ISSN 1560-9197

Trading Forest Products in Cambodia:

Challenges, Threats, and Opportunities for Resin

Working Paper 28

Prom Tola and Bruce McKenney

Working Paper No. 28

CAMBODIA DEVELOPMENT RESOURCE INSTITUTE

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Cambodia Development Resource Institute
Phnom Penh, November 2003

ISSN 1560-9197

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November 2003

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

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Photographs: Prom Tola, Bruce McKenney, Yim Chea and Wildlife Conservation Society (WCS)
Printed and Bound in Cambodia by Japan Printing House, 74 Street 99, Phnom Penh

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Executive Summary

Forests support rural livelihoods in Cambodia in a number of important ways. Almost all rural Cambodians use forest resources for cooking fuel and construction materials. Many also collect other products for household use and income generation through trade, such as bamboo, rattan, resin, wild fruits and vegetables, and medicinal materials. In addition to products, forests provide habitat for flora and fauna diversity, essential ecological services, and in some areas have important cultural and spiritual significance to surrounding communities.

Recent estimates indicate that about one-quarter of the Cambodian population lives in or near forest areas, and several hundred thousand rural Cambodians depend, at least in part, on income from the collection of forest products (World Food Programme 2001). These estimates, in combination with numerous case studies conducted on the role of forest resources in rural livelihoods, suggest that forest product collection and trade plays a significant role in Cambodia's rural economy. But with the bulk of attention in the forestry sector focused on commercial timber operations, this economic activity has often been overlooked.

To explore the conditions under which forest products are traded in Cambodia, and how such conditions may affect rural livelihoods, this study focuses on one of Cambodia's most important forest products – resin. Tapped mainly from the evergreen tree species *Dipterocarpus alatus,* but also from a variety of other species, resin is used domestically for sealing/waterproofing boats and exported for these uses as well as for paint and varnish manufacturing. Tapping occurs across most of Cambodia's forest areas, in at least ten provinces, with activity most prevalent in the north and northeast regions. Improving trade conditions for resin in a manner that increases returns to producers/tappers would have a positive impact on many forest communities.

For this study, research was conducted on resin trade from four resin-producing areas – Mondulkiri, Preah Vihear, Kompong Thom, and Oddar Meanchey/Siem Reap – between August and November 2002. Information and data were collected through nearly 60 semi-structure interviews with resin traders, wholesalers, transporters, exporters, retailers/distributors, and government officials, observations on a trip with a shipment of resin, and a brief survey of community representatives from resin-producing areas in nine provinces. Key objectives included describing resin tapping methods and uses, examining the threat of logging to tapping activities, analysing the market structure for resin production and trade, describing the current regulatory framework and actual practices, assessing the key challenges to resin trade, and identifying policy recommendations.

Tapping, Tenure, and Logging Threats

Tapping resin involves cutting a backward sloping hole in large trees, burning the hole briefly to stimulate resin flow, and collecting the resin in plastic containers after a few days. Using this method, trees can reportedly continue to yield resin for several decades. Tapping does not damage the trees, and the risk of forest fires appears negligible due to the brevity and control

of the burning. According to custom, the first person to find and mark a resin tree is considered its owner. Nonetheless, because resin trees are by custom considered private property, it is possible to transfer tree ownership through sale, inheritance, or donation, or sell the rights to tap trees for a specified period of time. This tenure system appears unique for resin trees; other trees and non-timber forest products are not "owned", instead access to these resources is open to all.

Although resin tree "ownership" lacks a formal legal basis, Cambodian law does ensure the user rights of tappers and also prohibits the logging of resin trees (Article 29, *Forestry Law* of 2002). But cutting of resin trees reportedly continues despite the illegality of the practice. Loggers harvest resin trees because they are a commercially attractive source of timber. Indeed, logbooks for six forest concessionaires indicate that species tapped for resin comprised a significant proportion of the trees harvested in 2001. Unfortunately, in some forest areas there appears little room for a "win-win" solution – maintenance of resin tapping income *and* commercial logging. A clear forest management decision is needed about whether commercial logging will be permitted in any manner in areas with resin trees. Without such interventions, the cutting of resin trees will likely continue, conflicts over resin trees could increase, and thousands of rural Cambodians dependent on resin tapping could lose a vital source of income – an outcome that clearly runs counter to national poverty reduction objectives.

Resin Production and Trade

Approximately 20,000 tonnes of resin are collected annually across Cambodia, and this activity provides an important source of income for roughly 100,000 people living in/near forest areas. Resin tappers sell their product to a marketing chain that includes traders, wholesalers, transporters, domestic retailers and exporters. From forests, resin is often transported significant distances to domestic markets around the Tonle Sap, south to the Mekong Delta region, and exported to Vietnam, Thailand, and Laos (which reportedly re-exports resin to Thailand). Domestic demand for resin is mainly driven by the need of more than 250,000 Cambodian households to seal and waterproof their boats each year. Export demand for resin appears to be mainly driven by the needs of paint and varnish manufacturers in Vietnam, but CDRI could not confirm primary export uses. The annual market/export value of resin production in Cambodia is approximately $6 million.

Regulatory Framework and Actual Practice

The current regulatory system requires a number of permits, licenses, and fees to stock, transport, and export resin. But in practice, almost no one active in the resin trade holds the appropriate permits and licenses. Instead, trade operates through an informal process involving a range of fee payments to a variety of institutions, including the Department of Forestry, Provincial Forestry Offices, Ministry of Environment, as well as district officials, police, economic police, military, and military police. One of the most common practices is to charge fees when "checking" the transport permit, since officials know that transporters will either have no transport permit, or a permit with a significant underestimation of the actual shipment amount.

Compliance with the official regulatory system governing resin marketing is extremely difficult. This is especially true for small businesses, which lack the means to pay official fees or to travel to Phnom Penh to obtain a transport permit and/or export license. Therefore, almost all resin trade and export must be conducted on (technically) an illegal basis. Consequently, the system generates almost no formal government revenue.

Analysis of Costs and Fees for Resin Trade

The main constraints on resin trade are transportation costs and multiple informal fees. Although these costs are imposed on the marketing of resin, rather than resin tapping, the costs can nonetheless have a significant impact on tappers' incomes. When marketers of resin incur significant costs, they may not be able to absorb them and continue to make a profit. In such cases, they must pass on costs to tappers in the form of lower prices for resin. As one trader put it, "*when the authorities raise the fees, I cannot pay all of it and make a profit, so I must reduce the price I pay to villages for resin."*

Across the four resin trade routes studied, there is significant variation in trade practices, prices and margins, costs, and fees. For example, the average price received for resin by tappers in Mondulkiri is three times the price in Kompong Thom and about twice the prices in Preah Vihear and Oddar Meanchey. Such price differences can be explained by a number of factors, including resin quality, distance from tappers' villages to a final market, level of fees along the trade route, and end markets (export prices are higher than domestic prices).

The market price of resin ranges from $172 per tonne (domestic market) up to $325 per tonne (export market). Trading resin from tapping villages to these end markets costs an average of $93 per tonne in trade costs ($56 per tonne) and fees ($37 per tonne).[1] Thus, fees add 65 percent to the total costs of resin marketing and sharply reduce profits. If applied to all 20,000 tonnes of resin produced and traded annually in Cambodia, total fees on resin range from about $500,000 to $1 million per year.

Fees on resin trade are paid along the road and at different transaction points. All fees are either informal payments or payments made on an official basis but not at the official rate. Detailed examinations of shipments for two trade routes illustrate the variance in fee amounts, number of payments, and collecting institutions. For a 20-tonne shipment of resin from Preah Vihear to the Vietnamese border, fees amount to $1,344 (or $67 per tonne). This trade involves 43 payments in 14 different locations. Forestry officials dominate fee collection for this trade route, accounting for 20 of the payments and about 75 percent of the overall fee amount. Another 17 payments are made to police, economic police, military police, and military. Fees play a lesser role in resin trade from Mondulkiri to the Vietnamese border. For a 1.2-tonne shipment of resin, fees amount to about $30 (or $25 per tonne). This trade only involves 11 payments in three locations.

In addition to fees actually paid, the *threat* of fees causes economic losses due to trade inefficiencies. Resin traders will go to great lengths to avoid paying high fees, since their payment would often result in a loss rather than profit. For example, rather than shipping resin efficiently in a large truck (and paying high fees), it is common to avoid fees by shipping smaller quantities in the trunks of taxis. Likewise, traders avoid some border points where fees are known to be high, opting instead to travel longer distances to other border points despite the additional transport and fuel costs. Stepping up enforcement to counter such fee payment evasion is not recommended, however, because it would make much of the trade unprofitable and perhaps cause a collapse in the trade altogether. Prior to any efforts to improve compliance, the fee system itself needs to be reformed.

[1] Trade costs refer to all operating, capital, and working capital costs involved with storing, aggregating, and transporting resin from the tappers' villages (or forest gate) to end markets, *excluding fees.*

Recommendations

The government has indicated in its *National Poverty Reduction Strategy 2003–2005* the need to review and improve the regulatory system for non-timber forest products in order to support better market conditions. Such improvements would be in line with national objectives to reduce poverty, ensure food security, increase pro-poor trade and rural development, and improve forest management. To support such improvements, a number of policy recommendations are summarised below based on the research findings of this study.

1) **Improve governance and transparency for resin marketing, including an overhaul and simplification of the current regulatory system.**
    - Eliminate the transport permit and associated fees.
    - Eliminate fees collection by checkpoints/institutions with no legal basis for collecting fees.
    - Remove the export tax and simplify procedures for obtaining an export license.
2) **Improve and localise forest management by decentralising authority over revenue-raising mechanisms.**
3) **Enforce Article 29 of the *Forestry Law* prohibiting the harvest of resin trees.**
4) **Establish resin/NTFPs as a focal sector for pro-poor trade initiatives and value-added processing improvements.**
5) **Review and revise the regulatory framework for all NTFPs.**

Acronyms and Abbreviations

$	US dollars
CDRI	Cambodia Development Resource Institute
DFW	Department of Forestry and Wildlife
Dipterocarpus alatus	Tree species that is common source of liquid resin in Cambodia
Kg	Kilogram
MAFF	Ministry of Agriculture, Forestry and Fisheries
NGO	Non Governmental Organisation
NTFPs	Non-Timber Forest Products
PFO	Provincial Forestry Office
PM	Military Police
R/Riel	Cambodian currency (3920 R = 1$)
RGC	Royal Government of Cambodia
Shorea	Tree species that is common source of solid resin in Cambodia
VN	Vietnam
WCS	Wildlife Conservation Society
WFP	World Food Programme

Khmer Words

Chheu teal	A tree type that produces liquid resin
Jor chong	Solid resin product
Jor tuk	Liquid resin product
Kan	A plastic container that holds 30 liters
Prakas	Announcements issued by government ministries
Preal	A tree type, the leaves of which can be mixed with waste resin to make torches for lighting in rural areas
Trach	A tree type that produces liquid resin

Acknowledgements

The authors are very grateful to the many people who provided input and support for this study. First, in conducting research, about 57 people involved with resin trade activities were interviewed, which included traders, wholesalers, transporters, exporters, domestic retailers/distributors , and government officials from the Department of Forestry and Wildlife and Ministry of Commerce. Without their willingness to engage in extensive interviews and provide detailed information and data on their businesses, activities, and legal and regulatory issues, this study would not have been possible. We hope their efforts and insights can lead to future policy improvements for rural livelihoods in Cambodia.

The authors extend their appreciation to staff at Wildlife Conservation Society for their advice and assistance regarding research in Mondulkiri and Preah Vihear, and a special thanks to Ms. Hang Mary for field assistance in Mondulkiri. Mr. Yim Chea, our colleague and fellow researcher in the Natural Resources and Environment Programme at CDRI, also deserves special mention for his commitment in field research and important contributions to data collection and analysis.

The authors gratefully acknowledge the funding support of DANIDA to the CDRI Natural Resources and Environment Programme. The study would not have been possible without such assistance.

Finally, this study has benefited from valuable insights and comments from staff at a number of organisations including Wildlife Conservation Society, NGO Forum, Southeast Asia Development Program, and Department of Forestry and Wildlife. The authors are also grateful to Dr. K.A.S. Murshid, Research Director of CDRI, and Ms. Eva Mysliwiec, Director of CDRI, for their input, direction, and support.

Phnom Penh, October 2003

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Chapter 1

Introduction

Forests support rural livelihoods in Cambodia in a variety of important ways. Almost all rural Cambodians use forest resources for cooking fuel and construction materials. Many also collect other products for household use and income generation through trade, such as bamboo, rattan, resin, wild fruits and vegetables, and medicinal materials. Beyond the direct use of products, forests also provide habitat for rich flora and fauna diversity, important local and global ecological services, such as the stabilisation of watersheds and carbon sequestration, and in some areas have important cultural and spiritual significance to surrounding communities.

A significant proportion of the Cambodian population lives in or near forest areas. World Food Programme (2001) estimates that about 600,000 Cambodians live in forest concession areas (where forest resources tend to be richer), and roughly three million people (or about 25 percent of the population) either live in forest concessions or within a 30 km radius of a concession boundary. Much of this rural population depends, at least in part, on forest resources to support their livelihoods. Out of 550 communes for which data were available, World Food Programme (2001) identified 310 communes (2.3 million people) where more than 20 percent of the households go to the forest for forest-related income generation activities. In 59 of these communes (400,000 people), more than 50 percent of households go to the forest for forest-related income generation activities. Supporting these estimates, numerous case studies conducted across Cambodia illustrate the vital role of forests to rural livelihoods.[2]

Although forest products play a significant role in Cambodia's rural economy, this economic activity has often been overlooked. Much remains unclear about the conditions under which forest products are traded in Cambodia, and how such conditions may affect rural livelihoods. Some key issues for analysis include the market structure, marketing costs and fees, regulatory requirements and actual practices, and the sustainability of the trade in light of current management practices. To explore these issues, this study focuses on one of Cambodia's most important forest products – resin.[3] Tapped mainly from the evergreen tree species *Dipterocarpus alatus,* but also collected from a variety of other species, resin may be harvested in liquid and solid forms. It is used domestically for sealing and waterproofing boats and exported for these uses as well as for paint and varnish manufacturing. Tapping occurs across most of Cambodia's forest areas, in at least ten provinces, with activity most prevalent in the north and northeast regions.

Resin was selected as a case example for forest product trade for several reasons. First, a number of recent and ongoing studies highlight the importance of resin to income

[2] Recent case studies include: Chan and Acharya (2003), Evans *et al.* (2003), McAndrew *et al.* (2003), Mlup Baitong (2003), Sy *et al.* (2002), So *et al.* (2001), Yoshida *et al.* (2001), Ratanakiri Provincial Rural Development Department *et al.* (2000), Phat *et al.* (1999), Chea *et al.* (1998) and Seilava *et al.* (2002).

[3] Although commonly referred to as resin in Cambodia, the product is technically an "oleoresin" because it contains an essential oil (volatile) fraction.

generation for forest communities (Chan and Acharya 2003, Evans *et al.* 2003, McAndrew *et al.* 2003, Cock *et al*. forthcoming). Improving trade conditions in a manner than increases returns to resin producers/tappers would have a significant impact on rural livelihoods in many of Cambodia's forest communities. Second, resin is widely traded domestically (from upland forest areas to lowland fishing areas), and substantial quantities are known to be exported, making it a more robust case for the study of forest product marketing and trade. Third, resin tapping does not damage the trees and tapped trees can continue to yield resin for decades. This makes it possible to seek marketing and trade improvements for resin without the threat that such improvements may lead to problems of sustainable management of the forest product. Fourth, since resin is produced in rural areas, and much is currently exported in a raw form, it may be a product worthy of consideration for "pro-poor trade" promotion. Under the direction of the Ministry of Commerce, the pro-poor trade strategy aims to bring trade and export opportunities to the poor by encouraging entrepreneurship and investment in rural areas, decentralising the export base towards new regions, increasing value-added, and improving marketing strategies.

Lastly, resin trees remain central to any discussion of forest management in Cambodia. Although tappers' view is that they "own" their resin trees in accordance with customary tenure practices, and the *Forestry Law* (2002) prohibits the cutting of resin trees and ensures user rights for the collection of resin, the cutting of resin trees continues because the trees are commercially attractive to loggers as a source of timber. Indeed, harvest data provided in Department of Forestry and Wildlife logbooks for six forest concessionaires indicate that a significant proportion of the species harvested in 2001 are commonly tapped for resin (see Section 3.0). Due to the importance of resin trees to commercial logging, some concessions may no longer be viable (or certainly not as profitable) if the prohibition on cutting resin trees is enforced. Therefore, it can be expected that if new forest concession management plans are approved, resin tree cutting will continue in some areas. This may lead to increased conflict and the loss of a critical source of income for thousands of rural Cambodians dependent on resin tapping. It is hoped that this study can support a greater understanding of the role of resin production and trade in rural livelihoods that contributes to clear resolution of this problem.

Forest product trade has relevance for a number of national objectives, including reducing poverty, ensuring food security, increasing pro-poor trade and rural development, and improving forest management. With these policy goals in mind, research was conducted on resin marketing and trade from four areas – Mondulkiri, Preah Vihear, Kompong Thom, and Oddar Meanchey/Siem Reap – between August and November 2002. Information and data were collected through nearly 60 semi-structure interviews with resin traders, wholesalers, transporters, exporters, retailers/distributors, and government officials, a trip with a shipment of resin, and a brief survey of community representatives from resin-producing areas in nine provinces.

1.1. Objectives of Research

Objectives of this study include identifying constraints on resin trade, quantifying the costs of these constraints and assessing their impact, and making policy recommendations that support government objectives to reduce poverty, ensure food security, increase 'pro-poor' trade, and improve forest management. More specifically, the study aims to:

- Describe resin tapping methods, customary tree tenure and legal provisions, and highlight main resin uses and products (Section 2.0).
- Examine the threat of logging to resin tapping activity, including a discussion of logging practices, legal prohibitions on cutting resin trees, and implications for forestry reform (Section 3.0)

- Analyse resin production and marketing. Estimate national resin production and amounts used domestically and sold for export, describe the typical market structure for resin trade and export, and evaluate the role of credit and other factors in resin trade (Section 4.0).
- Describe how the official regulatory system governing resin trade is supposed to function, and how the system actually works in practice (Section 5.0)
- Identify key challenges to trading and exporting resin and quantify associated costs. Estimate and analyse price margins, transaction costs, fees, and profits involved with marketing from the forest gate to domestic and export markets (Section 6.0).
- Highlight implications of the study for key government policy objectives and identify policy recommendations (Section 7.0).

1.2. Methods

In selecting trade routes for study, CDRI reviewed existing literature and consulted organisations working on forest management issues and rural development to identify areas known for significant resin production and high incidences of poverty and food insecurity. In particular, CDRI took into account an analysis by the World Food Programme (2001) that identified 300,000 people living in 67 'communes of concern' – vulnerable areas due to high forest dependence, forest loss rates, food insecurity, and poverty. According to the WFP study, "these communes could potentially be suffering from negative impacts of forest loss on food security." Based on findings from the WFP study and existing information on resin tapping areas, CDRI selected four areas (seven districts) for research that are known for resin production and trade; these areas include 13 communes of concern. In 2002, all seven of the resin-producing districts selected for study experienced rice deficits (MAFF 2003). Maps of each trade route are provided in *Appendix A*.

Mondulkiri

- Site selected: Keo Seima and O Reang districts (include two communes of concern)
- Trade route studied: Keo Seima to Memot district (Kompong Cham) and on to the Vietnamese border.

Preah Vihear

- Site selected: Rovieng and Tbeng Meanchey districts (include seven communes of concern)
- Trade route studied: Tbeng Meanchey to Thbaung Khmum district (Kompong Cham) and on to the Vietnamese border.

Kompong Thom

- Site selected: Sandan district in Kompong Thom (includes one commune of concern)
- Trade route studied: Kompong Thom town and Kompong Thmor district to Phnom Penh.

Oddar Meanchey/Siem Reap

- Site selected: Anlong Veng district in Oddar Meanchey and Banteay Srei district in Siem Reap (include three communes of concern)

- Trade route studied: Anlong Veng district (Oddar Meanchey) to Chong Khneas (Siem Reap).[4]

CDRI carried out field research on resin trade by making four trips to study areas between August and November 2002. Using prepared questionnaires, 57 semi-structured interviews were conducted with traders (17), wholesalers (14), transporters (12), exporters (2), and domestic retailers/distributors (12). Formal sampling methods were not used in selecting these interviewees due to a lack of prior information about the number, identities, and location of people active in resin trade and export. However, based on the wide coverage of interviewing activity (four resin trade routes from significant areas of resin production) and considerable cross-checking of information, data collected for this study are expected to be representative of resin production, marketing, and trade conditions across the country.

CDRI took a number of additional steps to collect information in support of this study. First, one trip was taken with a shipment of resin from Keo Seima to Memot district to directly observe trade conditions, collect price, cost, and fee data, and crosscheck this data with information gathered in interviews. Second, with assistance from NGO Forum, CDRI administered a brief survey with community representatives from resin-producing areas in nine provinces to crosscheck data from fieldwork and improve information on resin production and the number of people deriving income from resin tapping. Third, CDRI interviewed officials from the Ministry of Commerce and Department of Forestry and Wildlife to determine and confirm the regulatory framework governing forest product trade.

A number of limitations of the study should also be noted. First, while this study examines four major resin trade routes to domestic and export markets, Cambodia has numerous areas in which resin is produced and many different routes for resin trade that are not examined. Second, data collected for this study reflect trade activity during the mid- to late-wet season. Interviewees indicated that resin production and trade may be somewhat seasonally affected, such as by a slight decline in resin yields during the dry season or problems for traders to access resin producing areas during the wet season. However, according to traders and wholesalers in the areas studied, these seasonal variations do not strongly affect resin prices. They note that resin can be easily stored, so it is less susceptible to wide fluctuations in price. For these reasons, it is not expected that seasonal differences affect the overall results of this research in a significant manner. Lastly, some areas of research deserve greater attention, but this was not possible due to resource limitations and lack of technical knowledge. For example, it was not possible to determine why resin quality in Kompong Thom is lower than in other areas (including the adjacent province of Preah Vihear).

[4] In the course of research, it was discovered that wholesalers no longer source resin from Banteay Srei. They now rely on supplies from Anlong Veng. CDRI was unable to confirm the reason for this shift in resin supply.

Chapter 2

Tapping, Tree Tenure, and Products

Resin is collected in both liquid and solid forms in Cambodia. The evergreen tree species *Dipterocarpus alatus* provides the main source of liquid resin, although at least five other species are tapped for resin as well (Evans *et al.* 2003, Smitinand 1980). Most *Dipterocarpus* species are referred to in Khmer as *chheu teal*, plus a variety of classifiers (e.g., *chheu teal tuk*, *chheu teal masao*). The liquid resin tapped from these tree species goes by the name *jor tuk*. Elsewhere in Southeast Asia, liquid resin may be referred to as *yang oil*, *gurjun*, *gurjun balsam, nam man nyang* (Laos), or *keruing oil* (Malaysia). In an attempt to avoid confusion, this study hereafter refers to liquid resin as simply "resin".[5]

Solid resin (*jor chong* in Khmer) is produced by *Shorea* tree species in areas where injury to the tree (e.g., broken branches) causes an exudate to form. This exudate may be collected by climbing the tree, using slingshots, or, if it has fallen from the tree, simply collected from the ground. Due to limited sources of supply, collection and trade of solid resin plays a lesser role in the livelihoods of forest communities than liquid resin. Therefore, it is not the focus of this study.[6]

2.1. Tapping Methods and Yields[7]

Tapping resin involves cutting a backward sloping hole in large trees, usually trees greater than 60 centimeters in diameter.[8] The hole is burned briefly to stimulate the flow of resin, which is collected in plastic containers (or in some cases in bags) after a few days. Tappers then repeat the process – briefly burning the tap and returning to collect resin about every 5-15 days. Studies suggest this approach is similar across Cambodia, Laos, and Thailand (Evans *et al.* 2003, Juiprik and Kijtewachakul 2001, Ankarfjard and Kegl 1998). Anecdotal reports indicate that when these tapping methods are employed trees can continue to yield resin for several decades – over 70 years (Enfield *et al.* 1998) and 50-80 years (Ankarfjard and Kegl 1998).

In general, the larger the tree, the more resin it produces. Based on interviews for this study, the "typical" resin tree yields about 30-35 liters of resin annually. This is consistent with other studies, which have found averages of 30-40 liters/year (Evans *et al.* 2003), 22.5-31 liters/year in Laos (Ankarfjard and Kegl 1998), and 30-35 liters/year (Smitinand *et al.*

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5 Technically, liquid resin is an "oleoresin" because it contains an essential oil (volatile) fraction.

6 It is notable, however, that several traders and wholesalers interviewed for this study indicated the trade of solid resin would be greater, but its lower density and lighter weight than liquid resin make it more expensive (by weight) to transport.

7 This section draws heavily on information from a comprehensive study supported by Wildlife Conservation Society and conducted by Evans *et al.* (2003) on resin tapping and livelihoods in Mondulkiri province, Cambodia. This study also provides a thorough and useful review of published information on resin tapping.

8 In an assessment of over 2,500 tapped trees in Mondulkiri, Evans *et al.* (2003) found that the average tree diameter was 82 cm at breast height, 96.5 percent were >45 cm and 78 percent >60 cm.

1990 in Ankarfjard and Kegl 1998). Although trees reportedly yield somewhat more resin during the wet season than the dry season, overall production/collection of resin appears to be fairly constant year round. This occurs because tappers tend to go to the forest somewhat less during the wet season due to flooding or because they are too busy with their rice/*chamkar* crops (especially transplanting and harvesting periods). Conversely, tappers can more actively engage in tapping trees during the dry season when they may have few other employment opportunities. It is not clear how the yield for a particular tree fluctuates over years and decades. New taps reportedly provide high initial yields, which may decline over some years (Evans *et al.* 2003). Tappers may then cut a new tap, but it is unclear whether this raises the resin yield to its initial level or not.

Burning holes and tapping do not appear to damage resin trees, and the risk of forest fires appears negligible due to the brevity and control of the burning (Evans *et al.* 2003, Enfield *et al.* 1998, Foppes and Ketphanh 1997). In the most comprehensive study, Evans *et al.* (2003) analysed the potential damage to more than 2,500 actively tapped trees in Mondulkiri province, Cambodia. They found that only in the most rare cases had resin tapping significantly damaged trees, and only two trees were observed to have died for reasons probably related to resin tapping (over-burning of tapped area). There was no evidence that trees tapped for long periods of time have higher amounts of damage than more recently tapped trees. Furthermore, in a study of resin tapping impacts on timber values in Savannaketh province, Laos, Ankarfjard (2000) found that no sawmill owners perceived tapping as a problem regarding the quality of timber, and that tapping has no affect on timber prices.

A Dipterocarpus alatus tree tapped for resin in Mondulkiri province (Photo provided courtesy of Wildlife Conservation Society)

2.2. Customary Tenure for Resin Trees and Relevant Legal Provisions

Customary tenure of resin trees appears similar across the four study areas. It functions in a manner consistent with more detailed findings by Evans *et al.* (2003). According to custom, the first person to find and mark a resin tree is considered the owner of the tree. In some areas, resin trees grow in well-defined groups (30-50 trees), so the same person usually finds, marks, and owns all the trees in the group (Evans *et al.* 2003). In other areas, resin trees are found along streams or more scattered about the forest area. The number of trees owned by a tapping household is commonly in the range of 30-100 trees, but some households have fewer and others claim to own several hundred trees.

Village members and neighboring villages recognise ownership of resin trees as private property, which makes it is possible to transfer ownership of trees through sale, inheritance, or donation, or sell the rights to tap trees for a specified period of time. This tenure system appears unique for resin trees; other trees and non-timber forest products are not "owned", instead access to these resources is open to all (Evans *et al.* 2003). Because resin trees are treated as private assets, tappers have strong incentives to protect their trees from logging. Such forest protection and management incentives may provide a strong basis from which to encourage expanded local forest management efforts in the future.

Although the customary practice is to own resin trees, such ownership has no formal legal basis. Under the *Forestry Law* (2002), forests are the property of the State (Article 2.B). While the State can grant customary *user rights* to timber products and non-timber forest products (NTFPs) under Article 2.C, such rights provide less security of tenure than owning private property because the State can remove the user rights in the future.

The *Forestry Law* ensures user rights to resin and other NTFPs under a number of Articles, with the issue most directly addressed in Article 40.

> Article 40:
>
> A. *For communities living within or near the Permanent Forest Reserve, the State shall recognize and ensure their customary user rights for the purpose of traditions, customs, religious and livelihood as defined in this Law.*
>
> B. *The customary user rights of a local community for timber products and NTFPs shall not require a permit and include the following:*
>
> 1. *The collection and use of dead wood, wild fruit, products from bee hive or comb, resin, and other NTFPs;…*
>
> 5. *The right to barter or sell NTFPs without a permit provided such sale does not threaten the sustainability of the forest. A transport permit is required for any third party who buys NTFPs for commercial purpose from a local community, in accordance with the provisions of this Law and after payment of any applicable royalties and premiums.*
>
> C. *It is prohibited for a local community to transfer any of these customary user rights to a third party, even with mutual agreement or under contract….*

A number of differences between the customary tenure system and legal provisions need to be noted. First, in contrast to customary tenure, which allows for tree ownership and transfer of this ownership, Article 40 only ensures user rights and prohibits the transfer of these user rights. Second, although Article 40 makes clear that a (harvest) permit is not required to tap trees for resin, a transport permit and applicable fee payments are required for resin trade. It has long been the "custom" to trade resin from forest areas, where it has few uses, to areas of higher demand (see section 2.3). Since nearly all resin is traded, Article 40 provides a basis for assessing fees on nearly all resin produced.

2.3. Main Resin Products

In Cambodia, resin is sold for use in raw form, filtered to improve quality (usually for export), or mixed with a variety of different substances (e.g., solid resin, kerosene, *preal* leaves) to make boat caulking and sealant materials of different consistencies, and torches. Wholesalers play the most active role in processing resin, although retailers and exporters will occasionally process resin in response to consumer demand. The aim of most processing is to remove waste material from the resin, which may be accomplished through filtering and/or settling. The end product is a thinner more consistent resin. A description of the most common resin products is provided below.

2.3.1. Export Quality Resin

Based on interviews and direct observation, resin traded from Preah Vihear, Mondulkiri, and Oddar Meanchey is of a higher quality (thinner, uniform consistency) than what is traded from the area studied in Kompong Thom. Whereas resin from Kompong Thom appears to serve much of the domestic market, resin collected from these three other study areas is mostly exported to Vietnam. Field interviews revealed no clear answer as to why there is a quality difference between resin in Kompong Thom and other areas. However, it has been suggested that the quality difference is due to tappers in Kompong Thom tapping resin from some different tree species than other areas (P. Swift pers. comm. 2003). No chemical analysis of the different resins collected was possible, nor was it feasible to conduct research

to confirm types of tree species, investigate variances in tapping methods, and other possible determinants of quality differences.

Wholesalers and exporters indicate that all resin for export is processed to some degree in order to remove waste materials and improve consistency. The most common method involves filtering through 100-kg plastic/cloth bags. The bags are filled with tapped resin, which then slowly seeps through the fibres of the bag and drips down into a larger container/drum. Waste materials equal to about 10-40 percent of the original (unfiltered) resin weight remain in the bags.

According to interviews, exported resin is used as an input to paint and varnish manufacturing in Vietnam. Some traders reported that Vietnam re-exports resin to China. Unfortunately, CDRI was unable to obtain/confirm information about final uses of Cambodia's resin exports. Other studies of resin use in Southeast Asia indicate that resin can be an important input to high quality paints and varnishes (but lower quality paints and varnishes no longer use resin because artificial substitutes are cheaper) (Ankarfjard and Kegl 1998, Foppes and Ketphanh 1997). Some studies also suggest that, with proper processing, the essential oil component of resin is occasionally used in perfumes, but this use has only been confirmed for resin from *Dipterocarpus kerrii* species (Ankarfjard and Kegl 1998, Jantan *et al.* 1990, Gianno 1986). It is not clear if the essential oil of resin from *Dipterocarpus alatus* species (the most commonly tapped tree in Cambodia) can be used in the same manner.

Final stage of collecting resin filtered through bags, quality is suitable for export

Resin in bags ready for export from Preah Vihear province

2.3.2. Boat Sealant/Waterproofing

With roughly 250,000-300,000 boat owners in Cambodia, resin is used throughout the country as a boat sealant and waterproofing product.[9] According to interviews, boat owners paint their boats with resin to seal and protect the wood every 6-12 months, using about 10-20 kg depending on the size of the boat. Retailers indicate that most resin for sealing boats is sold during the early wet season from June until September. Boat owners tend to prefer unprocessed resin for boat sealing because of its price of about R800-R1000/kg (or $0.20-$0.25/kg) is cheaper than filtered resin.

As noted above, CDRI research indicates that much of the resin tapped in Kompong Thom is lower quality than in other provinces studied. This is also the resin that is supplying many domestic markets around the Great Lake and across the country (via distributors in Phnom Penh). According to wholesalers and distributors, in cases where the consistency of resin is too thick to be sold as a boat sealant, they may add kerosene as a thinner (up to one part kerosene to two parts resin). Kerosene is used sparingly since its cost of R1500/kg (or about $0.40/kg) is about twice that of poor quality resin.

Sealing and waterproofing a boat at Chong Kneas landing site, Siem Reap province

2.3.3. Boat Caulk

To fill spaces between a boat's boards, as well as any cracks or holes, boat owners use a thicker resin material composed mainly of resin waste materials and solid resin. Other materials, such as jute fibre, powders, and higher quality resin, may be added in small amounts. The mixture is usually heated for about three hours to create a black, sticky caulk. Prices for this boat caulk range from about R700-R900/kg (or $0.18-$0.23/kg).

[9] Based on a national socio-economic survey, National Institute of Statistics (2000) estimated that 232,000 households in Cambodia (11.1 percent of the population) owned boats in 1999. A similar survey conducted in 1997 found more than 160,000 households (or 8.5 percent of the population) owned boats. Households may own more than one boat. Extrapolating based on boat ownership statistics for 1997 and 1999, and population growth data, approximately 250,000-300,000 households owned boats in 2002.

Using resin materials to caulk gaps/cracks in boards of a boat, Kompong Chhnang province

2.3.4. Torches

Torches are a traditional means of providing light at night for rural Cambodians without electricity, especially those living in remote areas. In urban areas, torches are sometimes used for starting cooking fires. CDRI interviewed the head of a torch making business in Rovieng district, Preah Vihear. Torches are made with a combination of resin waste products (40 percent) obtained from a resin wholesaler for about R50-100 per kg and *preal* leaves (60 percent) collected from the forest. To make a torch, *preal* leaves are mixed with heated resin waste products, then shaped into torches and hung to dry. With a few hired labourers, the torch maker in Rovieng can produce 200-300 torches per day. Each torch is sold for R500 ($0.13), and the profit margin is about R250-R300 ($0.07) per torch after subtracting out the costs of labour, fuel wood, waste resin, and *preal* leaves.

Torches made using resin waste materials and preal leaves, used in rural areas for lighting at night and starting cooking fires

Chapter 3

The Logging Threat to Resin Trees

Before discussing research findings on resin production and trade in Cambodia (section 4.0), it is important to first examine the impact and future threat of logging to resin tapping activity. Indeed, efforts to improve the trade and marketing of resin products will be largely meaningless if the source of supply is lost. In other countries in the region, such as Malaysia, logging has had a significant impact on resin tree stands and overall resin production (Jantan *et al.* 1990, Gianno 1986, Gianno and Kochummen 1981). Widespread logging in Cambodia suggests the potential for a similar scenario.

Resin trees, including the most common *dipterocarpus* species, are commercially attractive to forest concessionaires and other loggers as a source of timber. To this point, the two most well known trees for liquid and solid resin production (*chheu teal* and *jor chong* respectively) appear as two of the Department of Forestry and Wildlife's "Main Tree Species for Timber Production" (Department of Forestry and Wildlife 2003). The timber of most tree species tapped for resin is classified as Second Grade, rather than Luxury or First Grade, because of the oily, resinous quality of the wood. However, most of the timber logged in Cambodia is within this Second Grade category (Department of Forestry and Wildlife 2003).

The logging of resin trees is prohibited under Cambodian law. Harvesting resin trees was first prohibited under the *Forest Practice Rules* (Kret no. 35, 25 June 1988), the main law governing the forestry sector prior to the recent passage of the *Forestry Law* in 2002. Article 17(g) of the 1988 law stated "[It] shall be forbidden... to fell the trees that people have tapped for resin...". However, Article 18 of the law effectively left the decision about cutting resin trees to the discretion of the Ministry of Agriculture by stating "...the felling of resin trees, shall be permitted only if there is authorization from the Ministry of Agriculture".

To strengthen efforts to stop the logging of resin trees, a "directive order" was issued by the Prime Minister calling for the suspension of the cutting of resin trees in April 2001 (letter number 33 Tor/2001, 18 April 2001). The order referred to the complaints of local people concerning the cutting of resin trees by forest concession companies. This message was somewhat obscured, however, by a letter issued a few days later from the Director of the Department of Forestry and Wildlife. The letter referred to the suspension of resin tree cutting as temporary, requested that concessionaires study the potential for alternative employment for tappers, and concluded with a statement that "permission to *resume* the cutting of resin trees can be discussed after you have finished and presented the results of the above study" (Letter No. 740 Rbro. KKB, 26 April 2001) (emphasis added).

With the passage of the *Forestry Law* in 2002, the cutting of resin trees was again prohibited under Article 29.

Article 29:

A. *Unless authorized by MAFF for specific exceptions (e.g. a weather emergency or trees removed from previously authorized forest road constructions or other conditions proposed by the Forest Administration), it shall be prohibited to harvest the following anywhere within the Permanent Forest Estate:*

   1. *Tree species whose diameter is smaller than the diameter allowed to harvest;*
   2. *Rare tree and vegetation species;*
   3. *Trees within a species that local communities have tapped to extract resin for customary use; and*
   4. *Trees that yield high-value resin.*

B. *MAFF shall issue a Prakas to determine the tree and NTFP species and specifications that are prohibited by this Article.*

Article 29 provides the most concrete statement against cutting resin trees to date. If the tree is within a species tapped for resin, it should not be cut.[10] Although there is much agreement about which tree species are most commonly tapped for resin (*dipterocarpus* or *chheu teal* in Khmer), a variety of other tree species are also tapped. MAFF should be encouraged to clearly specify all tree species that may not be cut (via the *Prakas* referred to in part B of the Article) as soon as possible to ensure against any potential confusion. Such action to prevent the cutting of resin trees would be in line with recent comments from the Prime Minister to provincial and municipal leaders on enhancing rural livelihoods (see box).

Extract from a Keynote Lecture by Prime Minister Hun Sen: "The Economic Government and Strategies to Enhance Rural Livelihoods"

Since before the creation of the Second-term Government, we made a declaration about forestry reform, to which we have committed ourselves up to now. But we should not forget that the forest has many enemies: legal and illegal loggers, people who need land to grow crops, forest fire,.… [T]his issue is definitely related to the livelihood of rural people. That is why in the Consultative Group meeting between the Royal Government and the donor community in January, I already recommended to the Ministry of Agriculture to give highest priority to the survey [of forestry resources] in order to produce an appropriate map for a number of concessions. And in this, we must give first priority to the people. On the other hand, forests, trees, and sacred woods are all provided for in the law. But at that time [Consultative Group meeting in January 2003] I also made a clear recommendation that the forests where people tap resin should not be allowed for logging. For example, in one village there are 5,000 resin trees. We should keep these 5,000 trees. If the forest concessionaires restart their activities, these 5,000 trees should not be touched. They can be kept for 200, 500, and even 1,000 years and the trees will not go bad or turn sour. Here there is nothing to worry about. The worry is rather that if we are unable to create jobs for them and we cut down the [resin] trees, then people will tap other trees. That is why it is better to keep resin trees for them. Normally in a forest concession a tree can be cut down if the forestry officer puts a mark on it designating it for cutting. So the forestry department shall not mark the trees that can be kept for 100, 500, 1000 years without problem. They are our natural resource, and villages in rural area are dependent on them.

Source: Cambodia Development Resource Institute (2003)

[10] In checking the translation of Article 29 from Khmer to English, it was found that the Khmer term (*prophet*) more literally translates as "type or kind" rather than species. It is unclear how this affects interpretation and implementation of the Article.

Despite the illegality, numerous cases of resin tree logging have been reported over the past few years. For example, in Mondulkiri, Evans *et al.* (2003) found that three villages had lost more than 3,000 trees tapped for resin – about 20-30 percent of all their actively tapped trees – due to logging within the Samling International concession. This logging had mainly occurred in 1998-99. In Siem Reap and Oddar Meanchey provinces, the manager of the Samrong Wood concession estimated that resin trees accounted for about 80 percent of the company's harvest in 2001, of which about 20 percent of the trees were being actively tapped (Global Witness 2002). In a more recent case, several reports have called attention to the logging of resin trees inside and outside of Tumring Rubber Plantation in Kompong Thom province (NGO Forum *et al.* 2002, BBC News 2002, The Economist 2003, The Cambodia Daily 2003).

Harvested tree species are recorded in official "logbooks" of the Department of Forestry and Wildlife and concession companies. Logbook records confirm that resin tree species are an important source of timber for concession companies. Based on available statistics for six companies, trees in the *Dipterocorpaceae* family accounted for nearly all species harvested in 2001, with *chheu teal* trees comprising about 30-90 percent of the harvest depending on the concessionaire (Table 3.1). In addition, *jor chong* – the main species producing solid resin – as well as other species known to be tapped for resin were harvested (e.g., *trach*). Logging statistics for other concession companies were not available.

Table 3.1. Species Harvested by Six Concession Companies in 2001

Names of Species Harvested		Concession Company, Location of Concession, and Species Harvested as a Percentage of Total Species Harvest in 2001					
Khmer Name for Species	Scientific Name for Family and Species	Pheapimex Fuchan (Ratanakiri, Stung Treng)	Pheapimex Fuchan Thalabariwat (Stung Treng)	Mieng Ly Heng (Kompong Thom, Preah Vihear, Kompong Cham)	Samrong Wood (Siem Reap)	Timas Resources (Kompong Cham, Preah Vihear, Kratie)	Chemdar Plywood (Preah Vihear)
Chheuteal	*Dipterocorpaceae – Dipterocarpus Alatus, Costatus, Dyori, Jourdani*	80.0%	89.3%	78.2%	30.7%	45.1%	27.7%
Phdiek	*Dipterocorpaceae – Anisoptera Glabra*	5.4%	8.0%	18.5	58.1%	51.3%	59.8%
Jor chong	*Dipterocorpaceae – Shorea Vulgaris*	8.0%	-	1.3%	-	0.9%	0.3%
Trach	*Dipterocorpaceae – Dip- terocarpus Intricatus*	3.1%	-	-	0.8%	-	-
Koki	*Dipterocorpaceae – Hopea Helferi, Odorata, Ferrea*	-	-	-	4.3%	0.1%	9.5%
Other	Four other species	3.2%	2.5%	1.8%	5.9%	2.1%	2.7%

Source: Species harvested by concessionaires in 2001, Department of Forestry and Wildlife – company harvest logbooks, as reported in Global Witness (2003).

In light of the importance of resin trees to commercial logging, if the prohibition on cutting resin trees is enforced, some concessions may no longer be viable (or certainly not as profitable). Indeed, concessionaires already complain about their lack of profitability and the additional burdens and costs associated with adopting sustainable forest concession management (KPMG 2001). Unfortunately, in some forest areas there appears little room for a "win-win" solution – maintenance of resin tapping income *and* commercial logging.

Due to financial incentives (and based on evidence of past practices), if commercial logging occurs in forest areas with resin trees, it can be expected that resin trees will be cut. At present, forest concession management plans under review provide little information on resin trees within concession areas. To support sound forest management, these plans should be improved to include relevant information on resin trees in inventory data, environmental and social impact assessments, and management strategies. More broadly, a clear forest management decision is needed about whether commercial logging will be permitted in any manner in areas with resin trees. Without such interventions, the cutting of resin trees will likely continue, conflicts over resin trees could increase, and thousands of rural Cambodians dependent on resin tapping could lose a vital source of income – an outcome that clearly runs counter to national poverty reduction objectives.

Chapter 4

Resin Production and Marketing

Resin tapping occurs across most of Cambodia's forest areas, with the most prevalent activity in the north and northeast regions, including the provinces of Kompong Thom, Preah Vihear, Siem Reap, Kratie, Stung Treng, Mondulkiri, and Ratanakiri. Tapping activity also occurs in Koh Kong in the southwest and Oddar Meanchey in the northwest, as well as in isolated forest areas of a number of other provinces (Cock *et al.* forthcoming). From forests, resin is often transported significant distances to domestic markets around the Tonle Sap, south to the Mekong Delta region, and for export to Vietnam, Thailand, and Laos (which reportedly re-exports resin to Thailand) (Enfield *et al.* 1998, Nicholson 1997). Although the overall scale of Cambodia's resin production is difficult to estimate with precision, based on CDRI research and findings from other studies, it appears that approximately 20,000 tonnes of resin are collected annually, and that this activity provides a source of income for roughly 100,000 rural Cambodians.[11]

Of the 20,000 tonnes of resin collected in Cambodia each year, approximately 3,000-4,000 tonnes is sold domestically and the remainder (roughly 16,000-17,000 tonnes) is exported, primarily to Vietnam.[12] Domestic demand for resin is mainly driven by the need of more than 250,000 Cambodian households to seal and waterproof their boats each year. Demand for resin in Vietnam appears to be driven by the needs of paint and varnish manufacturers, but CDRI could not confirm primary export uses. The annual market/export value of resin production in Cambodia is approximately $6 million.[13]

Trade involves the sale of resin from tappers to a marketing chain that includes traders, wholesalers, transporters, domestic retailers and exporters. Mapping this market structure in all its complexity is a significant challenge due to the many forest areas in Cambodia

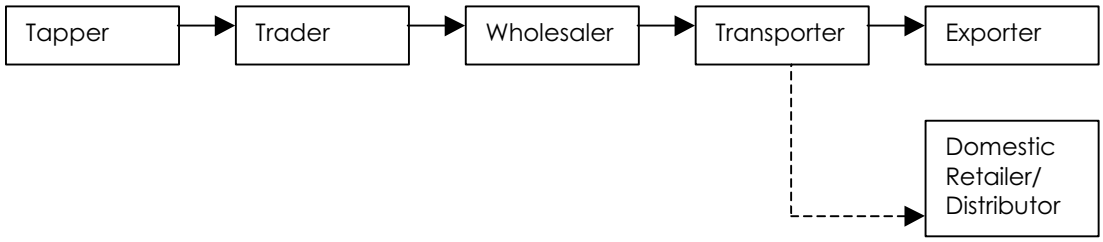
[11] Although no formal survey of tapping areas across Cambodia has been conducted to support a precise estimate of resin production, a number of different sources of information make it possible to develop an approximate estimate of production levels. These sources include: (a) production data collected by CDRI for four trade routes (about 5,000 tonnes per year); (b) information on these and other major resin production areas in Cambodia (Cock *et al.* forthcoming); (c) data on tapping areas and households collected by CDRI from representatives of nine provinces of the NGO Forum-supported forestry network; and (d) information on the average resin yield per tree and typical number of trees tapped per household collected by this study and others (Evans *et al.* 2003, Cock *et al.* forthcoming).

[12] The estimate of domestic demand is based on the amount of resin required annually to seal and waterproof boats in Cambodia. This figure has been developed using data on the number households owning boats (250,000-300,000), the average amount of resin required to seal a typical small boat (10-15 kg) and medium-size boat (20 kg), and the average frequency that boat owners reseal their boats (every 6-12 months). The resin export estimate reflects the difference between the estimate of annual domestic consumption and total production, as well as anecdotal information from resin transporters and exporters.

[13] Estimate based on the average export price multiplied by amount of resin exported plus the average domestic price multiplied by amount of resin domestically consumed.

providing sources of resin, thousands of tappers, traders, and others active in the trade, the range of trade relationships, and the variety of different trade and export routes. However, based on the four resin trade routes studied, it is possible to identify a generalised market structure (Figure 4.1). A detailed description of each actor in this market structure is provided below, followed by specific information on resin marketing approaches for each of the four trade routes.

Figure 4.1. Generalised Market Structure for Resin Trade in Cambodia



- **Tappers** travel to forest areas to collect resin from their trees every 5-15 days. They may collect from one to three containers (30-90 liters) of resin per trip, which they sell to traders, either at the forest, the tapper's village, or along the road. To ensure an exclusive supply of resin from tappers, wholesalers often offer credit to tappers in the form of rice, other food items, and cash. This is provided directly to the tapper or through trusted traders. Equipment for tapping and collecting resin may also be provided free of charge. Borrowing by tappers is most common during the wet season, at the time of rice transplanting and just before rice harvest. Loans may be paid back in as little as 7-10 days or over as long a period as six months with no interest payment. However, in Preah Vihear, prices are reduced by R100-150 per kg of resin for tappers with outstanding loans. In Mondulkiri, prices for borrowing and non-borrowing tappers were observed to be the same, suggesting that credit is only used as a tool to help ensure a stable resin supply.
- **Traders** purchase resin from tappers in the forest or at tappers' villages, some of which may be in remote areas. Traveling by motorbike, traders can carry about 200 kg of resin (six to seven containers).[14] Some traders use oxcarts, which can transport about 300-400 kg of resin. Traders then bring resin to a more central or semi-urban area for sale to a wholesaler. Traders may operate independently from wholesalers (as in Mondulkiri), or in a close relationship with a wholesaler (as in Preah Vihear).
- **Wholesalers** purchase resin from traders and tappers, in some cases perform filtering, and stock it until they have enough for a shipment (usually about 1–2 tonnes). As noted above, wholesalers may provide credit to traders and tappers to ensure a supply of resin. Wholesalers indicate that they do not depend on external credit sources; their businesses are self-financed. For resin destined for export, wholesalers usually perform filtering in a rudimentary manner to improve resin quality. Resin intended for domestic markets may also be filtered, or sold as a raw product to distributors and retailers who may process it depending resin quality and customer needs.
- **Transporters** ship resin from wholesalers to exporters or domestic distributors/retailers. using either trucks or taxis. For export, transporters purchase resin from a wholesaler, transport it by truck, and sell it to an exporter. In contrast, resin for domestic markets is usually transported (surreptitiously) in the trunk of

[14] For resin production in Cambodia, tappers usually measure resin amounts by the "kan" – a plastic container that holds 30 liters. However, traders, wholesalers, and exporters all measure resin amounts by weight (kilogram and tonne) rather than volume.

passenger taxis. Taxi drivers do not purchase the resin, they simply transport it to a distributor or retailer for a set fee paid by the wholesaler.

- **Exporters** aggregate resin purchased from transporters for export. In some cases, exporters filter resin if wholesalers have not done so. For the trade routes studied, all resin exports were transported through Memot in Kompong Cham province to Vietnam. Shipments ranged in size from 1–20 tonnes.
- **Domestic Distributors/Retailers** purchase resin from wholesalers (transported by taxis). Retailers are mainly located in provincial markets or nearby fishing areas where the high number of boats creates a demand for resin. Four resin distributors were identified in Phnom Penh. They mainly purchase resin from Kompong Thom and distribute to Takeo, Kandal, Kompong Chhnang, Kompon Speu, Prey Veng, Svay Rieng, and Koh Kong provinces.

In the four areas studied, the choice of marketing methods and trade routes used is strongly affected by fee levels (and fee avoidance), resin quality, road conditions, and consumer demand for different resin products. Examples of how these factors influence the market structure and trade in each area are provided below.[15]

- **Mondulkiri:** In the past, small-scale traders in Keo Seima and O Reang districts operated independently, purchasing resin from tappers and making the short trip to the border with Vietnam at Labake. But after local authorities sharply increased fees along the road to Labake, traders could no longer export across this border point and make a profit. Indeed, the fees to export resin through Labake are more than 10 times the amount paid to export through Memot in Kompong Cham. Not surprisingly, to avoid fees the vast majority of resin collected in Mondulkiri is now exported through Memot rather than Labake, despite significantly higher costs to transport a shipment over the longer distance to Memot (see section 6.5). In addition, without the financial means to ship larger quantities of resin, small-scale traders must now sell resin to local wholesalers, rather than take it directly to the border.
- **Kompong Thom:** This study found that substantial quantities of poor quality resin (thicker consistency) are collected in Sandan district, Kompong Thom, where resin prices are substantially lower than elsewhere. As this resin quality does not meet standards for export, most is sold domestically through distributors in Phnom Penh to a range of provinces. To avoid checkpoint fees that would make the trade unprofitable, wholesalers cannot transport large quantities by truck. Instead they pay passenger taxis traveling from Kompong Thom to Phnom Penh to transport about 200 kg of resin in the trunk of their car.

Trader pouring resin from a 30-litre kan into a plastic bag for transport by oxcart

[15] Resin trade activities are more extensive than what is presented here because this research only covers a selection of trade routes and resin-producing areas. For example, whereas this study examines trade from Rovieng and Tbeng Meanchey districts to Vietnam via Kompong Cham, resin produced in other districts in Preah Vihear is known to be traded to Vietnam via Stung Treng and to Thailand through Laos.

- **Preah Vihear:** In Tbeng Meanchey and Rovieng districts, wholesalers employ approximately 5-10 village traders to purchase resin from tappers. These traders can earn R500-1000 per container of resin (about 28-30 kg). Traders bring resin to their wholesalers/employers, who filter it and aggregate it into large shipments (20 tonnes). These shipments are sold to transporters, who then sell it to exporters in Kompong Cham. In the past, wholesalers report that resin was sold to distributors in Phnom Penh. However, the recognition that Preah Vihear resin was suitable for export, and that exporting resin provided a higher return than trading to Phnom Penh, resulted in a shift in the trade.
- **Oddar Meanchey:** Resin collected in Anlong Veng district is either sold in Siem Reap for domestic use or shipped across the country for export to Vietnam through Kompong Cham.[16] Similar to the transport strategy employed in Kompong Thom, resin shipped from Anlong Veng to Siem Reap is transported in the trunks of passenger taxis. Wholesalers in Siem Reap report that they now source resin from Anlong Veng because they can no longer purchase resin from Banteay Srei district, Siem Reap. Some wholesalers suggested that this has resulted due to logging of resin trees in Banteay Srei, while other wholesalers thought it was the result of a ban on resin transport by local authorities in the area. This study was unable to confirm either of these accounts.

Trader transporting resin by oxcart to a wholesaler in Tbeng Meachey, Preah Vihear province

[16] This study could not determine why resin is shipped such a long distance for export to Vietnam rather than sold for export to Thailand.

Chapter 5

Resin Trade Regulations and Actual Practice

With the aim of forest management and revenue generation, the government has established a number of permit, licensing and fee requirements to transport and export resin and other non-timber forest products (NTFPs). But in practice, almost no one active in the resin trade holds the appropriate licenses and permits. Instead, they work through an informal process involving numerous fee payments to a variety of institutions. This section provides an overview of key legal provisions and requirements for resin trade and highlights actual practices by officials and people active in resin marketing and trade.

5.1. Official Regulatory Requirements

The harvest, stocking, trade, and export of NTFPs can involve numerous permits and licenses (see *Appendix B: Articles 25 and 26 of the Forestry Law of 2002*). As noted previously, under Article 40 of the *Forestry Law*, local communities have "customary user rights" to harvest NTFPs (including resin) without a permit. However, in cases where these communities want to sell NTFPs to a third party (e.g., trader or wholesaler), a transport permit is required and fees may be imposed (Article 25.A.4 and 40.B.5). In effect, since nearly all resin is traded to a third party (except for a small fraction used in villages for traditional purposes such as torches), the resin collected by local communities is almost always subject to a transport permit and associated fees. In addition to the transport permit, resin wholesalers must hold a permit to stock and distribute resin (Article 25.A.8) and exporters must obtain an export license (Article 25.A.11).

Determining which offices within MAFF and the DFW are responsible for authorising and issuing permits and licenses is not clear. The *Forestry Law* provides for the establishment of the "Forest Administration". This is to be "the government institution for implementing the management of forest and forest resources. The Forest Administration shall be organized as a direct, vertical structure divided into the following hierarchical levels: central level, regional inspectorates, cantonments, divisions, and triages" (Articles 6.A and 6.B). Elsewhere in the law the authority for approving and issuing permits and licenses is assigned to the Minister of MAFF, Director of the Forest Administration, Cantonment Chiefs, and Division Chiefs, with no mention of "regional inspectorates" and "triages" (see box, Article 26). In practice, since the "organization and functioning" of the Forest Administration has only recently been established by *Prakas* in September 2003, forest management responsibilities presently are administered by MAFF, DFW, and Provincial Forestry Offices (PFOs).[17]

In *Guidelines on Official Fee Rates for Forest Products* (2000), MAFF establishes fees for the transport of 71 types of forest products, including resin (see *Appendix C* for a complete list of forest products). According to the guidelines, forestry officials are to assess a fee of

[17] For elaboration on the structure of the new Forest Administration, see "Prakas on the Organization and Functioning of Forestry Administration", No. 509 PK/MAFF/B (17 September 2003)

R315 per kg of resin – R300 for a "transport fee" and an additional 5 percent (R15) for "forest management". Fee rates for resin and a number of other frequently traded forest products are shown in Table 5.1.

Table 5.1. Official Fee Rates for Selected Forest Products

Type of Forest Product	Unit	Total Fee (R/unit)[1]	Total Fee ($/unit)	Total Fee ($/tonne)
Resin	1 hab = 60 kg	18,900	$4.8	$80.4
Charcoal	1 hab = 60 kg	6,300	$1.6	$26.8
Bamboo (stem diameter >5 cm)	1 tonne	15,750	$4.0	$4.0
Bamboo (stem diameter <5 cm)	1 tonne	10,500	$2.7	$2.7
Vine	1 hab = 60 Kg	63,000	$16.1	$267.9
Rattan	1 tonne	262,500	$67.0	$67.0
Fuelwood	1 stere = 1m3	10,500	$2.7	-
Pole (stem diameter 0.15 - 0.19 m)	1 pole	6,300	$1.6	-
Pole (stem diameter 0.10 - 0.15 m)	1 pole	3,150	$0.8	-
Pole (stem diameter <0.10 m)	1 pole	1,050	$0.3	-

1 Total fee is equal to the transport fee plus a five percent forest management fee.
Source: Ministry of Agriculture, Forestry and Fisheries (2000).

Based on the current official permitting and licensing system, analysis of relevant Articles of the *Forestry Law*, and information from *Guidelines on Formal Fee Rates for Forest Products*, official requirements for resin stocking, transport, and export can be summarised as follows:

- **Stocking permit:** In their application for a stocking permit, resin wholesalers must estimate the amount of resin that they plan to stock over the course of one year. Currently, permit applications are submitted to MAFF, after first being approved by the relevant PFO. MAFF may request technical support from DFW. Under the forthcoming Forest Administration, the Cantonment Chief will have the authority to issue this permit (Article 26.C.2).
- **Transport permit:** Presently, to transport resin within a province requires approval of the PFO. No payment is officially required. To transport resin across provinces within Cambodia requires approval of the PFO and a transport permit obtained from the DFW in Phnom Penh. A fee of R315 per kg of resin must be paid to either DFW or the PFO. Under the forthcoming Forest Administration, a number of different authorities may play a role in issuing transport permits. At the local level, the Division Chief will have the authority to issue a transport permit for resin traded from an area under the Division Chief's jurisdiction (Article 26.D.2). If the area is a community forest, a transport quota permit authorised by the Cantonment Chief is required (Article 26.C.4). If the area is a forest concession or production forest not under a concession, a transport quota permit authorised by the Director of Forest Administration is required (Article 26.B.2). Finally, if resin is intended for export, a transport permit must also be authorised by the Director of Forest Administration (Article 26.B.3).
- **Export license:** To export resin currently requires approval from the PFO, a transport permit from DFW, and approval of an export license from the Ministry of Commerce and Council of Ministers. In addition to R315 per kg, the exporter will be charged a 'service fee' equal to one percent of the total value of the resin exported plus a royalty fee. (This study was unable to determine the official amount of the royalty fee). Under the forthcoming Forest Administration, export of resin will require an export license authorised by the Minister of MAFF, following approval from the Royal Government of Cambodia (office not specified) (Article

26.A.2). Further requirements include a transport permit and "permit or visa on the export-import license" from the Director of Forest Administration (Article 26.B.5), and applicable transport permits from the Division Chief and/or Cantonment Chief.

5.2. The System in Practice

In practice, applications for resin transport and stocking permits are rare, no one holds an export license, and no one is paying official rates. In the few cases where transporters have obtained an official transport permit for resin from DFW, the permit vastly underreports the actual quantities of resin transported. According to transporters, it is typical for about one-fourth of the actual shipment to be officially recorded on a transport permit. Underreporting allows forestry officials to charge an informal fee on top of the official payment, a practice similar to that employed by fisheries officials in the export of fish (Yim and McKenney 2003). Regarding export licenses, this study was unable to identify any actors in the trade with a license, and a DFW representative confirmed that no one has applied for a resin export license since 2000.

Compliance with the official system of permits, licenses and fees governing resin marketing is extremely difficult. This is especially true for small businesses, which lack the means to pay official fees or to travel to Phnom Penh to obtain a transport permit and/or export license. Therefore, almost all resin trade and export must be conducted on (technically) an illegal basis. Consequently, the system generates almost no formal government revenue. What the official system does provide is a basis from which a variety of local authorities and officials can justify the collection of informal fees.

Fee collectors identified by this study include officials from DFW, PFOs, and the Ministry of Environment, as well as district officials, police, economic police, military, and military police. One of the most common practices for extracting fees is to "check" the transport permit. Since officials know that transporters will either have no transport permit, or a permit with a clear underestimation of the actual resin amount, they can count on permit "checking" as a reliable basis for fee extraction. The same approach is employed by officials collecting fees on fish exports (Yim and McKenney 2003).

It is important to point out that the informal fee collection system is also quite variable, making those working in the resin trade uncertain about their costs. First, the same institution may collect fees at several points in the transport of resin; there are no receipts with which transporters can prove previous payment to an institution. Second, local fees may vary considerably from district to district. For example, fees charged by district officials in Keo Seima, Mondulkiri province are five times as high as fees in the adjacent district of O Reang. Third, traders and wholesalers report instances in which local authorities have raised fee levels without warning, sometimes to more than double the previous rate. Finally, although fee levels may be established, all fees are open to some amount of negotiation, making it possible for fees to differ depending on a variety of factors including the "mood" of the fee collector that day.

Chapter 6

Analysis of Costs and Fees for Resin Trade

The main constraints on resin trade are transportation costs and a multiplicity of informal fees. Although these costs are imposed on the marketing of resin, rather than resin tapping, the costs can nonetheless have a significant impact on tappers' incomes. When marketers of resin incur significant transaction costs, such as fees, they may not be able to absorb them and continue to make a profit. In such cases, they must pass on costs to tappers in the form of lower prices for resin. As one trader put it, "*when the authorities raise the fees, I cannot pay all of it and make a profit, so I must reduce the price I pay to villages for resin."*

The collection and trade of NTFPs is recognised as an important source of income in rural areas of Cambodia. To date, however, no quantitative assessment has been undertaken to determine the costs associated with marketing NTFPs in Cambodia and for export. This section quantifies the costs and fees involved with marketing resin. In light of current trade regulations and practices for NTFPs, this case analysis of resin is likely to be representative of trade conditions for other NTFPs. The purpose of this analysis is to better understand the magnitude of trade costs and fees and, in turn, their potentially negative impacts on rural incomes.

Table 6.1. Margin and Cost Analysis of Resin Trade in Cambodia for Four Trade Routes

Margin and Cost Analysis	**Trade Route 1:** Mondulkiri-Kompong Cham-VN		**Trade Route 2:** Preah Vihear-Kompong Cham-VN		**Trade Route 3:** Kompong Thom-Phnom Penh		**Trade Route 4:** Oddar Meanchey-Siem Reap	
	Riel/kg	$/tonne	Riel/kg	$/tonne	Riel/kg	$/tonne	Riel/kg	$/tonne
Price paid to tappers	759	194	414	105	261	67	437	111
Export/market price	1275	325	1250	319	675	172	861	220
Price margin (tappers to export/market)	515	131	836	213	414	106	423	108
Total trade costs (costs from tappers to export/market, excluding fees)	226	58	354	90	175	45	127	32
Fees	120	31	240	61	82	21	109	28
Profit margin[1]	168	43	241	61	155	40	187	48
Fees as % of total costs	35%		40%		32%		46%	
Fees as % of "potential" profit[2]	42%		50%		35%		37%	

[1] *This margin represents profit in cases where business owners have included their wages within their operating costs. If they are not paying themselves a daily wage as part of operating costs, this margin reflects net revenue.*
[2] *Potential profit is equal to the price margin (tappers to export/market) minus total trade costs (excluding fees).*

For each of the four trade routes studied, CDRI collected information on trade practices, prices and margins, trade costs (capital, operating, and working capital costs) and fees. As indicated in Table 6.1, there is significant variation in prices, costs, and fees among the trade routes. For example, consider that a tapper who collects one tonne of resin annually from trips to the forest would receive only about $67 for his resin in Kompong Thom due to poor resin quality, but could make three times as much in Mondulkiri ($194). In Preah Vihear and Oddar Meanchey, the tapper would receive just over $100, even though the resin quality is similar to that in Mondulkiri. Such price differences for resin producers across the four trade routes can be explained by a number of factors, including resin quality, distance from tappers' villages to a final market, level of fees along the trade route, and end markets (export prices are higher than domestic prices).

6.1. Tappers' Share of Resin Market Value

Comparing producer prices to domestic/export market prices, tappers in Mondulkiri capture the highest percentage of the market value of resin – about 60 percent ($194 out of $325 per tonne). This appears to be the result of a high level of resin trade activity in Mondulkiri, which encourages freer market competition, the bidding up of producer prices, and lower profit margins for marketers of resin. Close proximity to Vietnam also means that transport costs are lower than for resin exported from Preah Vihear. But these costs could be even lower if high fees to the nearby Labake border point did not force transporters to make longer trips to export via Memot in Kompong Cham (see section 6.5).

In contrast to Mondulkiri, tappers in Preah Vihear and Kompong Thom only receive about one-third of the market value of their resin ($105 out of $319, and $67 out of $172 per tonne, respectively). In Preah Vihear, this poor return for tappers may be due to the high level of market power maintained by the area's two major wholesalers. Each wholesaler targets resin collection (by their hired traders) in a different district. In turn, the lack of competition for resin supply may result in lower prices to tappers. In addition, costs associated with the longer distance to market and higher fee levels from Preah Vihear to Kompong Cham/Vietnam reduce the prices received by tappers. In Kompong Thom, returns for tappers appear to be affected by the high risks surrounding resin transport. Although passenger taxis carrying resin can usually avoid fees along the road, if caught the resin can be confiscated and a severe penalty imposed (as high as R1 million, or about $250). In taking such risks into account, resin wholesalers and transporters offer lower prices to tappers.

6.2. Trade Costs

Trade costs refer to all operating, capital, and working capital costs involved with storing, aggregating, and transporting resin from tappers' village (or the forest gate) to an end market. Operating costs include everyday business expenses such as transportation and fuel, labour, and resin storage bags. Longer-term investments in trucks, boats, drums, plastic containers, scales, and the warehouse area are included as capital costs. Working capital is the amount of cash kept on-hand to operate a business and conduct trade. There is an "opportunity cost" to working capital, since this cash could be used for other investment purposes but is instead held within the business. All fees on the trade of resin have been *excluded* from trade costs to allow for an analysis that separates typical business-related trade costs from fees imposed under various regulations.

Trade costs range from $32-$90 per tonne, depending on the trade route. On average, trade costs are approximately $56 per tonne or about 40 percent of the marketing margin (market/export price minus price received by tapper). Transportation and fuel costs account for about 80-90 percent of trade costs. In comparison, other expenses for resin storage, labour, capital investments, and working capital are quite minimal. Thus, trade costs are largely correlated with the distance from wholesalers to end markets, with the highest costs ($90 per tonne) incurred for trade from Preah Vihear to Kompong Cham/Vietnam.

6.3. Fees

In addition to typical trade and business costs (transport, labour, and storage equipment), there are significant fees imposed on the marketing of resin. For the four trade routes studied, fees on resin trade range from $21-$61 per tonne. On average, fees across the four trade routes are about $37 per tonne, or approximately 26 percent of the marketing margin. If applied to all 20,000 tonnes of resin produced and traded annually in Cambodia, total fees on resin range from about $500,000 to $1 million per year.

Fees are paid along the road and at different transaction points. All fees are either informal payments or payments made on an official basis but not at the official rate. On average, such fees add 65 percent to the total costs of resin marketing (i.e., fees add $37 to costs of $56 for total costs of $93 per tonne). Fees also dramatically reduce the amount of profit that can be earned on resin marketing. While profit on resin trade from the tappers' village to end market currently averages about $47 per tonne, it would be about 80 percent higher ($84 per tonne) if fees were not imposed.

6.4. Summary of Fees: Resin Trade from Preah Vihear and Mondulkiri

The impact of fees on resin marketing costs and profits warrants closer analysis. This section provides a detailed examination of shipments for two trade routes – one from Tbeng Meanchey district, Preah Vihear to Skoun district, Kompong Cham and on to the Vietnamese border (Table 6.2) and the other from Keo Seima district, Mondulkiri to Memot district, Kompong Cham and on to the Vietnamese border (Table 6.3). These shipments illustrate the potential variance in fee amounts, number of payments, and fee collecting institutions.

From tapping villages in Preah Vihear to the Vietnamese border, the fees imposed on a 20-tonne shipment of resin amount to $1,344 (or $67 per tonne). This trade involves 43 payments in 14 different locations to national, provincial and local institutions and authorities. Forestry officials dominate fee collection for this trade route, accounting for 20 of the payments and about 75 percent of the overall fee amount. Another 17 payments are made to police, economic police, military police, and military. The remaining six payments are made to environment, customs, and district officials. It is notable that this is the only shipment identified by CDRI research to have been made with an approved transport permit from DFW in Phnom Penh. The transporter complained that, despite paying a sizeable fee to DFW and having in possession an approved permit, he still had to make numerous informal payments to forestry officials along the trade route. There was no export license for the shipment.

Table 6.2. Fee payments for a 20-tonne resin shipment from Preah Vihear to Vietnam

Area	Items	Fee Collecting Institution	Actual Rate				
			R/kg	$/Tonne	R/Shipment	$/Shipment	% of Total Fee
Phnom Penh	1. Department of Forestry and Wildlife	Fee paid to get license	157.5	40.2	3,150,000	803.6	59.8%
		Service charge for exporting (1% of total export value)	0	0.0	0	0.0	
		Royalties rate*	0	0.0	0	0.0	
Preah Vihear	2. Preah Vihear town	Provincial Forestry Office	2.5	0.6	50,000	12.8	1.0%
		Forestry Section	3.5	0.9	70,000	17.9	1.3%
		Economic police	2.5	0.6	50,000	12.8	1.0%
		Military Police	0.5	0.1	10,000	2.6	0.2%
	3. Chi Ok	Military Police	1.5	0.4	30,000	7.7	0.6%
		Provincial Forestry Office	3.5	0.9	70,000	17.9	1.3%
		Economic police	2.5	0.6	50,000	12.8	1.0%
		Provincial Environment Office	1.5	0.4	30,000	7.7	0.6%
Kompong Thom	4. Sala Visay	Provincial Forestry Office					
		Military Police					
		Economic police					
		District Soldier					
		Police					
		Provincial Environment Office	10	2.6	200,000	51.0	3.8%
	5. Kompong Svay District	Department of Forestry and Wildlife					
		Provincial Mobile Foretsry Office					
		Sangkat Forestry					
		Forestry Section					
		Provincial Environment Office					
		Military Police					
		Economic Police	20	5.1	400,000	102.0	7.6%
	6. Mobile Checkpoint	Provincial Military Police	2.5	0.6	50,000	12.8	1.0%
	7. Mobile Checkpoint	District Military Police	2.5	0.6	50,000	12.8	1.0%
	8. Mobile Checkpoint	Economic Police	1.5	0.4	30,000	7.7	0.6%
	9. Mobile Checkpoint	Provincial Forestry Office	1	0.3	20,000	5.1	0.4%
	10. Taing Krasang	Forestry Office (unclear)	1.5	0.4	30,000	7.7	0.6%

Area	Items	Fee Collecting Institution	Actual Rate				
			R/kg	$/Tonne	R/Shipment	$/Shipment	% of Total Fee
	11. Kompong Thmor District	Department of Forestry and Wildlife					
		Mobile Forestry Office					
		Sangkat Forestry					
		Economic Police (from Ministry)					
		Provincial Economic Police	15	3.8	300,000	76.5	5.7%
Kompong Cham	12. Cheung Prey District	Provincial Forestry Office	1.5	0.4	30,000	7.7	0.6%
		Department of Forestry and Wildlife	3	0.8	60,000	15.3	1.1%
		Military Police	1.5	0.4	30,000	7.7	0.6%
	13. Prey Chhor District	Department of Forestry and Wildlife	5	1.3	100,000	25.5	1.9%
	14. Border	Customs Office					
		Department of Forestry					
		Ministry of Environment					
		District Official					
		Police	22.8	5.8	27,336	116.2	8.7%
Total	**14 locations**	**43 payments**	**263**	**67**	**4,810,000**	**1344**	**100%**

The role of fees in resin trade from Mondulkiri to the Vietnamese border is quite different. Fees imposed on a 1.2-tonne shipment amount to about $30 (or about $25 per tonne). This trade only involves 11 payments in three locations. In comparison to trade from Preah Vihear, forestry officials play a minimal role in fee collection. Rather it is police working on behalf of district officials who demand the most fees – about two-thirds of the total. Smaller payments are made to forestry, environment, military, and customs officials.

Table 6.3. Fee payments of 1.2-tonne resin shipment (Keo Seima, Mondulkiri to Memot, Kompong Cham)

Area	Items	Fee Collecting Institution	Actual Rate				
			Riel/kg	$/Tonne	R/Shipment	$/Shipment	% of Total Fee
Mondulkiri	Keo Seima District	District Official	51	13.0	61,044	15.6	52.5%
		District Official	8	2.1	9,996	2.6	8.6%
		Provincial Forestry Office	8	2.1	10,000	2.6	8.6%
		Police	3	0.9	4,000	1.0	3.4%
Kompong Cham	Memot District	Environment Office	0	0.0			
		District Military Office	3	0.9	4,000	1.0	3.4%
	Border	Customs Office					
		Ministry of Environment					
		Department of Forestry					
		District Official					
		Police	22.8	5.8	27,336	7.0	23.5%
Total	**3 locations**	**11 payments**	**97.0**	**24.7**	**116,376**	**29.7**	**100%**

6.5. Impacts on Trade Efficiency

In addition to fees actually paid, the *threat* of fees causes economic losses due to trade inefficiencies. Resin traders will go to great lengths to avoid paying high fees, since their payment would often result in a loss rather than profit. For example, rather than shipping resin efficiently in a large truck (and paying high fees), it is common to ship smaller quantities of resin (200 kg) from Kompong Thom and Oddar Meanchey in the trunks of taxis. While shipping via several taxis raises transport costs, traders have calculated that it is cheaper than a truck shipment subject to fees.

Likewise, traders in Mondulkiri refrain from exporting at the nearby border point of Labake because fees are too high, opting instead to go a longer distance and export resin via Memot in Kompong Cham. This additional travel distance adds roughly $12 per tonne in transport and fuel costs, equal to about 20 percent of total marketing costs (excluding fees). Wholesalers and transporters in Mondulkiri also reported that per-tonne fees on smaller resin shipments (1-2 tonnes) are about half as much as per-tonne fees on larger shipments (10 tonnes). This creates disincentives for transporting resin more efficiently in large shipments.

6.6. Implications for Future Compliance with Official Regulations

As noted above, all fees paid on the resin trade are either informal payments or payments made on an official basis but not at the official rate. One response to this lack of compliance might be to recommend enforcement of official fees and removal of informal payments. However, with the exception of trade from Preah Vihear where fees already total to 86 percent of official rates, such enforced compliance with official fees would make most resin

trade unprofitable (Table 6.4). For example, a profit of $40 per tonne can be earned on resin marketed from Kompong Thom after payment of informal fees of $21 per tonne. But if fees are enforced according to official rates of $80 per tonne (and all informal payments are eliminated), this profit will become a loss of $20 per tonne. Prior to any efforts to improve compliance with official fees, the fee system itself needs to be reformed so that its enforcement does not result in the collapse of resin trade.

Table 6.4. Actual Fee Payments Compared to Official Fee Payments (if enforced)

	Trade Route 1: Mondulkiri-Kompong Cham-VN	**Trade Route 2:** Preah Vihear-Kompong Cham-VN	**Trade Route 3:** Kompong Thom-Phnom Penh	**Trade Route 4:** Oddar Meanchey-Siem Reap
	$/tonne	$/tonne	$/tonne	$/tonne
Actual Fees	31	67	21	28
Official Fees[1]	80	80	80	80
Actual Fees as a Percentage of Official Fees	38%	84%	26%	35%
Current Profit Margin	43	55	40	48
Profit Margin if Official Fees are Imposed (and informal fees are removed)	**-7**	**42**	**-20**	**-5**

[1] *Fees are based on the official rate of R315 per kg of resin, converted to $/tonne.*

Chapter 7

Conclusions and Recommendations

The government has recently acknowledged some of the problems with the NTFP permit and licensing system and has indicated an interest in reviewing the system and improving market conditions. As stated in the government's *National Poverty Reduction Strategy 2003–2005*:

> *The Forestry Law will be reviewed as information on its effectiveness and implementation is gathered. The system of fee and permits on NTFPs will also be reviewed in consultation with local user groups. Additionally, efforts should be made to remove barriers to marketing NTFPs (especially resin), since NTFPs can be harvested without negatively affecting the forest and are of great importance for rural household economy.*

In reviewing the *Forestry Law* and associated regulations, the government has the opportunity to consider how best to transform the current framework so that it plays a stronger role in supporting key government policy objectives. These objectives include reducing poverty, ensuring food security, increasing pro-poor trade and rural development, and improving forest management. Implications from this study for making progress toward these objectives are discussed below.

7.1. Implications for Poverty Reduction and Food Security Objectives

As discussed in section 1.2, this study focuses on resin traded from several forest areas known for chronic rice-deficits and high incidences of poverty – areas identified as "Communes of Concern" in a recent study by World Food Programme (2001). Many households in these areas depend on the collection of resin and other forest products to support their livelihoods. Because rice crops are inadequate to ensure food security, income from the sale of resin and other forest products is used to purchase rice during deficit periods. Indeed, CDRI observed tappers directly exchanging resin for rice from resin wholesalers.

Fees imposed on the marketing of resin from tapping villages to end markets reduce potential profits by 35 to 55 percent depending on the trade route. Where marketers of resin are unable to absorb these fees, they pass on the costs to tappers by way of lower prices for resin. In this manner, fees on resin marketing can have a significant impact on the income and food security of resin tapping households. For example, a study of four villages in Mondulkiri by Wildlife Conservation Society (2003) estimates that the average tapping household earns about $340 per year from the sale of resin. But these households also only grow enough rice to cover consumption needs for about four months each year. They depend on income from resin to buy rice. For the average amount of resin tapped by one household in Mondulkiri, fees to bring the resin for export total to about $82 per year. This amount of money could purchase up to 400 additional kilograms of rice per year – enough to support the rice consumption of a household of five persons for 5-6 months. Though it is not expected that marketers of resin would pass all the benefits along to tappers if fees were eliminated, the intensity of competition for resin supply suggests that a significant amount of the benefit would reach tappers. According to marketers of resin, greater competition for resin is driven

in part by the shrinking resin supply – a consequence of the illegal logging of resin trees in many areas.

Under the current approach, fees are charged on resin trade that reduce the incomes of forest communities, and then when these communities face a rice-deficit period, efforts are made to reach them with food aid. As many communities are located in remote areas, such aid distribution can be difficult and expensive. Clearly, a more effective strategy for food security, poverty reduction, and rural development/empowerment would be to eliminate fees on resin trade. This would allow forest communities to earn additional income, providing them greater means with which to purchase rice during deficit periods, and reducing dependence on aid.

7.2. Implications for Pro-Poor Trade Objectives

Historically, resin tapped in the forest areas of Cambodia has been traded for use in domestic fishing areas and sold for export. Forest communities have little use for resin other than in some cases for sealing their own boats or for torch making. Therefore, resin supply has always been far greater than the demand for it in forest communities. For tappers to earn income on this surplus resin, trade is required.

The government is currently promoting a "pro-poor trade" strategy, under the direction of the Ministry of Commerce. The strategy seeks to bring trade and export opportunities to the poor by: (a) encouraging investment and entrepreneurship in rural-based sectors; (b) decentralising the current export base (largely Phnom Penh, Siem Reap, and Sihanoukville) towards new regions; (c) increasing the value-added of exports through improved productivity and increased processing; and (d) formulating a marketing strategy for local and foreign markets. Criteria for pro-poor targeting include selecting trade that can promote labor-intensive employment creation, increase income growth in regions where Cambodia's poor are most concentrated, and add greater value to exports (Royal Government of Cambodia 2001).

Resin marketing should be a target for pro-poor trade improvements. Resin is a domestically produced product, currently marketed for export in significant quantities, with opportunities for value-added processing and identification of higher value export markets. More importantly, resin production supports roughly 100,000 rural Cambodians living in remote areas where rice-deficits and poverty can be chronic problems. Improving resin trade would clearly be a "pro-poor" initiative, as it would help to support income growth in these areas while decentralising Cambodia's export base.

Current regulations governing resin trade and export are not consistent with pro-poor trade efforts. These regulations serve to impede trade rather than encourage it. For most involved in the resin trade, compliance with the current system is impossible because they lack the means to pay high official fees or to make the necessary trips to Phnom Penh to apply for permits and licenses (see section 5.1). As a result, the current system functions mainly as a basis for informal fee payments rather than official government revenue collection. This is not representative of good governance or supportive of pro-poor trade.

Pro-poor improvements to resin trade will depend on reform in at least three areas. First, the transport permit required by Provincial Forestry Offices and the Department of Forestry and Wildlife is often used as a basis for informal fee collection. This permit appears ineffective as a tool for formal revenue collection or data collection, and it is unnecessary for forest management purposes since tapping does not affect the forest in a negative manner. Indeed, tappers may go to considerable lengths to protect areas with resin trees. Second, the system for issuing export licenses is clearly unworkable as evidenced by the fact that no one has approached the Department of Forestry and Wildlife for a license to export resin since 2000. Whether an export license is retained in some form or not, the one-percent export tax (or "service fee") should be eliminated, as such charges run counter to export promotion.

Third, greater efforts will be needed to eliminate unauthorised/illegal fee collection by military, police, and other authorities through clear policy statements on the subject and regular monitoring of roads.

7.3. Implications for Forest Management Objectives

As discussed in section 2.1, tapping does not harm resin trees or the surrounding forest area. While there is good reason to regulate timber and NTFP harvesting where unsustainable practices could result in forest loss, species loss, or other environmental problems, there does not appear to be a firm basis for regulating resin tapping and trade. Indeed, regulations that result in decreased prices for resin may actually reduce forest protection because tappers have less incentive to tap (and protect) their trees.

Reform of regulations governing the harvest and trade of NTFPs, such as resin, will be especially important if efforts to decentralise forest management through "community forestry" are to succeed. In broad terms, community forestry seeks to empower villages and communes in forest areas to continue their customary uses of forest resources, encourage sustainable practices, and ensure they have a strong voice in local forest management decision-making. As of March 2002, there were an estimated 237 community forests in Cambodia, with most having been recently established and therefore still in the process of organising, setting management objectives, and developing management plans (McKenney and Prom 2002).

Nearly all community forests in Cambodia presently receive some level of support from an international or local NGO. While this support plays a critical role in the establishment of community forests, such support cannot be sustained over the long term. Community forests will eventually be expected to operate independently. To do so, they will need more than just good forest management plans, rules, and ethics. Members will need to see benefits to their livelihoods and incomes, and revenue will need to be raised to support management activities. Under the current regulatory framework, fees imposed on the trade of NTFPs reduce local incomes and little, if any, of this revenue is then used for local forest management purposes.

For community forests to sustain operations over the long term, the right to impose taxes and fees on NTFPs will need to be shifted away from national and provincial officials to local elected officials (commune council and/or community forest committee members). As people who live and work in the commune, these officials could work with constituents to identify fair and reasonable fee levels for different NTFPs, with the understanding that this revenue will be reinvested in local forest management activities. Moreover, as elected officials they could be held accountable for the revenue raised and level of progress towards improved forest management.

7.4. Recommendations

Based on the findings of this study, and consistent with national objectives to reduce poverty, ensure food security, increase pro-poor trade, and improve forest management, a number of policy recommendations are highlighted below:

1. **Improve governance and transparency for resin marketing, including an overhaul and simplification of the current regulatory system.** The wide array of permit and licensing requirements for harvesting, stocking, transporting, and exporting resin and other NTFPs, in combination with fee and royalty charges, creates an NTFP marketing climate that is inimical to wider pro-poor trade and rural development efforts. As noted in the government's *National Poverty Reduction Strategy 2003–2005*, these regulatory barriers need to be removed. Key steps will include:

   A. **Elimination of the transport permit and associated fees.** The transport permit for resin serves as a basis for charging informal fees rather than official government

revenue collection. The permit plays no effective role in forest management and data collection, while its costs and requirements run counter to policies intended to increase trade and economic growth.

B. **Elimination of fees collected by checkpoints and institutions that have no clear legal basis for collecting fees.** This study identified numerous checkpoints operating along resin trade routes. To decrease the impact of checkpoints on resin trade (as well as other forms of trade), regular monitoring of roads is needed to identify and remove unauthorised checkpoints, and to ensure authorised checkpoints are operating in accordance with their legal mandate.

C. **Removal of the export tax and simplification of procedures for obtaining an export license.** Currently, no one is applying for resin export licenses due to the costs and burdens associated with application fees, travel to Phnom Penh, and navigating the approval process. Removal of the export tax and simplification of licensing procedures would be consistent with the government's wider efforts to promote exports. Simplification of procedures should aim to make it possible to obtain a license at little or no cost, through a "one-stop" service, without travel to Phnom Penh.

2. **Improve and localise forest management by decentralising authority over revenue-raising mechanisms.** As noted in section 7.3, nearly all community forests in Cambodia presently receive some level of support from an international or local NGO. Such support cannot be sustained over the long term. Community forests will need to be able to raise their own revenue to finance forest management activities. This will require a shifting of the rights to impose taxes and fees on NTFPs (including resin) away from national and provincial officials to local elected officials (commune council and/or community forest committee members). These officials could work with constituents to identify fair and reasonable fee levels for different NTFPs. Moreover, as elected officials they could be held accountable for the revenue raised and level of progress towards improved forest management.

3. **Enforce Article 29 of the *Forestry Law* prohibiting the harvest of resin trees.** Efforts to improve resin marketing will have little meaning if the supply of resin is lost due to resin tree logging. Resin trees appear to make up a considerable proportion of the species harvested by concession companies and other commercial interests. If this cutting continues, conflicts over resin trees may increase and thousands of rural Cambodians dependent on resin tapping could lose an important source of income. While the government should be commended for prohibiting the cutting of resin trees in the *Forestry Law* of 2002, the challenge going forward is to enforce it.

4. **Establish resin/NTFPs as a focal sector for pro-poor trade initiatives and value-added processing improvements.** Most resin collected in Cambodia is exported with only minor processing/filtering, much of it going to Vietnam (from where it may be re-exported). At present, there appear to be considerable opportunities for investment in value-added processing and identification of potentially high-value end markets to which Cambodia could export directly. For example, resin could be further processed domestically for export to paint and varnish manufacturers or perhaps essential oil and perfume makers. Even better, such processing could potentially support domestic paint and varnish production. A necessary step toward these objectives will be to create a more favourable business and trade climate for resin in line with recommendation #1 above. Overhauling the current regulatory framework would reduce marketing costs and allow resin production and trade to operate in a more formal and transparent manner conducive to investment and entrepreneurship.

5. **Review and revise the regulatory framework for all NTFPs.** As indicated in the government's *National Poverty Reduction Strategy 2003–2005*, the overall system of fees and permits for NTFPs needs to be reviewed and barriers to marketing removed. While this study has focused on resin trade, the marketing climate for other NTFPs is likely similar given that the same legal and regulatory requirements apply. Reform of these requirements will be needed if the nation is to succeed in meeting forest management, rural development, and poverty reduction objectives.

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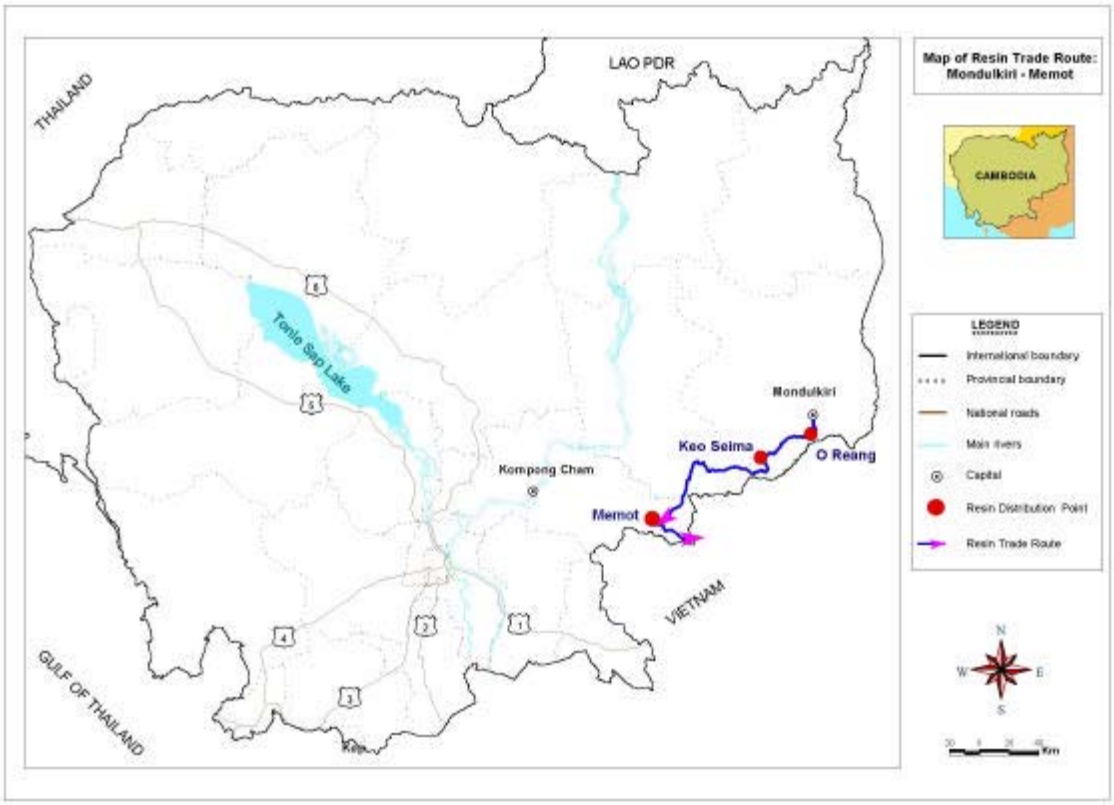
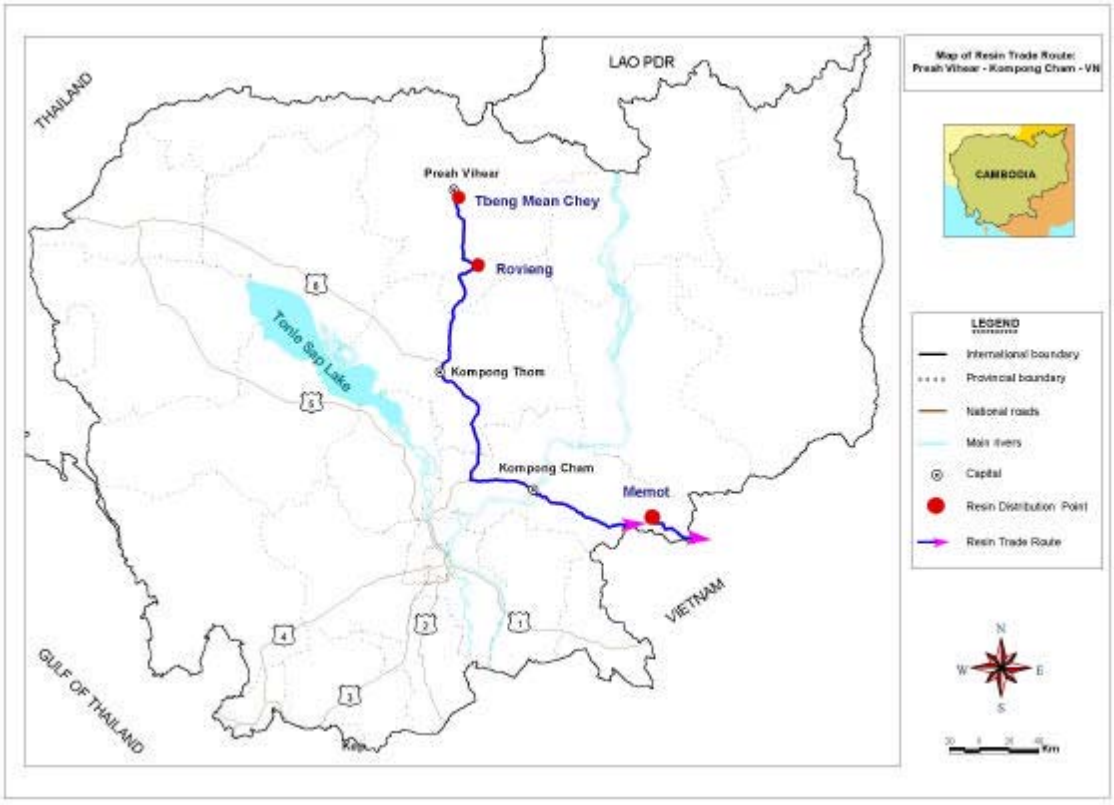
Appendix A: Maps of Resin Trade Routes Studied

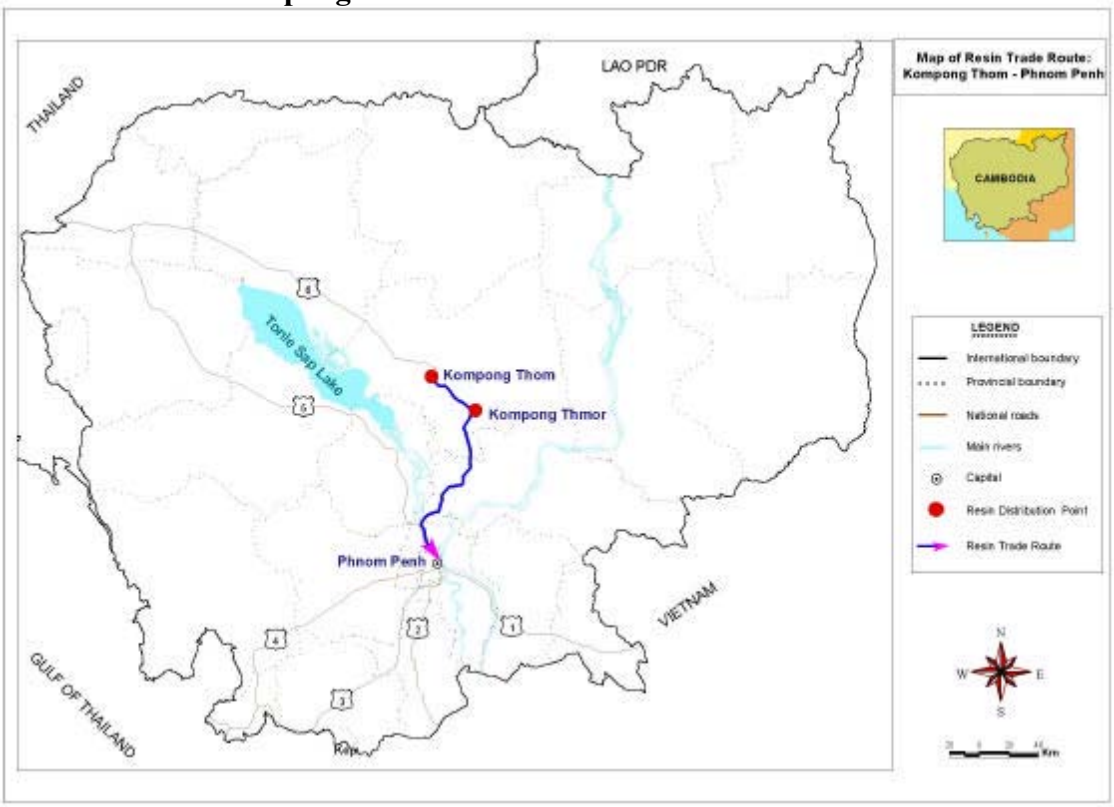
Trade Route 1: Mondulkiri – Memot



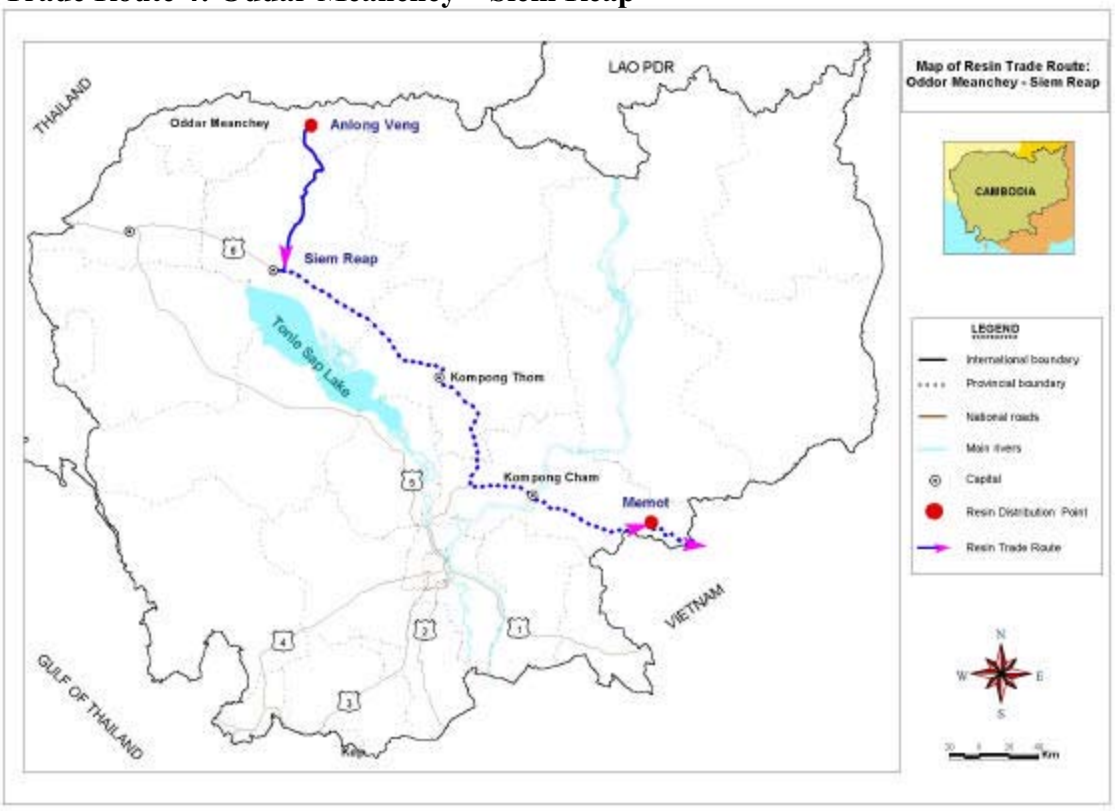
Trade Route 2: Preah Vihear – Kompong Cham –VN



Trade Route 3: Kompong Thom – Phnom Penh



Trade Route 4: Oddar Meanchey – Siem Reap



Appendix B: Articles 25 and 26 of the Forestry Law of 2002

Article 25

A. Activities related to the Permanent Forest Estate, and timber products and NTFPs throughout Cambodia shall require one or more of the following permits:
   1) Permit to set annual harvest quota;
   2) Permit to harvest timber products and NTFPs;
   3) Permit to set quota for transport;
   4) Permit to transport timber products and NTFPs;
   5) Permit for use of forest as defined in Article 28 of this Law;
   6) A Prakas to establish an industrial forest center, sawmill, or timber or NTFPs processing facility;
   7) Permit to enter coupe for preparation;
   8) Permit to establish a stockplace to sale or distribute timber products and/or NTFPs;
   9) Permit to establish all types of kilns that use timber products and/or NTFPs as raw material;
   10) Export quota for timber products and/or NTFPs;
   11) Export and Import License for timber products and/or NTFPs; and
   12) Other types of permits that may be required according to provisions of this Law.

B. The following individuals and legal entities are entitled to apply for permits stated above:
   1) A concessionaire who has received approval of the Annual Operation Plan as required by the Forest Concession Management Agreement;
   2) A party that has received approval for harvesting timber and/or NTFPs in a production forest not under concession;
   3) A community authorized to harvest timber products and/or NTFPs in a community forest that exceed customary user rights defined by this Law and rules on community forestry.
   4) A person or party who buys and transports timber products and/or NTFPs from the forest area where they were harvested to their final destination; and
   5) Any other individual, legal entity, community or party who may be granted rights under provisions of this Law.

C. Permits under this article shall contain the following items:
   1) The name of the permit holder;
   2) The duration of the permit;
   3) the specific location and boundaries of harvest area;
   4) the quantity of timber products and/or NTFPs allowed to be harvested in a unit determined by the Forest Administration;
   5) Origin and destination of timber products and/or NTFPs being transported; and
   6) Other items based on the type of permit required by the Forest Administration.

D. Permits may be extended, based on an evaluation report by the Forest Administration, by the same level of forestry official who granted the original permit in order to fulfill the existing quota.

E. The standard form for each permit shall be officially determined by MAFF.

Article 26:
The responsibility and authority for approving and issuing permits are as follows:

A. The Minister of MAFF shall have the authority to approve:
   1) Permits to set annual harvest quota for a concession and a production forest not under concession;
   2) Import-Export quota for timber products and/or NTFPs, following the approval of the RGC;
   3) Permits for use of forest stated in Article 27 of this Law; and
   4) Prakas to establish forest industry centers, sawmills, and medium and large-scale timber and/or NTFPs processing facilities.

B. The Director of the Forest Administration has the authority to issue:
   1) Permits to harvest timber products and/or NTFPs from concessions and production forest not under concession;
   2) Permit to set transport quota for timber products and/or NTFPs from concession and production forest not under a concession;
   3) Permit to transport timber products and/or NTFPs intended for export;
   4) Permit to enter coupe prior to issuance of annual harvest permit; and
   5) Permit or Visa on the export-import license for timber products and/or NTFPs.

C. The Cantonment Chief of the Forest Administration has the authority to issue:
   1) Permit to set harvest quota for timber and/or NTFPs for local communities;
   2) Permit to establish stockplace to store, sale or distribute of timber products and/or NTFPs and for small scale timber and/or NTFPs processing facilities;
   3) Permit to establish kilns of all types that use timber and/or NTFPs as raw material;
   4) Permit to set transport quota of timber products and/or NTFPs originating from a community forest.

D. The Division Chief of the Forest Administration shall have the power to issue:
   1) Permit to harvest timber products and/or NTFPs in a community forest at an amount above the customary user rights; and

All Permits to transport timber products and/or NTFPs originating from the area under the jurisdiction of the Division Chief.

Appendix C: Circular on the Formal Fee Rate Determination for Non-Timber Forest Products

Unofficial Translation[18]

Ministry of Agriculture,
Forestry and Fisheries

Kingdom of Cambodia
Nation, Religion, King

No. 430 Administration -MAFF

Circular
on the
Formal Fee Rate Determination for Non-Timber Forest Products,

The Minister of Agriculture, Forestry and Fisheries,

- Having seen the Constitution of the Kingdom of Cambodia;
- Having seen Royal Decree No. NS/RKT/1198/72 of 01 November 1998, on the Appointment of the Royal Government of Cambodia;
- Having seen Royal Decree No. NS/RKM/0196/13 of 24 January 1996, promulgating the Law on the Establishment of the Ministry of Agriculture, Forestry and Fisheries;
- Haven seen Sub-decree No. 17 RNKRBK of 07 April 2002, preparing and organising the Ministry of Agriculture, Forestry and Fisheries;
- Having seen in Inter-ministerial Circular No. 007 MEF and 337 Circular-MAFF dated 12 June 2000, of the Ministry of Agriculture, Forestry and Fisheries and the Ministry of Economy and Finance, on the Income Payment Level for Forest Protection and Conservation;
- Pursuant to the need of the Ministry of Agriculture, Forestry and Fisheries;

Decides

Article 1: To determine the formal fee rate on Non-Timber Forest Products as in the table below:

[18] Translation of some Khmer terms in the fee rate table was not possible at this time. These terms are shown in Khmer in quotes (“ ”).

	Type of Non-Timber Forest Products	**Unit**	**Fee Rate (Riels)**
I	*Secondary construction wood*		
1	Protuberance of luxury wood (hard wood)	tonne	6,000,000.00
2	Stump and root of luxury wood (hard wood)	tonne	6,000,000.00
3	Protuberance of non-luxury wood	tonne	1,000,000.00
4	Stump and root of non-luxury wood	tonne	300,000.00
5	"Chheu Daikhla"	tonne	300,000.00
6	"Chheu Bakdang"	tonne	300,000.00
7	Paddle and oar		
	- First category	1m long	12,000.00
	- Other category	1m long	8,000.00
8	"Changkot"	set	40,000.00
9	Pole with stem diameter between 0.15-0.19m	pole	6,000.00
10	Pole with stem diameter between 0.10-0.15m	pole	3,000.00
11	Pole with stem diameter less than 0.10m	pole	1,000.00
II	*Fuelwood and charcoal production*		
12	- Fuelwood of all kinds	stere	10,000.00
13	- charcoal	60kg	6,000.00
III	*Secondary Non-Timber Forest Products*		
14	- Bamboo of more than 5cm in stem diameter	tonne	15,000.00
15	- Bamboo of less than 5cm in stem diameter	tonne	10,000.00
16	- Rattan of all kinds	tonne	250,000.00
17	- Bark of "Popoul bay"	tonne	30,000.00
18	- Bark of "Smach" (*Jambolifera resinosa* or *Melaleuca leucadendra*)	tonne	10,000.00
19	- Bark of mangrove	tonne	10,000.00
20	- Bark of "Smer" (*Ceriops species*)	tonne	10,000.00
21	- Bark of "Khmot"	tonne	10,000.00
22	- Bark of "Prohout" (*Cambogia gutta*)	tonne	10,000.00
23	- Bark of "Tepirou" (*Liriopa spicata or Nardus indica*)	tonne	30,000.00
24	- "Kantuy Ve"	tonne	10,000.00
25	- Bark for paper production	tonne	10,000.00
26	- Bark of "Preal"	tonne	10,000.00
27	- Bark of "Samrong"	tonne	10,000.00
28	- Bark of Licorice tree (*Glycyrrhiza glabra*)	tonne	10,000.00
29	- Bark of all kinds for dyeing	tonne	10,000.00
30	- Aromatic bark of all kinds	tonne	10,000.00
31	- Fruit of cardamom (*Amomum cardamomum Linn.*)	60kg	18,000.00
32	- Flower of cardamom (*Amomum cardamomum Linn.*)	60kg	18,000.00
33	- "Krakor" (*Amommum villosum*) with round fruit type	60kg	18,000.00
34	- "Krakor" (*Amommum villosum*) with oval fruit type	60kg	18,000.00
35	- "Krakor" (*Amommum villosum*) with none bark	60kg	18,000.00
36	- Seed of Strychnine (*Strychnos nux-vomica*)	60kg	9,600.00
37	- Seed of "Krabao" (*Hydnocarpus species*)	60kg	9,600.00
38	- Seed of "Samrong"	60kg	9,600.00
39	- Seed of "Samrang" (*Nauclea cordifolia*)	60kg	9,600.00
40	- Seed of "Chambak" (*Buchanania fastigiata, Amygdalicera stipulata*, or *Irvingia harmandii*)	60kg	9,600.00
41	- Wild bamboo shoot	60kg	6,000.00

42	- Root of "Kbeas"	60kg	9,600.00
43	- "Thavhok" or Chinese medecine rhizome	60kg	9,600.00
44	- Root of "Kamnhan"	60kg	9,600.00
45	- Resin of all kinds	60kg	18,000.00
46	- Wax	1kg	2,000.00
47	- Liana of all kinds	60kg	60,000.00
48	- Torch big size of more than 4cm in diameter	100 units	10,000.00
49	- Torch small size of less than 4cm in diameter	100 units	5,000.00
50	- "Slek Phochoul" (*Pandanus laevis* or *Rhapis flabelli formis*)	100 sheets	10,000.00
51	- "Slek Rotaing" (*Homalium brevidens*)	100 sheets	10,000.00
52	- "Slek Rith"(*Pandanus laevis* or *Rhapis flabelli formis*)	100 sheets	10,000.00
53	- "Marak" (*Melanorrhea laccifera*, *M. glabra* or *Augia sinensis*)	18 litre	36,000.00
54	- Powder extract from "Vor Romeat"	kg	1,000,000.00
	Aloe-wood (Aquilaria agallocha)		
55	- Oil extracted from aloe-wood	litre	5,000,000.00
56	- Special ken	kg	2,000,000.00
57	- Ken quality No.1	kg	1,500,000.00
58	- Lam quality No.1	kg	1,000,000.00
59	- Lam quality No.2	kg	800,000.00
60	- Old "Pakhwan" with upper circle	kg	500,000.00
61	- New "Pakhwan"	kg	300,000.00
62	- "Tok"	kg	60,000.00
63	- Waste products from aloe-wood	kg	600.00
IV	**Skin, horn, bone, ivory, "products from hunting" (Hunting of wild animals is forbidden)**		
64	Sambar antler	1 animal	300,000.00
65	Tiger skin of all kinds	1 animal	10,000,000.00
66	Python skin of more than 2.5m long	1 animal	500,000.00
67	Python skin of less than 2.5m long	1 animal	300,000.00
68	Tiger bone	kg	100,000.00
69	Ivory weighing 4-10kg	kg	500,000.00
70	Ivory weighing 10-20kg	kg	8,000,000.00
71	Ivory weighing more than 20kg	kg	10,000,000.00

Article 2: In addition to total value of NTFP's fee payment, another 5% of extra fee payment of total fee shall be paid for forest management as stated in article 1 as above

Article 3: The fee rates of NTFPs as stated in article 1 as above shall be revised as may be necessary by the Ministry of Agriculture, Forestry and Fisheries.

Article 4: For other NTFPs that do not mentioned in article 1 as above, it shall be determined later on.

Article 5: The Department of Forestry and Fisheries shall issue detailed instructions for an efficient implementation.

Article 6: All provisions contrary to this article circular shall be abrogated.

Article 7: Directors of all relevant units under the Ministry of Agriculture, Forestry and Fisheries, shall effectively implement this Circular according to their respective fields of responsibilities from the date of signature.

Copy to:
- Council of Ministers
- Relevant Ministries "For information"
- As in article 5 "For implementation"
- Chronology - Archive

Phnom Penh, 19 July 2000
Minister of Agriculture, Forestry and Fisheries

(Signature and Seal)

H.E. Chhea Song

Appendix D: Questionnaires

Questionnaire A:

Trader Interview Questionnaire

1. Background

1.1. Name:....., Age:……, Sex:……, Marital Status…..…..…..…..….....

1.2. No. of members in Household:…….....

1.3. Address:…….....

1.4. Main occupation:…….....

1.5. Minor occupation…….....

1.6. How long have been you a resin trader?…….Years

1.7. How many villages do you serve with your resin trade business?

Name of Village	Hours to transport from village to home or place of sale	Means of transportation
1.		
2.		
3.		
4.		

1.8. Who/where do you sell you resin products?

Name of wholesalers or others	Address	Hours to transport from your house to wholesalers	Means of transportation
1.			
2.			
3.			

Note: Map

1.9. Why do you sell to wholesalers rather than sell directly to the border?
…….....…….
…….....…….

2. Resin Pricing

2.1. What is the trend for resin production over the past three years?
   a. Are villagers providing more or less resin?…….....
   b. Are there more or less traders in the resin business?…….....
   c. Is the resin price is higher or lower?…….....

2.2. Why does the price that you offer resin producers/collectors fluctuate (change) during the course of the year?
   a. Change in transport costs
   b. Quality of resin change
   c. Demand-driven shift (such as more demand by consumers at some time of the year).
   d. Supply-driven shift (such as greater resin production at some time of the year)
   e. Other reason

2.3. Why does the price at which you sell resin to the wholesaler fluctuate (change) during the course of the year?
   a. Change in transport costs
   b. Quality of resin change
   c. Demand-driven shift (such as more demand by consumers at some time of the year).
   d. Supply-driven shift (such as greater resin production at some time of the year)
   e. Other reason

2.4. Do you offer loans to resin tappers as part of your resin trade business? If yes, how may tappers do you make loans to?

Location	Number of tappers	No. tapper loan credit
1.		
2.		
3.		
4.		

2.5. What is the typical structure of these loan arrangements?
…….
…….

2.6. When do you typically offer loans?
…….
…….

2.7. How much time do borrowers have to pay back the loan (with cash? Resin? Others?)?
…….
…….

2.8. Do you charge an interest rate? What happens if people cannot pay back the loan?
…….
…….

3. Monopoly issue

3.1. Do tappers sell to you exclusively? If so, Why?
…….
…….

3.2. Are there any tappers who are not borrowers that sell to you exclusively?
…….
…….

3.3. How many other traders also do business in the villages you serve?
…….
…….

3.4. What if another trader offers a better price?
…….
…….

4. Fee associated with business

4.1. What kinds of formal fees do you pay or trip from villages to the place of sale (formal fee are fees for which you receive a receipt)?

Kind of formal fee	*Village. 1*		Village.2		Village.3		Village.4	
	D	*W*	*D*	*W*	*D*	*W*	*D*	*W*
1. DoFW official								
2. Licence								
3. Other								

Note: please identify on the map the points where you pay each fee.

4.2. What kind of informal fee do you pay on trips from villagers to the place of sale?

Kind of informal fee	Village. 1		Village.2		Village.3		Village.4	
	D	*W*	*D*	*W*	*D*	*W*	*D*	*W*
1. DoFW								
2. Local authority								
3. Check points								
4. Other								

5. Economic analysis of resin business

Items	**Variable**	**Village.1**		**Village.2**		**Village.3**	
		W	**D**	**W**	**D**	**W**	*D*
Purchasing expense	Number of trips to village						
	Number of liters purchased per trip						
	Price paid to villager for resin (riels per unit--30 liters?)						
Operating cost	Distance from village to main road (km)						
	Distance along main road to selling point (wholesaler, market, border)						
	Number of hours total travel time						
	Wage of next best alternative job (riels/day)						
	Estimated labor costs per trip (riels)						
	Means of transportation						
	Liters of gasoline used for trip to/from village to selling point						
	Cost of gasoline per liter in that area						
Capital cost	How many years has the trader owned the transport?						
	Annual repairing cost						
	How many years until it will likely need to be replaced?						
	Capital costs (purchasing price of moto, car, truck) ($)						
	Other capital equipment (resin containers and other equipment)						
	How often does equipment need to be replaced (years)						
	How much does equipment cost to replace						
Formal fee	Annual fees -- Transport license (riels)						
	Other official fees -- tax per unit						
Informal fee	Checkpoint fees per trip						
	Other informal fees						
	Selling price to wholesaler/trader/border (liter)						

6. Processing

6.1. What do resin consumers use resin for?

…….
…….

6.2. Is processing needed to make different resin-based products?

…….
…….

6.3. Do you process resin ? If no why?

…….
…….

6.4. Do you know anyone who processes resin in the area? What do they do in Vietnam? What are the products?

…….
…….

6.6. Why is processing is not done in Mundulkiri?

…….
…….

7. Alternative labour

7.1. What would you do if the resin trade business did not exist?

…….
…….

7.2. What daily could you earn from that alternative job?

…….
…….

8. What are the main constraints/challenges you face in the resin trade business?

1.
2.
3.
4.

9. How do you manage/overcome with these constraints?

1.
2.
3.
4.

10. What types of change would you like to see in your resin trade business in the future?

1.
2.
3.
4.

Questionnaire B:

Resin Wholesaler Interview Questionnaire

1. Background

1.1. Name: …… Age: ……, Sex: ...……, Marital Status…..……

1.2. No. of member in Household:…….....

1.3. Address:…….....……...

1.4. Main occupation: …… …… …… …… ……....

1.5. Minor occupation …….....

1.6. How long have been you a resin wholesaler?……Years

1.7. How many traders/villages do you purchase their resin products from?

Name of trader/villagers	Average amount purchased in dry season (liter)	Average amount purchased in wet season(liter)
1.		
2.		
3.		
4.		
5.		
6.		

1.8. Who/where do you sell you resin products?

Name of trader	Address	Hours from your wholesale business to traders/borders	Transportation means
1.			
2.			
3.			

2. Resin pricing

2.1. What have been the trends for the resin trade over the past 3 years?
   a. Greater or smaller supply of resin? .....
   b. More or less traders? .....
   c. More or less wholesalers? .....
   d. Higher or lower prices? .....

2.2. Why does the price that you sell resin to traders or at border fluctuate (change) during the course of the year?
   a. Change in transport costs
   b. Quality of resin change
   c. Demand-driven shift (such as more demand by consumers at some time of the year).
   d. Supply-driven shift (such as greater resin production at some time of the year)
   e. Other reason

2.3. Why does the price that you purchase resin from producers/traders fluctuate (change) during the course of the year?
   a. Change in transport costs
   b. Quality of resin change
   c. Demand-driven shift (such as more demand by consumers at some time of the year).
   d. Supply-driven shift (such as greater resin production at some time of the year)
   e. Other reason

2.4. Do you offer loans to resin tappers as part of your resin trade business? If yes, how may tappers do you make loans to?

Location	Number of tappers	No. tappers loan credit
1.		
2.		
3.		
4.		

2.5. What is the typical structure of these loan arrangement?
……
……

2.6. When do you typically offer loans?
……
……

2.7. How much time do borrowers have to pay back the loan (with cash? Resin? Others?)?
……
……

2.8. Do you charge an interest rate? What happens if people cannot pay back the loan?
……
……

2.9. How many staff do you employ? And how is their salary scale?

Type of staff	Number of staff (#)
1. Labourer at warehouse	
2. Sale agent at village level	
3. Others	

3. Monopoly issue (If whosaler is directly purchased from tappers)

3.1. Do tappers/traders sell to you exclusively? If so, Why?
……
……

3.2. Are there any tappers who are not borrow that sell to you exclusively?
……
……

3.3. How many other whosalers alos do business in the villages/ area you serve?
……
……

3.4. What if another wholesalers/traders offer a better price?
……
……

3.5. Do you have an agreement with other wholesalers about prices?
……
……

4. Fee associated with business

4.1. What kinds of formal fees do you pay for your wholesale business? To transport from the warehouse to the border?

Kind of formal fee	Dry season (Riels/liter)	Wet season (Riels/liter)
1. DoFW official		
2. Licence		
3. Other		

4.2. What kind of informal fees do you pay for your wholesale business? To transport from the warehouse to the border?

Kinds of informal fee	Dry season (Riels/liter)	Wet season (Riels/liter)
1. DoFW		
2. Local authority		
3. Check points		
4. Other		

5. Economic analysis of resin business

Items	**Variable**	**Village/trader**		**Village/trader**		**Village/trader**	
		W	**D**	**W**	**D**	**W**	**D**
Purchasing expense	Number of trips to village						
	Number of liters purchased per trip at village/trader						
	Price paid to villager/trader for resin (riels per unit--30 liters?)						
Operating cost	Distance from warehouse to border (km)						
	Number of hours total travel time						
	Wage of next best alternative job (riels/day)						
	Means of transportation						
	Liters of gasoline used for trip to/from village to selling point and from warehouse to border						
	Average staff salary						
	Cost of gasoline per liter in that area/from warehouse to border						
Capital cost	How many years has the wholesaler owned the transport?						
	How many years until it will likely need to be replaced?						
	Capital costs (purchasing price of moto, car, truck) ($)						
	Warehouse cost						
	Other capital equipment (resin containers and other equipment)						
	How often does equipment need to be replaced (years)						
	How much does equipment cost to replace						
Formal fee	Annual fees – Transport license (riels)						
	Other official fees -- tax per unit						
Informal fee	Checkpoint fees per trip						
	Other informal fees						
	Selling price to trader/border (liter)						

6. Processing

6.1. What do resin consumers use resin for?
……
……

6.2. Is processing needed to make different resin-based products?
……
……

6.3. Do you process resin? If no, why?
……
……

6.4. Do you know anyone who processes resin in the area? What do they do in Vietnam? What are the products?
……
……

6.5. Why is processing is not done in Mundulkiri?
……
……

7. What are the main constraints/challenge to operating your wholesale business?
1.
2.
3.
4.

8. How do you manage/overcome these challenges/constraints?
1.
2.
3.
4.

9. What type of changes would you like to see in your resin wholesale business in the future?
1.
2.
3.
4.

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Trading Forest Products in Cambodia: Challenges, Threats, and Opportunities for Resin

Forests support rural livelihoods in Cambodia in a number of important ways. Almost all rural Cambodians use forest resources for cooking fuel and construction materials. Many also collect forest products for household use and income generation through trade. To explore the conditions under which forest product trade is conducted, and how such conditions affect rural livelihoods, this study focuses on resin. Tapped mainly from evergreen tree species, resin is used domestically for sealing and waterproofing boats and exported for higher value uses.

Because tapping is common income generation activity for forest communities across Cambodia, improvements in resin trade that increase returns to tappers could have a widely beneficial impact on rural livelihoods. To this end, this paper assesses the challenges, threats, and opportunities for resin trade. Key areas addressed include describing resin tapping methods and uses, examining the threat of logging to tapping activities, analysing the market structure for resin production and trade, describing the current regulatory framework and actual practices, and assessing key challenges to resin trade. Following which, a number of policy recommendations are identified for improving resin trade in a manner consistent with national objectives to reduce poverty, ensure food security, increase pro-poor trade, and improve forest management.
to support improvements in trade efficiency, governance, and the climate for economic growth.

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