710	613,890
2007	6	417 (415)	292	30	2,075	605,900
2006	6	125 (125)	378	30	625	236,250

\* Based on a sample size of 48.

\*\* Based on 241 community forestry families.

The marketing chains for these NTFPs were again characterized by an apparent absence of intermediaries, again probably as a result of the perishability of these products.

Notwithstanding that the selling price of bamboo shoots had been rising, especially in 2008 when it had almost doubled, there had been a much less than proportionate response of collectors to this price increase. The amount of bamboo shoots collected in 2008 might even have even somewhat less than was collected the previous year. This might have been more indicative of the response to the current availability of bamboo shoots than to price, however, as well as to the concentration of large-scale collectors in the survey sample. Indeed, the amounts that were collected by two individual collectors accounted for the entire amount of bamboo shoots that were reported to be collected in the sample.

The estimated market values of the bamboo shoots and medicinal plants are presented in table 26, together with estimates of each of each of those product's contributions to the annual per capita income of community forestry families in Svay Bakav.

Table 26. Market Values of NTFPs Collected in Svay Bakav in 2008.

NTFP	Estimated Total Amount Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Value (riels)	Contribution to Annual Per Capita Income of Community Forestry Families
Bamboo Shoots	3,000	1,500	4,500,000	\$4.67
Medicinal Plants	1,710	359	613,890	\$0.64

The contributions of the bamboo shoots and medicinal plants that were collected and marketed in Svay Bakav to annual per capita income levels of community forestry families was relatively small, collectively accounting for a little more than \$5, and most of that amount was accounted for by the marketing of bamboo shoots.

Most of the bamboo shoots that were collected in the Svay Bakav sample originated at sites that were reported to be either in or out of the community forestry area, but located at a mean distance of no more than 1.5 km. The medicinal plants that were reported to be collected originated almost entirely inside the community forestry area at a mean distance of about 3 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of bamboo shoots and medicinal plants in Svay Bakav indicated that:

- There was only one loan, reported for 1 million riels, that was to be repaid at an interest rate of 3% / month;
- None of the collectors commented on constraints to increasing outputs of bamboo shoots and medicinal plants; and
- Most of the collectors did not concur that a collector's organization would be particularly useful for increasing collectors' incomes.

Other than bamboo shoots and the much smaller amounts of medicinal plants, there were only a few other NTFPs that were reported to be collected in Svay Bakav. Moreover, the amounts of those products that were reported to be collected were relatively small and none of those products were reported to be marketed. Included among those NTFPs were mushrooms, potatoes, fruits, and vines

#### 4.2.3. Saray Andet

The markets for NTFPs that were collected in Saray Andet were directed to the collecting, processing, and marketing of rattan. Moreover, the marketing chains for the rattan that was collected and processed were rather unique in that most of the collectors of rattan were also rattan processors, as demonstrated in table 27.

Table 27. Collection of Rattan in Saray Andet.

Year	Number of Collectors in Sample*	Total Amounts Collected and Processed (canes)	Weighted Mean Selling Price (riels/cane)	Estimated Total Number of Collectors**	Estimated Total Amount Collected and Processed (canes)	Estimated Total Value (riels)
2008	17	747,800	Processed by Collectors	104	4,574,776	Processed by Collectors
2007	17	728,000	Processed by Collectors	104	4,453,647	Processed by Collectors
2006	17	564,000	Processed by Collectors	104	3,450,353	Processed by Collectors

\* Based on a sample size of 17.

\*\* Based on 104 community forestry families.

The production requirements associated with processing the rattan that was collected at the time of the survey in 2008, according to processors who were interviewed, are summarized in table 28.

Table 28. Production Requirements in Saray Andet for Producing Rattan Baskets.

Year	Number of Canes Used in Processing Process	Total Number of Baskets Produced	Mean Number of Canes Consumed per Basket	Weighted Mean Selling Price of Baskets (riels/basket)	Mean Number of Baskets Produced per Processor	Estimated Total Value (riels)
2008	1,022,390 (823,640)*	64,240 (47,540)*	15.9 (17.3)*	178 (176)*	2,793 (2,796)*	11,434,720 (8,367,040)*

\*The numbers in parentheses refer to those collectors/processors who were included in the sample; it does not encompass the broader group of processors who were interviewed during the administration of the sample survey.

The results suggest that each processor, including family members, in Saray Andet produced, on average, more than 2,800 baskets per year and, while the mean price at which each one of those baskets sold was not much more than 175 riels, the estimated total annual value of that output to those collectors/processors and their families who were included in the sample was more than 8 million riels.

The estimated market value of the rattan baskets, along with estimates of rattan's contribution to the annual per capita income of rattan collectors/processors that were included in the survey sample in Saray Andet, is summarized in table 29.

Table 29. Market Value of Rattan Collected and Processed into Baskets by Collectors/Processors in Saray Andet in 2008.

Total Number of Baskets Produced	Weighted Mean Selling Price of Baskets (riels/basket)	Estimated Total Value of Baskets (riels)	Contribution to Annual Per Capita Income of Rattan Collectors/Processors
47,540	176	8,367,040	\$123.04

The expansion of the rather modest selling prices of the baskets by the large numbers of baskets that were sold resulted in the contribution of the rattan baskets that were produced

by the collectors/processors of rattan in Saray Andet that were included in the survey sample to annual per capita income levels for those collectors/processors of more than \$120.

Notwithstanding those contributions, the collectors/processors of rattan, as well as other rattan basket-makers, in Saray Andet apparently operate their rattan processing businesses at comparative disadvantages associated with both the locations of the rattan resource and the quality of the rattan resource itself.

The rattan that was reported to be collected in the Saray Andet sample originated at sites that were reported to be either in or out of the community forestry area. Those sites which were inside the community forestry area, which accounted for more than 40% of the raw materials that were reported to be collected, were located at a mean distance of more than 3 km; the rattan that originated at sites that were either in or out of the community forestry area, which accounted for another 40% of the raw materials that were reported to be collected, were located at a mean distance of more than 5 km; and the rattan that originated entirely outside the community forestry area, which accounted for a little more than 10% of the raw materials that were reported to be collected, were located at a mean distance of 6 km. Those distances were considered by collectors/processors to be too distant, especially considering that some collectors/processors reported having to travel to collection sites up to 300 times a year to obtain sufficient rattan raw material to operate their processing businesses.

Perhaps of even more significance, half of the processors of rattan in Saray Andet who were included in the survey sample indicated that the most important constraint to increasing output was the poor quality of the raw material that was used to make rattan baskets.

The pricing information provided on rattan and rattan baskets in tables 30 and 31, which appear to be generally consistent with the pricing information reported by collectors/processors in table 28, are indicative of mark-ups of up to more than 25% as rattan baskets move through marketing chains that branch from collectors/processors through wholesalers and traders.

Table 30. Value Added by Wholesalers of Rattan Baskets in Saray Andet.

Year	Sample Size	Total Quantity Purchased and Sold (baskets)	Weighted Mean Purchase Price and Selling Price (riels/basket)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	1	2,000	170 (180)	340,000 (360,000)	5.9
2007	1	5,000	100 (120)	500,000 (600,000)	20.0
2006	1	5,000	70 (80)	350,000 (400,000)	14.3

Table 31. Value Added by Traders of Rattan Baskets in Saray Andet.

Year	Sample Size	Total Quantity Purchased and Sold (baskets)	Weighted Mean Purchase Price and Selling Price (riels/basket)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	5	14,000	195 (255)	2,730,000 (3,570,000)	30.8
2007	5	34,000	151 (221)	5,134,000 (7,514,000)	46.4
2006	5	34,000	102 (155)	3,468,000 (5,270,000)	52.0

There were several other NTFPs, including mushrooms, medicinal plants, bamboo shoots, and potatoes, which were reported to be collected in Saray Andet, but the amounts of those products that were reported to be collected were very small and those amounts that were collected were used for personal consumption rather than marketed.

#### 4.2.4. Oroung

The NTFPs that were collected and marketed in Oroung included mushrooms, potatoes, and to a lesser extent some bamboo shoots, as well as some medicinal plants that were collected more intermittently, but in general, each of those products was collected in relatively small amounts that were almost exclusively used for personal consumption and the markets in which they were exchanged were very small, as tables 32 and 33 demonstrate.

Table 32. Collection of Mushrooms in Oroung.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	9	58.5 (1.5)	20,000***	44	7	140,000
2007	9	44 (5)	8,000	44	24	192,000
2006	9	39 (2)	8,000	44	10	80,000

\* Based on a sample size of 12.

\*\* Based on 58 community forestry families.

\*\*\* This price is questionable.

Table 33. Collection of Potatoes in Oroung.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	4	13 (4)	1,500	19	19	28,500
2007	4	36 (25)	1,500	19	119	178,500
2006	4	45 (30)	1,667	19	142	236,714

\* Based on a sample size of 12.

\*\* Based on 58 community forestry families.

#### 4.2.5. Svay Kroam

The restricted development of markets for NTFPs in Svay Kroam was even more pronounced than it was in Oroung. On the basis of responses in the sample survey, mushrooms were the only NTFP that was collected and marketed in Svay Kroam. Mushrooms, as well as bamboo shoots, bamboo poles, tree leaves, vines, and potatoes, were collected in relatively small amounts that were almost entirely reserved for personal use and the only markets in which those products were exchanged were very small. The extent of this lack of development of markets for NTFPs in Svay Kroam was underscored by the recognition that only one of the collectors in the sample survey accounted for all of the market transactions that involved the sale of mushrooms. Those transactions are summarized in Table 34, which provides a representative overview of the lack of market development for NTFPs in Svay Kroam.

Table 34. Collection of Mushrooms in Svay Kroam.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Marketed (kg)	Estimated Total Value (riels)
2008	6	34 (6)	6,000	28	28	168,000
2007	6	29 (7)	N/A	28	33	N/A
2006	6	23 (5)	N/A	28	23	N/A

\* Based on a sample size of 27.

\*\* Based on 127 community forestry families.

### 4.3. Rattanakiri

#### 4.3.1. Somkul

There were relatively large amounts of several NTFPs that were collected for personal use in Somkul, as summarized in tables 35 through 37. The most predominant NTFPs that were collected included bamboo shoots, bamboo poles, and mushrooms, as well as to a much less extent some rattan, tree leaves, and grasses. The amounts that were collected of each of these NTFPs were used for personal consumption and, as a result, there were no markets in which the NTFPs that were collected in Somkul were sold.

Table 35. Collection of Bamboo Shoots in Somkul.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	16	723 (---)	---	78	3,525	---
2007	16	507 (---)	---	78	2,472	---
2006	16	404 (---)	---	78	1,970	---

\* Based on a sample size of 21.

\*\* Based on 103 village families.

Table 36. Collection of Bamboo Poles in Somkul.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (poles)	Weighted Mean Selling Price (riels/pole)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (poles)	Estimated Total Value (riels)
2008	16	948 (---)	---	78	4,622	---
2007	16	1,170 (---)	---	78	5,704	---
2006	16	1,026 (---)	---	78	5,002	---

\* Based on a sample size of 21.

\*\* Based on 103 village families.

Table 37. Collection of Mushrooms in Somkul.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	20	514 + (---)	---	98	2,519	---
2007	20	545 + (---)	---	98	2,670	---
2006	20	481 + (---)	---	98	2,357	---

\* Based on a sample size of 21.

\*\* Based on 103 village families.

As a means of providing some perspective on the NTFPs in Somkul that were collected for personal use and not marketed, estimates were developed of implicit market values associated with the consumption of the more prevalent of those NTFPs. The information on implicit market values provided in table 38 suggests that the bamboo shoots and mushrooms that were collected in 2008 for personal use accounted for a relatively significant amount, more than \$32, of implied market value contributions to per capita income levels of village families in Somkul. Mushrooms accounted for two-thirds of that value.



Table 38. Implicit Market Values of Bamboo Shoots and Mushrooms Collected for Personal Consumption in Somkul in 2008.

NTFP	Estimated Total Amount Collected for Personal Consumption (kg)	Weighted Mean Market Price (riels/kg)	Implicit Total Market Value (riels)	Implicit Contribution to Annual Per Capita Income of Village Families
Bamboo Shoots	3,525	1,250*	4,406,250	\$10.69
Mushrooms	2,519	3,500**	8,816,500	\$21.40

\* This was considered to be a conservative value estimated on the basis of current market prices that were prevailing in Somtrak in Rattanakiri.

\*\* This was considered to be a conservative value estimated on the basis of current prices that were prevailing in other markets in Cambodia.

The preponderance of the collection sites that were reported for bamboo shoots and mushrooms were located at mean distances of 1 to 3 km. This potential comparative cost advantage is much less pronounced with regard to the collection sites reported for bamboo poles, which were located at mean distances of 5 to 6 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of bamboo shoots, bamboo poles, and mushrooms in Somkul indicated that:

- No loans were received by collectors of those NTFPs;
- None of the collectors commented on constraints to increasing outputs of bamboo shoots, bamboo poles, and mushrooms; and
- Collectors were almost unanimous in their opinion that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

#### 4.3.2. Somtrak

There were relatively large amounts of several NTFPs that were collected in Somtrak, as well as in Somkul. These are reported in tables 39 through 42. The foremost of those NTFPs included bamboo shoots, bamboo poles, mushrooms, and rattan. Notwithstanding the marketing of some bamboo shoots, though, the amounts of those other NTFPs that were collected were reserved exclusively for personal consumption.

Table 39. Collection of Bamboo Shoots in Somtrak.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected and Marketed (kg)	Estimated Total Value (riels)
2008	25	1,112 (415)	1,434	125	5,560 (2,075)	2,975,550
2007	25	765 (na)	N/A	125	95,625 (N/A)	N/A
2006	25	371 (na)	N/A	125	35,477 (N/A)	N/A

\* Based on a sample size of 29.

\*\* Based on 145 village families.

Table 40. Collection of Mushrooms in Somtrak.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	27	221 (---)	---	135	1,105	---
2007	27	253 (---)	---	135	1,265	---
2006	27	171 (---)	---	135	855	---

\* Based on a sample size of 29.

\*\* Based on 145 village families.

Table 41. Collection of Bamboo Poles in Somtrak.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (poles)	Weighted Mean Selling Price (riels/pole)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (poles)	Estimated Total Value (riels)
2008	28	1,372 (---)	---	140	6,860	---
2007	28	1,341 (---)	---	140	6,705	---
2006	28	760 (---)	---	140	3,800	---

\* Based on a sample size of 29.

\*\* Based on 145 village families.

Table 42. Collection of Rattan in Somtrak.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (canes)	Weighted Mean Selling Price (riels/cane)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (canes)	Estimated Total Value (riels)
2008	14	666 (---)	---	70	3,330	---
2007	14	372 (---)	---	70	1,860	---
2006	14	107 (---)	---	70	535	---

\* Based on a sample size of 29.

\*\* Based on 145 village families.

The estimated value of the bamboo shoots that were marketed is provided in table 43, along with estimates of the contributions of those marketed bamboo shoots to the annual per capita income of village families in Somtrak.

Table 43. Market Value of Bamboo Shoots Collected in Somtrak in 2008.

NTFP	Estimated Total Amount Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Value (riels)	Contribution to Annual Per Capita Income of Village Families
Bamboo Shoots	2,075	1,434	2,975,550	\$5.13

The contribution of the bamboo shoots collected and marketed in Somtrak to annual per capita income levels of village families was a little more than \$5. The collection sites for bamboo shoots, which were located at a mean distance of a little less than 5 km, represented potentially higher costs of production, however, that might be associated with efforts to collect and market increasing amounts of bamboo shoots from those sites. This potential cost disadvantage might be even more marked with regard to the collection sites reported for mushrooms, bamboo poles, and rattan, which were located at mean distances of 5 to 10 km.

As a means of providing some perspective on NTFPs that were collected for personal use in Somtrak, estimates were developed of implicit market values associated with the use of those bamboo shoots that were collected, but not marketed, and those of mushrooms. The estimates, which are provided in table 44, suggest that in 2008 the bamboo shoots and mushrooms that were collected and used for personal consumption collectively accounted for more than \$15 of implied market value contributions to per capita income levels of village families in Somtrak.

Table 44. Implicit Market Values of Bamboo Shoots and Mushrooms Collected for Personal Consumption in Somtrak in 2008.

NTFP	Estimated Total Amount Collected for Personal Consumption (kg)	Weighted Mean Market Price (riels/kg)	Implicit Total Market Value (riels)	Implicit Contribution to Annual Per Capita Income of Village Families
Bamboo Shoots	3,485	1,434	4,997,490	\$8.62
Mushrooms	1,105	3,500*	3,867,500	\$6.67

\* This was considered to be a conservative value estimated on the basis of current prices that were prevailing in other markets in Cambodia.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of bamboo shoots, mushrooms, bamboo poles, and rattan in Somtrak indicated that:

- No loans were received by collectors of those NTFPs;
- None of the collectors commented on constraints to increasing outputs of bamboo shoots, mushrooms, bamboo poles, and rattan; and
- Collectors were almost unanimous in their opinion that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

Some tree leaves, as well as grasses, were also reported to be collected in Somtrak, but the amounts that were reported to be collected were relatively small and neither of those NTFPs was currently marketed.

### 4.3.3. Somkaninh

There were relatively large amounts of several NTFPs that were collected in Somkaninh, as well as in Somtrak and Somkul. These are summarized in tables 45 through 47. The most prominent of those products included bamboo shoots, bamboo poles, and mushrooms. The amounts of each of the NTFPs that were collected were reserved exclusively for personal use and, as a result, there were no markets in which the NTFPs that were collected in Somkaninh were sold.

Table 45. Collection of Bamboo Shoots in Somkaninh.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	33	1,029.5 (---)	---	164	5,116	---
2007	33	680 (---)	---	164	3,379	---
2006	33	239 (---)	---	164	1,188	---

\* Based on a sample size of 44.

\*\* Based on 218 village families.

Table 46. Collection of Bamboo Poles in Somkaninh.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (poles)	Weighted Mean Selling Price (riels/pole)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (poles)	Estimated Total Value (riels)
2008	43	2,473 (---)	---	213	12,250	---
2007	43	2,406 (---)	---	213	11,918	---
2006	43	1,724 (---)	---	213	8,540	---

\* Based on a sample size of 44.

\*\* Based on 218 village families.

Table 47. Collection of Mushrooms in Somkaninh.

Year	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	33	168 (---)	---	164	835	---
2007	33	231 (---)	---	164	1,148	---
2006	33	182 (---)	---	164	904	---

\* Based on a sample size of 44.

\*\* Based on 218 village families.

As a means of providing some perspective on NTFPs that were collected for personal use in Somkaninh, estimates were developed of implicit market values associated with the use of bamboo shoots and mushrooms. The information on implicit market values that is provided in table 48 suggests that the bamboo shoots and mushrooms that were collected for personal consumption in 2008 collectively accounted for more than \$10 of implied market value contributions to per capita income levels of villagers in Somkaninh. Bamboo Shoots accounted for more than two-thirds of that value.

Table 48. Implicit Market Values of Bamboo Shoots and Mushrooms Collected for Personal Consumption in Somkaninh in 2008.

NTFP	Estimated Total Amount Collected for Personal Consumption (kg)	Weighted Mean Market Price (riels/kg)	Implicit Total Market Value (riels)	Implicit Contribution to Annual Per Capita Income of Village Families
Bamboo Shoots	5,116	1,250*	6,395,000	\$7.33
Mushrooms	835	3,500**	2,922,500	\$3.35

\* This was considered to be a conservative value estimated on the basis of current market prices that were prevailing in Somtrak in Rattanakiri.

\*\* This was considered to be a conservative value estimated on the basis of current prices that were prevailing in other markets in Cambodia.

The preponderance of the collection sites that were reported for bamboo shoots and mushrooms were located at mean distances of 1 to 2 km. This potential comparative cost advantage was much less pronounced with regard to the reported collection sites for bamboo poles, though, which were located at mean distances of up to 5 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of bamboo shoots, bamboo poles, and mushrooms in Somkaninh indicated that:

- No loans were received by collectors of those NTFPs;
- One of the collectors commented on constraints to increasing outputs of bamboo shoots, bamboo poles, and mushrooms regarding the requirements of obtaining a permit to collect NTFPs in other forest areas; and
- Collectors were almost unanimous in their opinion that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

Rattan, tree leaves, grasses, vines, potatoes, and medicinal plants were also reported to be collected in Somkaninh, but the amounts that were reported to be collected were small and allocated for personal use.

## 4.4. Mondulkiri

### 4.4.1. Pou Kroch

The NTFPs that were collected in Pou Kroch included both a significant marketed component and a less substantial non-marketed component. The market transactions of the most prominent of the marketed component, dry resin, are displayed in table 49.

Table 49. Collection of Dry Resin in Pou Kroch.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	13	7,920	1,575	65	39,600	62,370,000
2007	13	6,072	853	65	30,360	25,897,080
2006	13	N/A	N/A	65	N/A	N/A

\* Based on a sample size of 13.

\*\* Based on 65 village families.

The amount of dry resin collected in Pou Kroch was considerable and in 2008 exceeded 40,000 kg, which at the current market price would have been worth 63 million riels, or \$15,750. That would have represented an annual per capita income of more than \$240 to each village family in Pou Kroch.

A disproportionate amount of the dry resin that was reported to be collected in the Pou Kroch sample was provided by a few very large-scale collectors as table 50 demonstrates. Four individuals accounted for more than 50% of the dry resin that was reported to be collected in the sample, and six individuals, or less than 50% of those collectors that were sampled, accounted for 70% of the dry resin that was collected.

Table 50. Cumulative Shares of Dry Resin Collected in the Pou Kroch Sample.

Cumulative Amount Collected (kg)	Cumulative Number of Collectors	Cumulative Per Cent of Total Amount Collected
1,260	1	16
2,460	2	31
3,460	3	44
4,180	4	53
4,855	5	61
5,530	6	70
...	...	...
7,920	13	100

The mean distance to the dry resin collecting sites in Pou Kroch reported in the sample was more than 8.5 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of dry resin in Pou Kroch indicated that:

- They were unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain;
- There were no reported loans or cash advances from traders;
- None of the collectors appeared to understand the marketing chain or the effects of pricing information on marketing decisions very well;
- Some of the collectors commented on constraints to increasing their outputs of dry resin, especially those regarding the poor quality, as well as indiscriminate harvesting, of dry resin trees and the difficult road transport conditions; and
- Collectors were divided in their opinion whether a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

The pricing information that is provided on dry resin in table 51 was based on information derived from only one wholesaler, but appears to be generally consistent with the pricing information that was reported by collectors in table 49. It is indicative of mark-ups of 20% as dry resin moves through marketing chains that branch from collectors to wholesalers.

Table 51. Value Added by Wholesalers of Dry Resin in Pou Kroch.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	1	9,000	2,000 (2,400)	18,000,000 (21,600,000)	20.0

The responses of the wholesaler of dry resin collected in Pou Kroch to the market-oriented survey questions that were incorporated into the questionnaires suggested that:

- The dry resin that was purchased by the wholesaler was of medium quality;
- The wholesaler was unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain; and
- The wholesaler concurred that the demand for dry resin would continue to expand, but that the supply of dry resin would be restricted by the poor quality of the resin and the old age of resin trees.

The other products in the marketed component of NTFPs collected in Pou Kroch, the market transactions of which are summarized in table 52, included orchids, liquid resin, and a small amount of rattan.

Table 52. Collection of Orchids, Liquid Resin, and Rattan in 2008 in Pou Kroch.

NTFP	Number of Collectors in Sample*	Total Amount Collected and Sold (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected and Sold (kg)	Estimated Total Value (riels)
Orchids	4	950	2,874	20	4,750	13,651,500
Liquid Resin	3	2,325	700	15	11,625	8,137,500
Rattan	6	803 (625)	104	30	3,125	325,000

\* Based on a sample size of 13.

\*\* Based on 65 village families.

The marketed amounts of orchids, liquid resin, and rattan that were collected in Pou Kroch in 2008 were collectively worth more than 22 million riels, or \$5,500, at current market prices. That would have represented an annual per capita income of almost \$85 to each village family in Pou Kroch. Orchids, which were sold at a considerable price premium, would have accounted for more than 60%, while the sale of liquid resin would have accounted for more than 35%, of that value.

The pricing information that is provided on orchids in table 53, which accounts for most of the orchids that were reported to be collected and appears to be in general agreement

with the pricing information that was reported by collectors in table 52, is indicative of 100% mark-ups on orchids as they move through marketing chains that branch from collectors to wholesalers. Since wholesalers or traders purchasing liquid resin collected in Pou Kroch were not surveyed, there is no comparable information on the extent of mark-ups on liquid resin.

Table 53. Value Added by Wholesalers of Orchids in Pou Kroch.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	1	900	3,000 (6,000)	2,700,000 (5,400,000)	100.0

The non-marketed component of the NTFPs collected in Pou Kroch was characterized by the collection of relatively large amounts of bamboo shoots. A tabular overview that summarizes the collection of those non-marketed NTFPs in 2008 is presented in table 54.

Table 54. Collection of Bamboo Shoots in Pou Kroch in 2008.

NTFP	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
Bamboo Shoots	8	342	---	40	1,710	---

\* Based on a sample size of 13.

\*\* Based on 65 village families.

The information on implicit market value that is provided in table 55 suggests that the bamboo shoots that were collected for personal consumption in 2008 accounted for more than \$8 of implied market value contributions to per capita income levels of village families in Pou Kroch.

Table 55. Implicit Market Value of Bamboo Shoots Collected for Personal Consumption in Pou Kroch in 2008.

NTFP	Estimated Total Amount Collected for Personal Consumption (kg)	Weighted Mean Market Price (riels/kg)	Implicit Total Market Value (riels)	Implicit Contribution to Annual Per Capita Income of Village Families
Bamboo Shoots	1,710	1,250*	2,137,500	\$8.22

\* This was considered to be a conservative value estimated on the basis of current market prices that were prevailing in Somtrak in Rattanakiri.

The preponderance of the collection sites that were reported for bamboo shoots were relatively far, located at a mean distance of almost 5 km.

Some bamboo poles and mushrooms were also reported to have been collected in Pou Kroch, but the amounts that were reported to be collected were small and neither of those NTFPs was marketed.



#### 4.4.2. Pou Radet

The NTFPs that were collected in Pou Radet also included both a significant marketed component and a less substantial non-marketed component. The market transactions associated with dry resin, the most prominent marketed product, are displayed in table 56.

Table 56. Collection of Dry Resin in Pou Radet.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	16	4,852	1,685	83	25,170	42,411,450
2007	16	4,240	593	83	21,995	13,043,035
2006	16	1,440	768	83	7,470	5,736,960

\* Based on a sample size of 16.

\*\* Based on 83 village families.

The amount of dry resin collected in Pou Radet was increasing and in 2008 would have surpassed 26,000 kg, which at the current market price was worth almost 44 million riels, or \$11,000. That would have represented an annual per capita income of more than \$130 to each village family in Pou Kroch.

A disproportionate amount of the dry resin that was reported to be collected in the Pou Radet sample was provided by a few very large-scale collectors as table 57 demonstrates. One individual accounted for one-third of the dry resin that was reported to be collected; three individuals accounted for more than 50% of the dry resin that was reported to be collected; and six individuals, or less than 50% of those collectors that were sampled, accounted for more than 70% of the dry resin that was reported to be collected.

Table 57. Cumulative Shares of Dry Resin Collected in the Pou Radet Sample.

Cumulative Amount Collected (kg)	Cumulative Number of Collectors	Cumulative Per Cent of Total Amount Collected
1,600	1	33
2,100	2	43
2,570	3	53
2,870	4	59
3,170	5	65
3,470	6	72
...	...	...
4,852	16	100

The mean distance to the dry resin collecting sites in Pou Radet was a little less than 5 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of dry resin in Pou Radet indicated that:

- They were unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain;
- There were no reported loans or cash advances from traders;
- None of the collectors appeared to understand the marketing chain or the effects of pricing information on marketing decisions very well;

- One of the collectors commented on constraints to increasing outputs of dry resin, especially regarding the poor quality of dry resin trees and difficult road transport conditions; and
- Collectors were unanimous in their opinion that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

The pricing information that is provided on dry resin in table 58, which appears to be generally consistent with the pricing information that was reported by collectors in table 56, indicates mark-ups of more than 20% as dry resin moves through marketing chains that branch from collectors to wholesalers.

Table 58. Value Added by Wholesalers of Dry Resin in Pou Radet.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	3	3,670 (3790)	1,921 (2,261)	7,050,070 (8,569,190)	21.5

The responses of the wholesalers of dry resin collected in Pou Radet to the market-oriented survey questions that were incorporated into the questionnaires indicated that:

- The dry resin that was purchased was of medium to good quality;
- One of the wholesalers was aware of informal fees that were charged at different stages of the marketing chain; and
- Wholesalers concurred that the demand for dry resin would continue to expand, but that the supply of dry resin would be restricted by the poor quality of the resin and the old age of resin trees.

The other products in the marketed component of the NTFPs collected in Pou Radet, the market transactions of which are summarized in table 59, included orchids, liquid resin, and bamboo shoots.

Table 59. Collection of Orchids, Liquid Resin, and Bamboo Shoots in 2008 in Pou Radet.

NTFP	Number of Collectors in Sample*	Total Amount Collected and Sold (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors*	Estimated Total Amount Collected and Sold (kg)	Estimated Total Value (riels)
Orchids	2	1,504	4,162	10	7,520	31,298,240
Liquid Resin	1	3,000	360	5	15,000	5,400,000
Bamboo Shoots	5	637 (510)	931	26	2,652	2,469,012

\* Based on a sample size of 16.

\*\* Based on 83 village families.

The marketed amounts of orchids, liquid resin, and bamboo shoots that were collected in Pou Radet in 2008 were collectively worth almost 40 million riels, or \$10,000, at current

market prices. That would have represented an annual per capita income of more than \$115 to each village family in Pou Radet. Orchids, which were sold at a considerable price premium, would have accounted for more than 80%, while the sale of liquid resin would have accounted for almost another 15%, of that value.

The non-marketed component of the NTFPs that were collected in Pou Radet was characterized by the collection of relatively small amounts of mushrooms and rattan. A summary of the collection of those non-marketed NTFPs in 2008 is provided in table 60.

Table 60. Collection of Mushrooms and Rattan in Pou Radet in 2008.

NTFP	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
Mushrooms	3	113	---	16	603	---
Rattan	1	200 (canes)	---	5	1,000 (canes)	---

\* Based on a sample size of 16.

\*\* Based on 83 village families.

The information on implicit market values that is provided in table 61 suggests that the mushrooms that were collected for personal consumption in 2008 represented a little more than \$6 of implied market value contributions to per capita income levels of village families in Pou Radet.

Table 61. Implicit Market Value of Mushrooms Collected for Personal Consumption in Pou Radet in 2008.

NTFP	Estimated Total Amount Collected for Personal Consumption (kg)	Weighted Mean Market Price (riels/kg)	Implicit Total Market Value (riels)	Implicit Contribution to Annual Per Capita Income of Village Families
Mushrooms	603	3,500*	2,110,500	\$6.36

\*\* This was considered to be a conservative value estimated on the basis of current prices that were prevailing in other markets in Cambodia.

#### 4.4.3. Pou Loung

The NTFPs that were collected in Pou Loung, as in Pou Kroch and Pou Radet, included both a significant marketed component and a less substantial non-marketed component. The market transactions of dry resin, the most prominent of the marketed component, are displayed in table 62.

Table 62. Collection of Dry Resin in Pou Loung.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	26	5,927	2,234	120	27,355	61,111,070
2007	26	3,990	1,434	120	18,415	26,407,110
2006	26	N/A	N/A	N/A	N/A	N/A

\* Based on a sample size of 29.

\*\* Based on 134 village families.

The amount of dry resin that was collected in Pou Loung in 2008 increased substantially and would have surpassed 27,500 kg, which at the current market price would have been worth almost 61.5 million riels, or almost \$15,500. That would have represented an annual per capita income of about \$115 to each village family in Pou Loung.

A disproportionate amount of the dry resin that was reported to be collected in the Pou Loung sample was provided by a few very large-scale collectors as shown in table 63. Four individuals accounted for more than 50% of the dry resin reported in the sample, and six individuals, or less than 25% of those collectors that were sampled, accounted for more than 60% of the dry resin that was reported to be collected.

Table 63. Cumulative Shares of Dry Resin Collected in the Pou Loung Sample.

Cumulative Amount Collected (kg)	Cumulative Number of Collectors	Cumulative Per Cent of Total Amount Collected
1,200	1	20
2,200	2	37
2,700	3	46
3,200	4	54
3,500	5	59
3,700	6	62
3,900	7	66
...	...	...
5,927	26	100

The mean distance to the dry resin collecting sites in Pou Loung was more than 7.5 km.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of dry resin in Pou Loung indicated that:

- They were unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain;
- There were no reported loans or cash advances from traders;
- None of the collectors appeared to understand the marketing chain or the effects of pricing information on marketing decisions very well;
- Several of the collectors commented on constraints to increasing outputs of dry resin, especially regarding the poor quality of dry resin trees, as well as indiscriminate deforestation, and difficult road transport conditions; and
- Collectors were unanimous in their opinion that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

The pricing information that is provided on dry resin in table 64 was based on information derived from only one wholesaler, but appears to be generally consistent with the pricing information that was reported by collectors in table 62. It is indicative of relatively small mark-ups of about 4% as dry resin moves through marketing chains that branch from collectors to wholesalers.

Table 64. Value Added by Wholesalers of Dry Resin in Pou Loung.

Year	Sample Size	Total Quantity Purchased and Sold (kg)	Weighted Mean Purchase Price and Selling Price (riels/kg)	Total Cost and Revenue (riels)	Implied Value Added (%)
2008	1	4,000	2,300 (2,400)	9,200,000 (9,600,000)	4.3

The responses of the wholesaler of dry resin collected in Pou Loung to the market-oriented survey questions that were incorporated into the questionnaires suggested that:

- The dry resin that was purchased by the wholesaler was of medium quality;
- The wholesaler was unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain; and
- The wholesaler concurred that the demand for dry resin would continue to expand, but that the supply of dry resin would be restricted by the poor quality of the resin and the old age of resin trees.

The non-marketed component of the NTFPs that were collected in Pou Loung was characterized by the collection of relatively small amounts of mushrooms, bamboo shoots, and rattan, very small amounts of which were marketed. A tabular summary of the collection of those non-marketed NTFPs in Pou Loung in 2008 is provided in table 65.

Table 65. Collection of Mushrooms, Bamboo Shoots, and Rattan in Pou Loung in 2008.

NTFP	Number of Collectors in Sample*	Total Amounts Collected and Marketed (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected and Marketed (kg)	Estimated Total Value (riels)
Mushrooms	6	51 (25)	2,177	28	238 (117)	254,709
Bamboo Shoots	16	386 (60)	350	74	1,785 (278)	97,300
Rattan	15	1,226 (14) (canes)	200 (riels/cane)	69	5,640 (64) (canes)	12,800

\* Based on a sample size of 29

\*\* Based on 134 village families.

The information on implicit market values that is provided in table 66 suggests that the mushrooms, bamboo shoots, and rattan that were collected for personal consumption in 2008 collectively accounted for no more than about \$3.50 of implied market value contributions to per capita income levels of villagers in Pou Loung. Rattan accounted for almost 60%, while bamboo shoots accounted for almost another 30%, of that value.

Table 66. Implicit Market Value of Mushrooms, Bamboo Shoots, and Rattan Collected for Personal Consumption in Pou Loung in 2008.

NTFP	Estimated Total Amount Collected for Personal Consumption (kg)	Weighted Mean Market Price (riels/kg)	Implicit Total Market Value (riels)	Implicit Contribution to Annual Per Capita Income of Village Families
Mushrooms	121	2,177	263,417	\$0.49
Bamboo Shoots	1,507	350	527,450	\$0.98
Rattan	5,576 (canes)	200 (riels/cane)	1,115,200	\$2.08

Some tree leaves and vegetables were also reported to be collected in Pou Loung, but the amounts that were reported to be collected were small and were used for personal consumption.

#### 4.4.4. Pou Kreng

The NTFPs that were collected in Pou Kreng, as in each of the other targeted villages in Mondulkiri, included both a significant marketed component and a less substantial non-marketed component. The market transactions of the marketed component, which consisted exclusively of dry resin, are provided in table 67.

Table 67. Collection of Dry Resin in Pou Kreng.

Year	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
2008	11	1,225	1,900	52	5,791	11,002,900
2007	11	1,045	1,033	52	4,940	5,103,020
2006	11	250	800	52	1,182	945,600

\* Based on a sample size of 18.

\*\* Based on 85 village families.

The amount of dry resin that was collected in Pou Kreng was increasing and in 2008 would have exceeded 6,000 kg, which at the current market price would have been worth almost 11.5 million riels, or more than \$2,850. That would have represented an annual per capita income of more than \$33 to each village family in Pou Kreng.

The distribution among collectors of dry resin that was reported in the Pou Kreng sample was dominated by several large-scale collectors, as demonstrated in table 68. One individual accounted for almost 40% of the dry resin that was reported in the sample, and five individuals, or less than 50% of those collectors that were sampled, controlled 80% of the dry resin accounted for in the sample.

Table 68. Cumulative Shares of Dry Resin Collected in the Pou Kreng Sample.

Cumulative Amount Collected (kg)	Cumulative Number of Collectors	Cumulative Per Cent of Total Amount Collected
480	1	39
680	2	56
800	3	65
900	4	73
975	5	80
...	...	...
1,225	12	100

The mean distance to the dry resin collecting sites in Pou Kreng was a little less than 5 km.

Since wholesalers or traders purchasing dry resin collected in Pou Kreng were not surveyed, there was no information on the extent of mark-ups as dry resin moves through the marketing chain that branches from collectors through wholesalers and traders.

In response to the market-oriented survey questions that were incorporated into the questionnaires, collectors of dry resin in Pou Kreng indicated that:

- They were unaware of, or perhaps reluctant to discuss, informal fees that were charged at different stages of the marketing chain;
- There were no reported loans or cash advances from traders;
- None of the collectors appeared to understand the marketing chain or the effects of pricing information on marketing decisions very well;
- Some of the collectors commented on constraints to increasing outputs of dry resin, especially regarding the poor quality of dry resin trees and the large number of collectors; and
- Collectors generally agreed that a collector's organization would be useful for increasing collectors' incomes and they would be willing to participate in such an organization.

The non-marketed component of the NTFPs collected in Pou Kreng was characterized by the collection of relatively large amounts of bamboo shoots and rattan. A summary of the collection of those products in Pou Kreng in 2008 is provided in table 69.

Table 69. Collection of Non-Marketed NTFPs in Pou Kreng in 2008.

NTFP	Number of Collectors in Sample*	Total Amount Collected (kg)	Weighted Mean Selling Price (riels/kg)	Estimated Total Number of Collectors**	Estimated Total Amount Collected (kg)	Estimated Total Value (riels)
Bamboo Shoots	12	270	---	57	1,282	---
Rattan	5	470 (canes)	---	24	2,256 (canes)	---

\* Based on a sample size of 18.

\*\* Based on 85 village families.

The information on implicit market values that is provided in table 70 suggests that the bamboo shoots that were collected for personal consumption in 2008 accounted for almost \$5 of implied market value contributions to per capita income levels of village families in Pou Kreng.

Table 70. Implicit Market Value of Bamboo Shoots Collected for Personal Consumption in Pou Kreng in 2008.

NTFP	Estimated Total Amount Collected for Personal Consumption (kg)	Weighted Mean Market Price (riels/kg)	Implicit Total Market Value (riels)	Implicit Contribution to Annual Per Capita Income of Village Families
Bamboo Shoots	1,282	1,250*	1,602,500	\$4.71

\* This was considered to be a conservative value estimated on the basis of current market prices that were prevailing in Somtrak in Rattanakiri.

The preponderance of the collection sites that were reported for bamboo shoots were located at a mean distance of a little less than 5 km. The reported collection sites for rattan were located at a mean distance of about 3.5 km.

Some bamboo poles and mushrooms, as well as a small amount of liquid resin, were also reported to be collected in Pou Kreng, but the amounts that were collected were small and none of those NTFPs was marketed.

## 5. Conclusions and Recommendations

### 5.1 Recommended Market Development Initiatives in Kampong Thom

The contributions of resin markets to local livelihoods in the targeted project villages in Kampong Thom were substantial. The estimated value of the liquid resin, as well as the much smaller amounts of the dry resin, that were collected in Cheam Svay, Sam Orng, and Tum Or, was equivalent to an annual per capita income of almost \$200 for the 377 community forestry families that live in those three villages.

The principal markets for the resin that was collected were characterized by value chains that extended from collectors through local and regional wholesalers and traders to end-use markets in Cambodia, as well as Vietnam, for torches and caulking for fishing boats and as ingredients in paints, varnishes, and to a lesser extent, perfume.

Recognition of the importance of the liquid resin markets in Cheam Svay and Sam Orng, as well as the potential for expanding markets for liquid resin that was expressed by traders who were included in the marketing surveys, suggest that potential project interventions to increase villagers' market shares of resin income in those two villages might be most effectively directed toward representative activities that are associated with:

- Organizing collectors' organizations to strengthen villagers' marketing positions;
- Supporting the development of market information systems to inform collectors of current market conditions;
- Introducing processes to standardize the quality of resin sold by collectors and perhaps encourage some initial processing of raw resin material; and
- Providing technical assistance, as well as some funding, to support the provision of microcredit loans to collectors through village banking programs.



The only other NTFPs that were reported to be collected, other than small amounts of mushrooms in Cheam Svay and rattan in Sam Orng and Tum Or, were spiders, which were collected in Sam Orng and Cheam Svay. The estimated market value of the spiders that were collected in those two villages in 2008 was more than 4.2 million riels, or over \$1,000 at current market prices. The possibilities of substantially increasing the numbers of marketed spiders that are collected in Sam Orng or Cheam Svay, though, are probably somewhat limited, and the numbers of those spiders that are collected are currently controlled by a relatively small number of individuals.

In Tum Or, with the exception of dry resin and a very small amount of rattan, there was no other NTFP that was reported to have been collected in the sample and one individual accounted for over 90% of the dry resin that was collected. While potential opportunities for marketing various NTFPs collected in Tum Or in both local markets and Kampong Thom town might be recognized, the almost complete absence of reported use of NTFPs in Tum Or precluded a more informed assessment of potential project interventions associated with the selection of marketable NTFP species until more information regarding the potential supplies of various NTFPs in Tum Or had been considered. Medicinal plants may perhaps provide the most promising marketing opportunities since there was considerable evidence of the marketing of medicinal plants in the specialized market survey that was conducted in Phnom Penh, in which the potential market for various medicinal plants was considered to be moderate to high.

## **5.2 Recommended Market Development Initiatives in Kampong Chhnang**

The stage of development of markets for NTFPs differed to a considerable extent in each of the project villages in Kampong Chhnang. The primary markets for NTFPs collected in Kanchorng were dominated by mushrooms, other fungus, bamboo shoots, and to a much less extent, medicinal plants. The estimated values of those products were equivalent to an annual per capita income for the community forestry families that live in Kanchorng of about \$30. There appeared to be considerable growth potential for each of those products, not only in local markets, but also in regional and perhaps even international markets, particularly if storage constraints associated with the perishability of those products were to be removed. The emphasis of project interventions in Kanchorng might therefore be effectively directed to increasing the cultivation of one or more of those products and introducing relatively simple technologies for demonstrating the manner in which those products might be further processed, i.e., dried, packaged, and stored, prior to transporting them to more distant markets.

The primary markets for NTFPs collected in Svay Bakav were dominated by bamboo shoots and, to a much lesser extent, some medicinal plants. The estimated value of the bamboo shoots was equivalent to an annual per capita income for the community forestry families that live in Svay Bakav of a little less than \$5, but the situation regarding the market growth potential for bamboo shoots collected in Svay Bakav, in particular, parallels that in Kanchorng. The same observation might therefore be applied to potential project interventions in Svay Bakav. Potential project activities might effectively be directed to not only increasing the cultivation of bamboo shoots and some medicinal plants, but also transferring simple processing technologies to expand potential market outreach. There was considerable evidence supporting the marketing of medicinal plants in the specialized market survey that was conducted in Phnom Penh, in which the potential market for various medicinal plants was considered to be moderate to high.

The predominant NTFP that was collected in Saray Andet was rattan, which was processed by collectors/processors, as well as other independent processors, into large numbers of inexpensive woven baskets. The estimated contribution of those baskets to mean annual per capita income of those collectors/processors and their families was more than \$120. On the basis of the survey responses that recognized constraints affecting the collecting and processing of rattan, a particularly effective project intervention to improve livelihoods in Saray Andet might include the provision of technical assistance and financing for introducing quality production control measures, as well as the cultivation of selected rattan species in community forest areas located close to the village. Those initiatives might conceivably be extended through project activities that encourage the introduction of value-added technologies that expand the range of rattan products that are produced to perhaps include household and office furniture for commercial markets in Kampong Chhnang town and Phnom Penh.

In Oroung, and to an even greater extent in Svay Kroam, only small amounts of NTFPs were collected and even smaller amounts of those products were marketed. Mushrooms, bamboo shoots, and some medicinal plants were collected in both of those villages, though, and there may be some potential for project interventions that encourage the further cultivation of those products either for personal use or to exchange in markets.

The specialized surveys of markets in Kampong Chhnang town and in Phnom Penh suggest that another potential project intervention might be developed on the basis of the generally moderate demand projected in those larger markets for bamboo baskets.

### **5.3 Recommended Market Development Initiatives in Rattanakiri**

The markets for NTFPs collected in the targeted villages of Rattanakiri were apparently not particularly well-developed, but relatively large amounts of mushrooms, bamboo shoots, and bamboo poles were collected for personal use in each of those villages, especially in Somkul. The implicit market values associated with the personal use of those products in those villages, while not extensive, were not inconsequential. In Somkul, mushrooms contributed more than \$20 and bamboo shoots contributed more than \$10 to the annual per capita income of village families. In Somtrak, the cumulative contribution of those products to the annual per capita income of village families was a little more than \$15, and in Somkninh, it was a little more than \$10.

Irrespective of the implicit market values associated with the personal use of those products in those villages, there appears to be considerable growth potential for mushrooms and bamboo shoots, as well as bamboo poles, which were processed and sold in local markets, as well as in regional and international markets, especially in Vietnam and China. Some of the observations of traders, as well as wholesalers, who were interviewed during the administration of the survey questionnaires confirmed both the growth potential of markets for mushrooms and bamboo shoots in local markets and adjacent border areas of Vietnam, as well as the higher prices that were paid in those markets for processed (i.e., dried) bamboo shoots.

In recognizing some of the similarities to the development of markets for mushrooms, other fungus, medicinal plants, and bamboo shoots in the project villages of Kampong Chhnang, potential project activities in Rattanakiri might be most effectively directed to not only increasing the cultivation of mushrooms, bamboo shoots, and bamboo poles, but also transferring simple processing technologies to expand market outreach by demonstrating the manner in which mushrooms and bamboo shoots in particular might be

further processed, i.e., dried, packaged, and stored, prior to transporting them to more distant markets. Those efforts might most effectively be combined with parallel interventions directed to organizing collectors' organizations to strengthen villagers' marketing positions.

Other observations of wholesalers regarding the development and expansion of markets for NTFPs suggest that another effective project intervention in Rattanakiri might include support for the cultivation of selected rattan and bamboo species in areas close to those villages. The purpose of those initiatives would be to encourage the introduction of simple value-added technologies to produce large and small kaphas, or "baskets" which are carried on a person's back, to sell in Banlong, as well as in other local markets.

The survey of markets in Phnom Penh suggests as well that there might be some potential for project interventions to support the production and marketing of honey in Phnom Penh, as well as in some of the other larger regional markets in Cambodia.

## **5.4 Recommended Market Development Initiatives in Mondulkiri**

The NTFPs that were collected in the targeted villages of Mondulkiri included both a significant marketed component and a less substantial non-marketed component. In each of the villages, dry resin was the most prominent of the marketed component and the contributions of resin markets to local livelihoods were substantial. Whereas in Kompong Thom, the markets for liquid resin were the most important, the markets for the dry resin that was collected in Mondulkiri were the most important. The estimated value of the dry resin, as well as the much smaller amounts of liquid resin, that were collected in Pou Kroch, Pou Radet, Pou Loung, and Pou Kreng was equivalent to an annual per capita income of more than \$130 for the 367 families that live in those villages.

The principal markets for the resin that was collected in Mondulkiri were characterized by value chains that extend from collectors through local and regional wholesalers and traders to end-use markets in Cambodia, as well as Vietnam, for torches that use a mixture of liquid resin and dry resin, and a caulking paste to protect fishing boats that is made from dry resin mixed with sand.

The dominance of the dry resin markets in each of the targeted villages, as well as the potential for expanding markets for dry resin that was expressed by wholesalers who were included in the marketing surveys, suggest that potential project interventions to increase villagers' market shares of resin income in each of the targeted villages might be most effectively directed toward activities similar to those that were recommended in Kompong Thom. In Mondulkiri, those activities might include:

- Organizing collectors' organizations to strengthen villagers' marketing positions;
- Supporting the development of market information systems to inform collectors of current market conditions; and
- Introducing processes to standardize the quality of resin sold by collectors and perhaps encourage some initial processing of the resin raw material to counteract the impacts of supply constraints associated with the quality of the resin collected and the ages of resin trees.

In Pou Radet and Pou Kroch, the marketed component of NTFPs also included orchids. The estimated value of the orchids that were collected in those two villages was equivalent to an annual per capita income of more than \$75 for the 148 village families

that live there. Potential project interventions to support the development and expansion of those markets might most effectively be directed to strengthening various elements of the marketing chain that extends from cultivation through processing, packaging, and storing to sales by collectors to market intermediaries.

Bamboo shoots were collected in each of the targeted villages, primarily as a non-marketed component for personal use, but also for markets for the bamboo shoots collected in Pou Radet. There appears to be at least some moderate growth potential for bamboo shoots, as well as mushrooms, which are currently collected for personal use in Pou Radet and Pou Loung, in local markets, as well as in regional and international markets, especially Vietnam.

In recognizing some of the similarities in the development of markets for bamboo shoots and mushrooms, potential project activities in Mondulkiri, as in Kampong Chhnang, might be most effectively directed to increasing the cultivation of bamboo shoots and mushrooms, and introducing simple processing technologies to expand market outreach by demonstrating the manner in which bamboo shoots and mushrooms might be further processed, i.e., dried, packaged, and stored, prior to transporting them to more distant markets.

There was also some evidence supporting the development and marketing of bamboo baskets in the specialized market survey that was conducted in Phnom Penh. The potential demand for bamboo baskets in this more extended market was generally considered to be moderate.

## **Annex A.**

**The relative locations of the four targeted provinces of the project.**



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## **Annex B.**

**Field-tested English versions of structured questionnaires.**

## Questionnaire for Collectors of NTFPs

Date.....

Name of interviewer.....

Name of collector:.....

Age.....Sex.....

Location:

Village.....Commune.....District.....Province.....

### 1. Quantities of NTFPs collected annually.

Type of NTFP	Quantities collected for household use	Quantities collected for the market

### 2. Sources of NTFPs that are collected.

Type of NTFP	Source of collection	Forest condition and type	Distance from home	Travel time to site	Time every month spent collecting NTFPs

### 3. Seasonality of the collection of NTFPs.

Type of NTFP	Month											
	J	F	M	A	M	J	J	Aug	S	O	N	D

### 4. Quantities and prices of NTFPs that are collected and sold.

Type of NTFP	Quantities collected			Quantities sold			Prices		
	2008	2007	2006	2008	2007	2006	2008	2007	2006



5. Storage of collected NTFPs.

Type of NTFP	Location and type of storage structure	Average period of time stored	If rented, average rental cost of using storage structure

6. Market destinations.

Type of NTFP	Purchasers	Location of market destinations

7. Do you know of informal fees that are charged at any stage of the marketing chain that extends from the collection of NTFPs to the final consumption of NTFPs by end users?  Yes  No. (If no, go to question eight). At which stages of the marketing chain are the fees collected – Collectors stage? Traders stage? Processors stage? Wholesalers/Retailers stage? Which officials or organizations collect the fees? How much are the fees?

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8. How often, if ever, are you provided with loans or cash advances from traders who buy NTFPs from you? What is the amount of an average loan or cash advance that they provide to you? What interest rate is generally charged on a loan or on a cash advance?

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9. What is your understanding of the linkages between the stages of NTFP product flows in the product marketing chain? That is, once NTFPs have been collected, which different commercial agents and organizations buy and sell the products as they move through the marketing chain?

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10. How, if at all, do you obtain reliable information on the market prices of the NTFP products that you collect and sell? Does the availability, or the lack of availability, of this information influence the market price of the NTFPs that you collect?

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11. Do you think there are important constraints to increasing your collection of NTFPs?

- Yes
- No. (If no, go to question 12). Is there something that the local, provincial, or national governments could do to increase your income from collecting NTFPs? Is there something that the project could do more effectively to support your efforts to increase the income that you make from selling NTFPs?

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12. How would you describe the potential importance to your household income of NTFPs that you currently collect and sell? What is the percentage of your annual household income that is accounted for by NTFPs? by agricultural crops? by livestock? by poultry and ducks? by capture fisheries? Owned and Operated Businesses? Salaried Employment?

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Household income (gross)	
Agriculture crops	riel/year
Livestock (please specify)	riel/year
Poultry, ducks	riel/year
Capture fisheries	riel/year
Owned and operated business (net)	riel/year
Paid work while living at home no. of persons from household: .....	months/year riel/month
Paid work while living away from home no. of persons from household: .....	months/year riel/month
<input type="checkbox"/> other (please specify)	riel/year

13. Do you think that if a local organization to organize collectors to market NTFPs were to be established, it could be used to increase collectors' incomes? If there were such an organization, would you be willing to participate in its operation?

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## Questionnaire for Traders of NTFPs

Date.....

Name of interviewer.....

Name of trader:.....

Age.....Sex.....

Location:

Village.....Commune.....District.....Province.....

1. Locations of NTFPs or processed NTFPs purchased by the trader in the project target area.

Type of NTFP or processed NTFP	Locations of NTFPs or processed NTFPs purchased by the trader in the project target area	Average distance to travel to these sites	Cost of transportation to travel to these sites

2. Quantities and prices of NTFPs or processed NTFPs purchased by the trader in the project target area.\*

Type of NTFP or processed NTFP	Quantities purchased			Prices			Notes
	2008	2007	2006	2008	2007	2006	

\* Specify if the information is based on purchases made outside of the project target area in the notes.

3. Locations of NTFP or processed NTFP sales by the trader in the project target area.

Type of NTFP or processed NTFP	Locations of NTFPs or processed NTFPs sold by the trader in the project target area	Average distance to travel to these sites	Cost of transportation to travel to these sites

4. Quantities and prices of NTFPs or processed NTFPs sold by the trader in the project target area.\*

Type of NTFP or processed NTFP	Quantities sold			Prices			Notes
	2008	2007	2006	2008	2007	2006	

\* Specify if the information is based on sales made outside of the project target area in the notes.

5. Locations of NTFP or processed NTFP purchases by the trader outside the project target area.

Type of NTFP or processed NTFP	Locations of NTFPs or processed NTFPs purchased by the trader outside of the project target area	Average distance to travel to these sites	Cost of transportation to travel to these sites

6. Quantities and prices of NTFPs or processed NTFPs purchased by the trader outside the project target area (if the information is available).

Type of NTFP or processed NTFP	Quantities purchased			Prices		
	2008	2007	2006	2008	2007	2006

7. Locations of NTFP or processed NTFP domestic sales by the trader outside the project target area.

Type of NTFP or processed NTFP	Locations of NTFPs or processed NTFPs sold by the trader outside of the project target area	Average distance to travel to these sites	Cost of transportation to travel to these sites

8. Quantities and prices of NTFPs or processed NTFPs sold domestically by the trader outside the project target area (if information is available).

Type of NTFP or processed NTFP	Quantities sold			Prices		
	2008	2007	2006	2008	2007	2006

9. Quantities and prices of NTFPs or processed NTFPs sold by the trader in international markets.

Type of NTFP or processed NTFP	Quantities sold			Export prices		
	2008	2007	2006	2008	2007	2006

10. Storage of NTFPs or processed NTFPs purchased by the trader.

Type of NTFP or processed NTFP	Location and type of storage structure	Average period of time stored	If rented, average rental cost of using storage structure

11. How would you regard the quality of the NTFP and processed NTFP products that you purchase from collectors and others in the project target area? Low quality? Average quality? High quality?

Type of NTFP or processed NTFP	Low quality	Average quality	High quality

12. Do you know of informal fees that are changed at any stage of the marketing chain that extends from the collection of NTFPs to the final consumption of NTFPs by end users? At which stage of the marketing chain are the fees collected - Collectors stage? Traders stage? Processors stage? Wholesalers/Retailers stage? Which officials or organizations collect the fees? How much are the fees?

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13. How often, if ever, do you loan money and/or provide cash advances to collectors that sell you NTFPs? What is the amount of an average loan or cash advance that you provide to them? What interest rate is generally charged on a loan or on a cash advance?

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14. What percentage of the NTFP or processed NTFP products that you purchase from collectors in the project target area would you say are sold to other traders? processors? wholesalers/retailers? end users?

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15 (a) What is your understanding of the linkages between the stages of NTFP product flows in the product marketing chain? That is, once NTFPs have been collected, which different commercial agents and organizations buy and sell the products as they move through the marketing chain?

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15 (b) How, if at all, do you obtain reliable information on the market prices of the NTFP and processed NTFP products that you purchase from collectors and others and sell to other traders and/or wholesalers/retailers? Does the availability, or the lack of availability, of this information influence the market prices of purchasing or selling these products?

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16. Based on your experience in the trade, what do you consider to be the NTFP or processed NTFP products that will experience the greatest growth in demand in local, regional, and international markets over the next year? the next five years?

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17. What are the relative shares of your annual business income that are accounted for by buying and selling NTFPs or processed NTFPs? agricultural crops; other goods and products?

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## Questionnaire for Processors of NTFPs

Date.....

Name of interviewer.....

Name of processor or company processing NTFPs

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Name of company representative.....Position.....

Location:

City.....Village.....Commune.....District.....Province.....

1. Sources of the NTFP raw materials used to produce the processor's processed products.

Types of processed products	NTFP raw materials	Sources and locations of NTFP raw materials

2. Quantities and prices of NTFP raw materials purchased by the processor to produce the processed products annually.

Types of processed products	Quantities of purchased NTFP raw material	Prices of purchased NTFP raw material

If the NTFP raw materials are collected independently by the processor, the following information should also be collected:

Sources of NTFP raw materials	Average distance to travel to these sites	Time every month spent collecting NTFP raw materials



3. Quantities and prices of processed NTFP products sold by the processor to wholesalers/retailers annually.

Types of processed products and numbers produced per month	Quantities of processed NTFP products sold	Prices of processed NTFP products

4. End uses of processed NTFP products sold by the processor.

Types of processed products	End uses

5. Storage of processed NTFP products.

Type of processed NTFP product	Location and type of storage structure	Average period of time stored	If rented, average rental cost of using storage structure

6. How would you regard the quality of the NTFP raw materials that you purchase in the project target area? Low quality? Average quality? High quality?

Type of NTFP	Low quality	Average quality	High quality

7. Do you know of informal fees that are charged at any stage of the marketing chain that extends from the collection of NTFPs to the final consumption of NTFPs by end users? At which stage of the marketing chain are the fees collected – Collectors stage? Traders stage? Processors stage? Wholesalers/Retailers stage? Which officials or organizations collect the fees? How much are the fees?

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8. How often, if ever, do you loan money and/or provide cash advances to collectors or traders that sell you NTFP raw materials? What is the amount of an average loan or cash advance that you provide to them? What interest rate is generally charged?

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9. How, if at all, do you obtain reliable information on the market prices of the NTFP raw materials that you purchase from collectors and traders? the market prices of the NTFP processed products that you sell to wholesalers/retailers? Does the availability, or the lack of availability, of this information influence the market prices of purchasing NTFP raw materials or selling NTFP processed products?

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10. What are the primary constraints to increasing your production of NTFP processed products? Is it the availability of NTFP raw materials that you have to purchase?

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11. Based on your experience in the trade, what do you consider the NTFP processed products that will experience the greatest growth in demand in local, regional, and international markets over the next year? the next five years?

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## Questionnaire for Wholesalers/Retailers of NTFPs

Date.....

Name of interviewer.....

Name of wholesaler/retailer organization

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Name of organization representative ..... Position.....

Location:

City.....Village.....Commune.....District.....Province.....

### 1. Quantities and prices of NTFPs purchased by wholesalers/retailers.

Type of NTFPs	Quantities purchased			Prices		
	2008	2007	2006	2008	2007	2006

### 2. Sources of NTFPs or processed NTFPs sold by wholesalers/retailers.

Type of NTFPs	Unprocessed	Processed	Sources of NTFP

### 3. Quantities and prices of NTFPs sold by wholesalers/retailers.

Type of NTFPs	Quantities sold			Prices		
	2008	2007	2006	2008	2007	2006

### 4. Storage of NTFPs purchased and sold by wholesalers/retailers.

Type of NTFP	Location and type of storage structure	Average period of time stored	If rented, average rental cost of using storage structure

5. How would you regard the quality of the NTFP products that you purchase in the project target area? Low quality? Average quality? High quality?

Type of NTFP	Low quality	Average quality	High quality

6. Do you know of informal fees that are charged at any stage of the marketing chain that extends from the collection of NTFPs to the final consumption of NTFPs by end users? At which stage of the marketing chain are the fees collected – Collectors stage? Traders stage? Processors stage? Wholesalers/Retailers stage? Which officials or organizations collect the fees? How much are the fees?

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7. How, if at all, do you obtain reliable information on the market prices of the NTFP products that you purchase and sell? Does the availability, or the lack of availability, of this information influence the market prices of purchasing or selling these products?

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8. Based on your experience in the trade, what do you consider to be the NTFP products that will experience the greatest growth in demand in local, regional, and international markets over the next year? the next five years?

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9. What are the relative shares of your annual business income that are accounted for by buying and selling NTFPs? agricultural crops? other goods and products?

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## **Annex C.**

**Survey of presence or absence of NTFPs in larger Cambodian markets.**

## Presence or Absence of NTFPs in Larger Provincial Markets

Date.....  
 Name of interviewer.....  
 Type of market.....  
 Name of market.....  
 Location of market.....

### 1. Presence or Absence of NTFPs in this market.

Raw Material	Product	Present	Absent	Current Market Price
Liquid Resin	1.			
	2.			
Dry Resin	1.			
	2.			
Spiders	1.			
	2.			
Rattan	1.			
	2.			
Other Vines	1.			
	2.			
Bamboo	1.			
	2.			
Medicinal Plants	1.			
	2.			
Wild Yams	1.			
	2.			
Other Wild Vegetables	1.			
	2.			
Mushrooms	1.			
	2.			
Other Fungus	1.			
	2.			
Wild Leaves	1.			
	2.			
Honey	1.			
	2.			
Fuelwood	1.			
	2.			
Poles	1.			
	2.			
Other Raw Materials	1.			
	2.			

