A Teacher's Guide on Markets for Agroforestry Tree Products

Curricular Framework and Case Study Materials

World Agroforestry Centre

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TRANSFORMING LIVES AND LANDSCAPES

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Southeast Asian Network for Agroforestry Education

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Foreword

Agroforestry holds great potential in contributing to rural poverty alleviation. However, most agroforestry education programs and courses in Southeast Asia place a low emphasis on the demand aspects of agroforestry, especially the links between producers and consumers, markets, post-harvest processing and small-scale livelihood systems. In most cases, agroforestry education in the region is still biased towards production or the supply side of production. The demand aspects, if dealt with at all, are briefly discussed as a topic at best. To better understand and promote how agroforestry can contribute to alleviating poverty, faculties and students need improved competence in relation to the business aspects.

It is in this context that the World Agroforestry Centre (ICRAF)-Southeast Asia Regional Office and the Southeast Asian Network for Agroforestry Education (SEANAFE) carried out a project on Markets for Agroforestry Tree Products (MAFTP) from 2005-2007. This project aimed to develop a market-based curriculum framework and teaching materials for lecturers and students.

This "Teacher's Guide on Markets for Agroforestry Tree Products: Curriculum Framework and Case Study Materials" is the project's major output. SEANAFE hopes this guide will stimulate interest among higher education institutions in the Southeast Asia region to review curricula to incorporate this subject matter into existing relevant courses and programs. At best, SEANAFE envisages seeing this guide being used in the eventual offering of this subject matter as a separate course.

This guide is a product of the experiences and insights of people and organizations involved in SEANAFE's MAFTP project. Country teams from Indonesia, Laos, Philippines, Thailand, and Vietnam were commissioned to conduct a market chain analysis on specific agroforestry tree products. Their research outputs became the basis for formulating an MAFTP curricular framework and case study materials as suggested teaching materials for some of the key modules of the curricular framework. This guide is divided into three part parts. Part 1 provides an overview of the project processes and outputs. Part 2 gives a contextual write up on the suggested MAFTP curricular framework, while Part 3 contains the case study materials.

The relevance and usefulness of this guide rest with its emphasis on how agroforestry marketing can help improve the livelihoods of the poor, but SEANAFE believes there is still room for its improvement.

Meine Van Noordwijk

ICRAF-SEA Regional Coordinator

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- Mark Grindley for developing the original country case study reports into case study teaching materials;
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Special thanks are due to the farm households, community officials and other local government agencies that have been the information sources for the research outputs of the country teams.

Some Notes on Using This Guide

This guide is intended primarily for university lecturers but could also be used by extensionists and community development workers who wish to conduct training on the subject matter for members of the community and local government staff.

It is divided into three major parts, namely: 1) The SEANAFE's Markets for Agroforestry Tree Products Project; 2) The SEANAFE's Markets for Agroforestry Tree Products Curricular Framework; and 3) Country Case Study Materials.

Part 1 provides a brief background on the SEANAFE MAFTP project enumerating the salient processes through which this guide was generated. It also highlights the team and participatory approaches adopted and the major outputs produced by the project.

Part 2 explains the context in which the SEANAFE MAFTP curricular framework fits with the agroforestry education scenario in the region, its process approach, and key themes, including suggested descriptions, methods of teaching, and reference materials.

Part 3 presents the country cases and offers ways to effectively use them for teaching MAFTP. It provides suggestions for encouraging critical thinking among students, including guide questions and discussions, suggested teaching activities and further reading. This, however, should not limit the users but are encouraged instead to further explore the other potential applications of the cases as teaching materials.

The curricular framework does not claim to be complete and comprehensive. However, SEANAFE considers it adequate to help enhance the knowledge and skills of students and other users in order to develop sustainable agroforestry enterprises that would improve the quality of life among farm families. In the same way, the case study materials do not cover all aspects of the market chain that may arise during student discussions or assignments. Further, the cases cover marketing issues at different levels, i.e. community, district, and provincial levels. For this reason, users are encouraged to use the materials as they wish to achieve the learning objectives they set in their teaching sessions, for example, by making considered assumptions about information absent from the cases study.

The guide presupposes that users have considerable experience in using case studies as a teaching method. First timers of this approach are encouraged to read the Notes for Teachers well in advance before giving the case study material to their students. The effectiveness of the case study material relies on how well the users have grounded themselves on its suggested use and internalized the basic information therein. Full copies of the country research are available from the ICRAF website as reference materials.

Acronyms

AFTP	Agroforestry Tree Product
APFSOS	Asia-Pacific Forestry Sector Outlook Study
ICRAF	World Agroforestry Centre (formerly International Centre for Research in Agroforestry
GTZ	German Development Foundation
INAFE	Indonesian Network for Agroforestry Education
LaoNAFE	Lao Network for Agroforestry Education
MAFTP	Markets for Agroforestry Tree Products
NAFRI	National Agriculture and Forestry Research Institute
PAFERN	Philippine Agroforestry Education and Research Network
SEA	Southeast Asia
SEANAFE	Southeast Asian Network for Agroforestry Education
Sida	Swedish International Development Cooperation Agency
SNV	The Netherlands Development Organization
ThaiNAFE	Thailand Network for Agroforestry Education
VNAFE	Vietnam Network for Agroforestry Education

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1. The SEANAFE's Markets for Agroforestry Tree Products Project

The second phase of the Southeast Asian Network for Agroforestry Education (SEANAFE) project was conceived to enable educators from more than 80 universities and colleges in Southeast Asia to share knowledge and develop learning tools that address the interface between environmental conservation and poverty alleviation. It recognizes that the complex interface between these two areas must be handled in a holistic and integrated way if the projects is to help millions of small-scale farmers to benefit from commercial markets and, at the same time, help them to manage local landscapes. Thus, the SEANAFE Phase 2 project is guided by the overarching goal of educating Southeast Asia's next generation of educators, scientists, and political leaders, on the importance of these issues and building their capacity. It particularly focuses on those currently enrolled in forestry and agriculture universities so that they can enact effective policies and programs in the future. SEANAFE, through funding support from the Swedish International Development Cooperation Agency (Sida), organized its Phase 2 set of activities around a series of well-defined regional projects for implementation from May 2005 to April 2009. These themed projects include: (a) Markets for Agroforestry Tree Products (MAFTP); (b) Agroforestry Landscape Analyses (AFLA); and (c) Forestry and Environmental Policies (FEP).

The MAFTP project was conceived in recognition of the fact that the area of marketing is not being sufficiently taught in forestry and agricultural programs and courses in most universities and colleges in Southeast Asia (SEA). Less emphasis is being placed on the links between producers and consumers, markets, post-harvest processing, and small-scale livelihood systems. Thus, the project was an attempt to fully understand the wide range of socioeconomic aspects of marketing agroforestry products that improve and ensure the gainful participation of smallholder farmers in improving their livelihoods.

Generally, the project's goal was to increase the knowledge and skills among agroforestry lecturers and graduates in SEA on MAFTP with emphasis on how such markets can improve the livelihoods of the poor. It had the following specific objectives:

1. Review and understand the principles for smallholders' gainful participation in markets for agroforestry tree products;
2. Identify and characterize key types of markets for agroforestry tree products in SEA;
3. Strengthen the teaching of markets for agroforestry tree products in universities and colleges in SEA, through developing teaching materials and curriculum modules in English and national languages; and
4. Enhance the teaching capacity in universities and colleges regarding the marketing of agroforestry tree products.

Under the MAFTP project, country teams were formed to help accomplish these objectives. Each consisted of at least four members from SEANAFE member institutions. For a two-year period, the teams undertook several activities in two project phases as shown in Figure 1. The MAFTP project, as a capacity building activity of SEANAFE, adopted the team and participatory approaches to:

- Enhance experiential learning of the country team members on MAFTP and applying this knowledge and experience while undertaking various activities of the project, culminating in writing the case materials and curricular framework;
- Capitalize on the opportunity for participatory curriculum development among the country teams, as a result of sharing insights and experiences during the project's second workshop;
- Maximize consensus building among country teams to heighten ownership of the project outputs toward enhanced advocacy on MAFTP.

For Phase 1, the MAFTP project activities included conducting two training sessions / workshops and the development of the curricular framework and country case studies on selected agroforestry tree products. The first regional training cum planning workshop was conducted on 21-26 November 2005 in Bangkok, Thailand. The training component updated team members on recent research results, tools and methods relating to agroforestry marketing. The workshop component enabled the country teams to formulate proposal outlines for their case studies, including the objectives and hypotheses, and set the activities and guidelines for implementing Phase 1 of the project. The country teams then submitted their case study proposals and revised them based on comments and suggestions by the SEANAFE Technical Adviser (TA). Contracts were signed with the respective institutions of the country team leaders in late 2005 and early 2006 with the final proposals as attachments. The teams tested what they had learnt during the training cum workshop by conducting market chain analyses on cashew nuts in Indonesia and Vietnam, bamboo in Laos, coconut in the Philippines, and pararubber in Thailand. These country case studies were aimed at providing content for the development of the curricular framework and teaching materials on the subject matter.

From the progress reports submitted by country teams sometime in February 2006, the need to organize an extra meeting of the team leaders came about. Though not originally planned, SEANAFE conducted the meeting on 6-7 March 2006 in Laos to harmonize the work of the teams. Together with the SEANAFE TA, three resource persons, namely: Joost Foppes of SNV; Joel Tukan, formerly of ICRAF; and Michael Victor, Information and Communication adviser to NAFRI, provided more technical input into the work of the five country team leaders during the meeting. The meeting clarified the differences between conducting research and case studies, and reiterated to the country teams the use of project results primarily for teaching BS level courses. In this meeting, the team leaders also discussed and developed outlines for their case study reports.

Six months after conducting their cases studies, the teams met again in Chiangmai, Thailand on 15-18 August 2006. This second regional workshop was aimed at presenting and comparing research results and experiences, formulating the MAFTP curricular framework and converting the case studies into appropriate teaching materials. In developing the curricular framework, the teams identified the common issues and concerns surfaced in their respective national research case study reports. These issues and concerns were then categorized accordingly and constituted the key modules of the curricular framework. Other key modules, though not discussed fully in the country reports, were also added to the curricular framework as deemed necessary by the teams.

The wide variations on how the national research case study reports were produced, however, posed difficulty in converting them into teaching materials. Thus, the country teams were requested to identify at least three strengths of their case studies in relation to the key themes of the MAFTP curriculum framework. Then, the teams developed teaching frameworks for the key modules they idenfied. These teaching frameworks contained the issues and learning points on the key module theme based on the case study that would be developed eventually, guide questions for discussing the issues and learning points, and the suggested teaching methods to use. The workshop officially completed Phase 1 of the MAFTP Project.

The transition period between the MAFTP project Phases 1 and 2 focused on refining the outputs of Phase 1 and enabling the country teams to develop their proposals for Phase 2 implementation. As agreed during the second regional workshop, SEANAFE hired an external consultant to fully develop the teaching frameworks into a format and scope appropriate for teaching and translation (hereafter referred to as teaching case study materials) into local languages of the country teams. Between November 2006 and January 2007, drafts of the teaching case study materials were given to the country teams for comments and validation. The country teams were also requested to fill in the information gaps and revise the teaching case study materials based on the comments and suggestions of the external consultant and SEANAFE TA. By February 2007, the SEANAFE TA came up with the repackaged versions of the case study materials and distributed them to the team leaders for approval for translation.

The MAFTP project's Phase 2 primarily consisted of translation of the teaching case study materials into local languages of the country teams and conducting in-country training on the use of the project outputs.

Before officially launching the MAFTP project's Phase 2, SEANAFE organized another team leaders' meeting on 8-10 March 2007 in Bogor, Indonesia. This meeting aimed to: 1) revisit and finalize the scope of the key themes of the MAFTP curricular framework; 2) finalize the country case study materials for translation in the local languages of SEANAFE member countries; 3) finalize the country team proposals for Phase 2 implementation; 4) agree on the major processes and basic activities that each country team would undertake for the project's Phase 2, including the design of in-country training; 5) agree on the county teams' terms of reference in implementing the project's Phase 2 activities; 6) orient the country teams on some practical tips for organizing and implementing an in-country training course on MAFTP; and 7) agree on the timetable of activity implementation of the project. Contracts were served to the country teams to carry out Phase 2 activities of the project from April to October 2007. In the case of the Philippines, translation of the case study materials into national language was not carried out since the medium of instruction in universities and colleges is English.

A total of 109 lecturers, researchers, and extensionists from 72 learning organizations, mostly SEANAFE members, benefited from the in-country training. Details are as follows:

Philippines: 28 faculty members from 28 member institutions of the Philippine Agroforestry Education and Research Network (PAFERN) on 29-31 May 2007 at the Training Center for Tropical Resources and Ecosystems Sustainability (TREES), University of the Philippines Los Banos (UPLB), Laguna.

Indonesia: 21 faculty members from 16 member institutions of the Indonesian Network for Agroforestry Education (INAFE) on 25-27 July 2007 at Institut Pertanian Bogor, Bogor.

Laos: 20 faculty members from 10 member institutions of the Laos Network for Agroforestry Education (LaoNAFE) on 13-15 August 2007 at Vangvieng, Vientiane

Vietnam: 19 faculty members from eight member institutions of the Vietnam Network for Agroforestry Education (VNAFE) on 28-31 August 2007 at Dam San Hotel, Buon Ma Thuot City.

Thailand: 21 faculty members, researchers and extensionists from 10 member institutions of ThaiNAFE and invited research (4) and extension (1) agencies in Thailand on 5-7 September 2007 at Chiang Mai University, Chiang Mai.

Through SEANAFE national networks, the project outputs are expected to be mainstreamed among SEANAFE member institutions. Where possible, support to the country teams will be given to conduct policy advocacy on the recommendations they formulated to address the issues identified in their respective research.

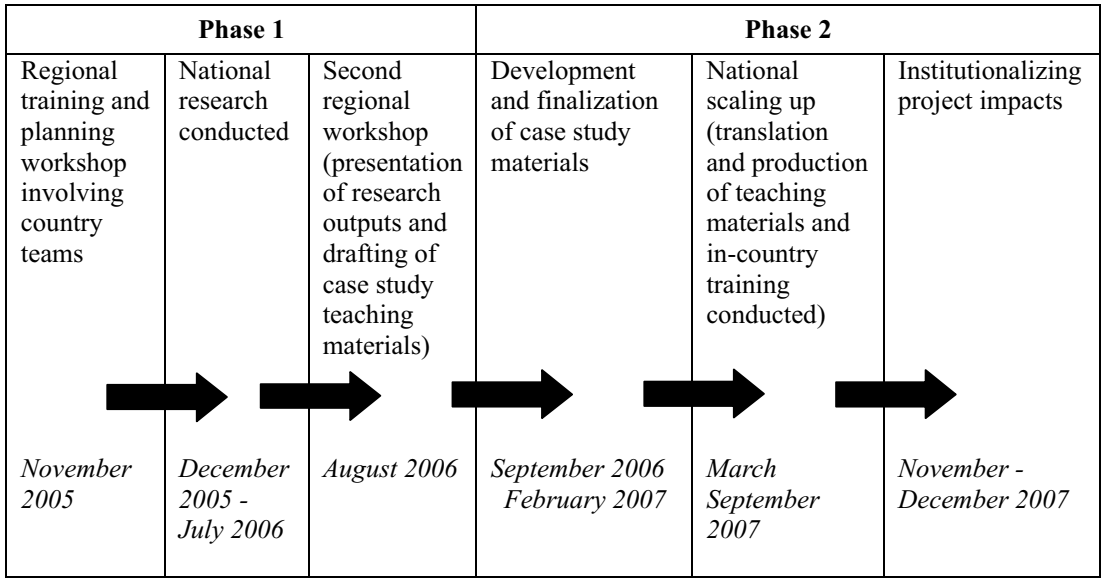

Figure 1. SEANAFE MAFTP Project flow of activities

2. The SEANAFE's Curricular Framework on Markets for Agroforestry Tree Products

Introduction

A curriculum can be developed using many different approaches. Whichever way one chooses however, the common and essential component is identification of the needs of the target learners. This need is found in various contextual settings surrounding the target learners.

As mentioned in earlier parts of this guide, the Markets for Agroforestry Tree Products (MAFTP) project was an attempt by SEANAFE to generate a curricular framework, including teaching materials, using a case study approach. As such, the framework integrates the experiences and insights of various people and organizations involved in the project. Except for in-country training sessions conducted between May and September 2007 to orient 109 lecturers of SEANAFE member institutions about the framework, the project has not been through the implementation and evaluation stages of the curriculum development cycle. Thus, the framework is open to further development, pilot testing, and evaluation, to ensure it meets the needs of potential users. The current framework is however, useful as it is to equip target learners with a holistic view of how small-scale agroforestry entrepreneurs can gainfully participate in markets.

The MAFTP curricular framework is complemented by teaching case study materials to help teach the themes and topics contained in Part 3 of this guide. Some general guidance on implementation of this curricular framework is provided in this section.

The Contextual Setting

Four contextual settings help in understanding and appreciating the formulation of the SEANAFE MAFTP curricular framework. These are: a) the status of, and demand for, forest and non-timber forest products (NTFP); b) link between poverty reduction and forest conservation and sustainable livelihoods; c) marketing issues and concerns surfaced by country research for case studies on the chosen MAFTP; and d) the major educational needs of forestry institutions in the Southeast Asia region.

A. The demand for forest and non-timber forest products and services in Southeast Asia.

The Asia-Pacific Forestry Sector Outlook Study (APFSOS,1998) shows that the demand for a full range of forest and non-timber forest products (NTFP), including services, is generally increasing, both in complexity and scope, throughout the region.

With regard to forest products, Asia, together with North America and Europe, is considered as both a major producer and a consumer. An abundant supply of forest products, as well as a large consumer market, characterize this region. However, recent statistics have shown that the region, despite its ample forest resource endowment, is still a net importer (Table 1).

China, Japan, Malaysia and Indonesia are the region's major producers of wood products, while Japan, China, Korea, Indonesia and Taiwan dominate paper and paper board production.

In Southeast Asia, Malaysia and Indonesia have both utilized their significant forest resources and are involved in sizeable export industries of forest products. However, the 1997 Asian economic crisis greatly affected and reduced demand for forest products in the region.

While China is not considered part of Southeast Asia, it is one of the economic drivers as far as importation of forest products is concerned. China has strong economic growth and low per capita endowment of wood, as well prevailing policy constraints on domestic production from natural and plantation forests (Sun, et al., 2007).

Table 1. Asia's share of global production and consumption of forest products by type and percentage.

Forest Products	Production (%)	Consumption (%)
Industrial wood	18	22
Lumber/wood panels	24	27
Pulp	21	26
Paper and Paperboard	29	32

Of the Southeast Asian countries, Indonesia, Malaysia, Thailand, Myanmar, Cambodia and Laos are exporting hardwood logs and lumber. Only Indonesia, Malaysia and Cambodia are exporting plywood and only Indonesia and Thailand are exporting pulp using various entry points into China.

NTFP at the local level include food, fodder, medicines and building materials such as bamboo and rattan. They comprise an important aspect of forest production. The APFSOS reported that Southeast Asia, as part of the Asia-Pacific region, accounts for up to 40 percent of the world's NTFP exports and this provides employment to a significant sector of its population. Indonesia's rattan industry alone engages about 200,000 local people, while more than 320,000 Vietnamese are involved in NTFP production. However, the real contribution of the NTFP sector in employment and income generation remains underestimated and vague even today.

While the demand for forest products and NTFPs is increasing, forest lands are rapidly shrinking and deforestation is the main cause. According to FAO in its Global Forest Resources Assessment 2005 (as cited in Greenfacts), deforestation or conversion of forests to agricultural land is continuing at an alarmingly high rate. The same source added that forest area decreased worldwide by 0.22% per year in the period 1990-2000 and 0.18% per year between 2000 and 2005.

In Southeast Asia, about 190 million hectares of forest cover were lost in less than a century (1900-1989). A case in point is Indonesia, which accounts for 10 percent of the world's tropical rainforests, and where over one million hectares of forest are cut each year. The rapid reduction of Asia's natural forest lands reflects the failure of conventional management systems to ensure the survival of these diverse and important ecosystems. In the past, governments in search of foreign exchange revenue have encouraged rapid timber exploitation and leased vast areas to private companies controlled by multinationals and politically and economically powerful people.

With pressure on forests and NTFPs from a rapidly increasing world population, there is certainly a need for new arrangements concerning access and management, including processing and marketing. This necessitates a clearer understanding of the roles of all stakeholders, including educational institutions that are responsible for producing the next generation of policy makers, researchers and entrepreneurs; the people who will make far-reaching decisions on the future state of forest products and NTFPs.

B. The Link between Poverty Reduction and Forest Conservation and Sustainable Livelihoods

While the industry sector has a lot to account for in the rapid destruction of forest cover, the same can be said of smallholder families dependent on forest for livelihoods. Of the eighty percent smallholder farmers in Asia (with less than 0.6 ha), a great percentage are into mixed species cultivation or agroforestry operating at low level of productivity and diminishing soil fertility regime (De Costa and Sangakkara, 2006; Kumar 2006). This group of smallholder farmers usually represent the more impoverished sector of the rural economy.

The link between poverty, conservation and sustainable livelihood has long been an issue. There is a recognition that conservation efforts will be more effective if carried out with participation of the smallholders especially with demonstrated impact on livelihoods and poverty reduction. Sustainability of

livelihoods from agroforestry are greatly dependent on marketability of the products. However, unlike commodity crops that have readily available but relatively uncompromising market, the market for some agroforestry products is not always apparent (USDA 2003). Oftentimes, smallholders have to actively engage in marketing activities to ensure sustainability of livelihood. In between production and marketing, smallholder farmers may have to do value adding (storage, processing, etc.) to enhance chances of finding and accessing markets for their produce.

C. Markets for Agroforestry Tree Products Scenario: Some Insights from selected Country Cases

On further analysis of the country research case studies, the issues and concerns related to the marketing of specific AFTP chosen appear to fall within five categories. They include: a) socio-economic; b) enabling environment; c) production systems and conservation practices; d) value adding (including post -harvest); and e) other market related concerns (Table 2).

The limited income, owing to the small size of landholdings and consequently low production levels, is the most cited socio-economic issue on the part of farmer-producers in all five cases. The lack of technical capacity among producers to improve production systems as well as the weak enabling environment, characterized by ill-prepared policies and regulations, do not help and in fact drive marginalized small forest gatherers/producers into illegal trade. If at all, there are few who have surplus to bring to the market. Farmers' inadequate post-harvest capacity affects the quality of their product and value adding potential. This limits their ability to command better prices for their produce which is compounded by their poor access to markets and market information. The lack of product and quality standard (or if present, the lack of knowledge thereof) further constrains farmers in gaining a viable livelihood from forest and agroforestry related activities. The country cases underscore the overwhelming impact of inappropriate or wanting enabling environments (policies and regulations). The more these marginalize smallholder upland farmers, the further they delimit their access to markets and possible integration into agroforestry chains.

D. Some Major Needs of Learning Institutions in Southeast Asia

SEANAFE, with 84 member institutions in five SEA countries, demonstrates that the region is not at all lacking in terms of universities and colleges offering forestry and related courses. Although the importance of forests and the forestry sector is increasing, the capacity of forestry institutions to provide quality education is declining as demonstrated by highly reduced enrolments in most countries. This could be attributed to the quality and relevance of curricular programs and teaching materials that the learning institutions provide. In most cases, curricula and teaching materials are outdated. Learning institutions lack either the resources, expertise, and to some extent the political will, to engage in in-depth curricular development and review in light of new societal perspectives.

This scenario has not only affected the image of the forestry profession, but also narrowed the employability of graduates. Unless faculty members engage in capacity-building activities such as training and research, curricular offerings will not improve which also means there will be no improvement in the quality and number of teaching materials. It is in this area that mechanisms for regional and national collaboration among learning institutions, such as SEANAFE, prove relevant as they enable the sharing of experiences and resources. The SEANAFE MAFTP Project is a clear example of this.

The MAFTP Curricular Framework

This section discusses the distinct features, thematic coverage and modules of the MAFTP curricular framework. As earlier mentioned, the framework incorporates issues distilled from current regional and country situations, which can best be addressed in terms of choice and mix of themes, and how it is proposed they be handled. The framework is envisioned to strengthen and enhance the capacity of learners to respond to the changing environment and lead to a sustainable process for agroforestry marketing. Figure 2 shows the MAFTP curricular framework.

Table 2. Issues and concerns on marketing celected agroforestry tree products in SEANAFE member countries: insights from country research case studies

	Country Issues and Concerns				
	Socio Economic	**Enabling Environment**	**Production Systems and conservation Practices & Behaviour**	**Value adding (including post harvest)**	**Products & Markets**
Philippines (coconut & by products)	limited income low & highly fluctuating prices	poor regulation of standards Inadequate farm-to-market roads	low farm productivity; small marketable surplus Inadequate replanting Avoidance of regulatory checks	limited value-addition and marketing options. Poor post-harvest handling practices Poor timing of harvest Outdated copra processing technology Limited and poor copra storage facililties	inadequate access to favorable markets limited product development. Poor and inconsistent product Lack of technical and entrepreneurial skills Limited quality control Poor linkage with higher-level markets Limited product development
Laos (bamboo)	poverty low bargaining power of farmer-producers engagement in illegal & unsustainable activities of farmer-producers to gain additional income.	unfavorable trade regulation (forest protection policy) reduces farmers incomes from sales (which opens a venue for illegal trade). multiple taxes & other fees further lower farmers income service charges at village/district levels lead to lower prices	low awareness on conservation practices decreased the production and supply of bamboo		Limited market information and marketing skills forced farmers to sell products according to the low prices dictated by traders
Vietnam (cashew)	Low incomes of small scale farmers, especially the ethnic people,	unfavorable biophysical and socioeconomic conditions constrain the marketing of cashew nuts at better price lack of market consultations and government policies with regards to market price information	(The study also found that production scale did not affect the farm gate price)	lack of storage and drying facilities	long market chain and dominated by the middle man price fluctuation farmers remained in debt thus forced to sell at low price access to reliable information (production& marketing) is minimal number of buyers also resulted in low market price of cashew nuts.
Indonesia (cashew)	low level of education of farmer-producers small landholdings (0.17ha for irrigated 1.3 ha/ for hilly land			grading system only by physical integrity of (% of broken kernels) hence age, size, color moisture content or flavor are left out	poor packaging resulting to frequent product damage no branding & promotion due to financial constrains & lack of experience
Thailand (rubber)	small-scale producers, relatively poor in capital & are susceptible to shocks in rubber prices.				Some producers have formed cooperatives to sell rubber, However, group action is not widely practiced compared with individual selling

Distinct Features

The MAFTP curricular framework adopts a 'process approach' where the emphasis is on broadening the perceptions of learners so as to enable them to conceptualize relevant issues in agroforestry. The process approach is essentially a translation of theoretical insights and knowledge into tools which can be applied to the current or enventual professional situation of the learners. The learners are expected to gain an in-depth understanding of agroforestry as a system, articulate issues, and suggest solutions in relation to their prospective jobs, particularly marketing, after graduation.

What sets the framework apart from other agroforestry curricula that exist in the region, is that it provides a learning premise where regional and country development interfaces are viewed and assessed within the context of global challenges. More importantly, it tackles the basics of product and enterprise development, grounded on the concepts of markets and marketing without neglecting sustainability concerns (i.e. social, economic and environmental).

The framework can also be said to be multidisciplinary as it attempts to interface the technical and marketing concepts within the context of agroforestry chains and interspersed with emerging issues in globalizing economies with changing market demands and structures.

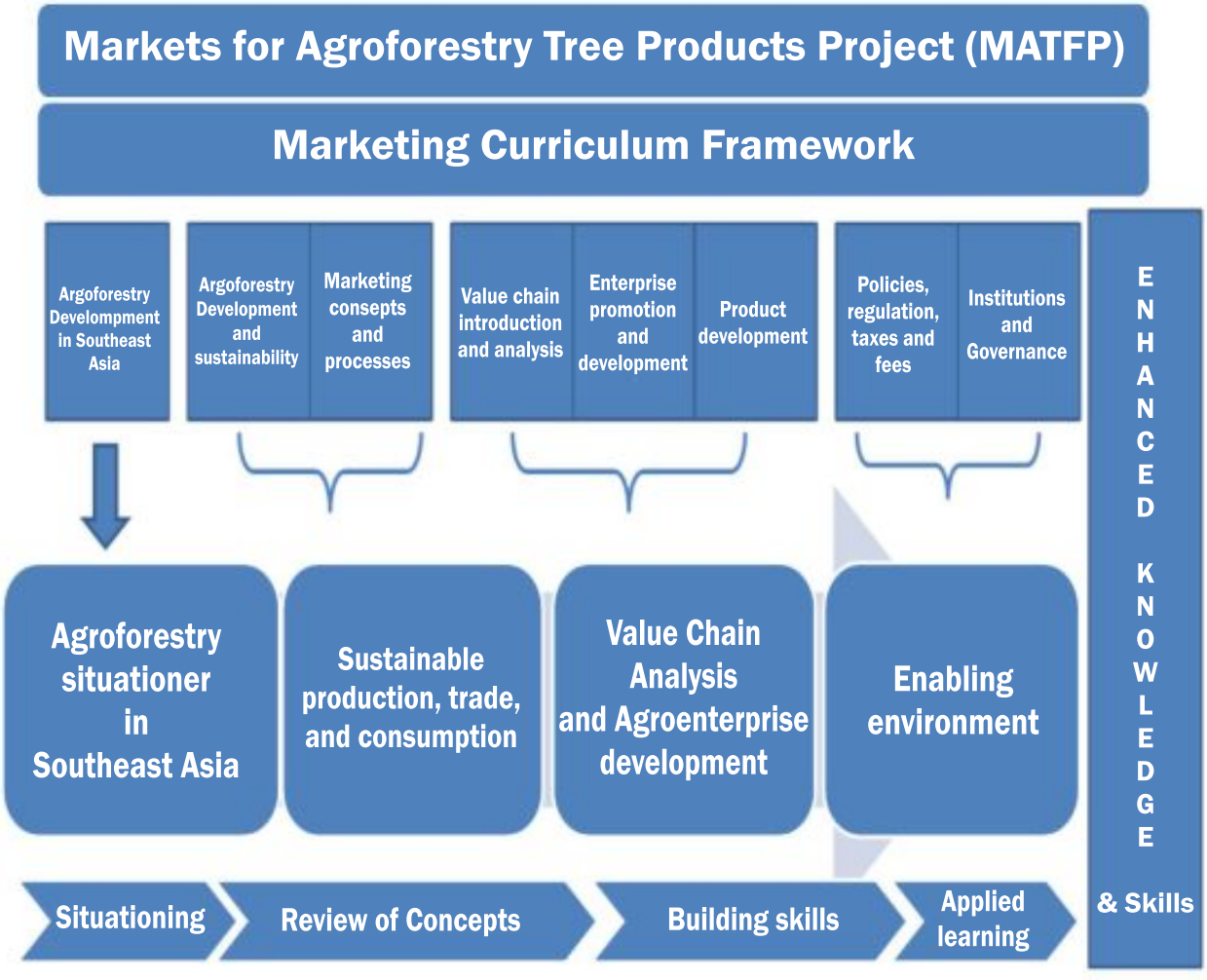

Figure 2. The SEANAFE MAFTP Curriculum Framework

Contents

The thematic areas covered by the MAFTP curricular framework include:

1. Agroforestry Situation in Southeast Asia;
2. Sustainable Agroforestry Production, Trade and Consumption in Southeast Asia;
3. Value Chain Analysis and Agroenterprise Development; and
4. Enabling Environment for Agroforestry Marketing.

Theme 1 sets the tone of the course; providing an overview of the state of agroforestry in the region including its potential and challenges in light of emerging global concerns.

Theme 2 consists of two subthemes, namely: a) agroforestry development and sustainability; and b) marketing concepts and processes. The first sub-theme will discuss agroforestry as a development sector and the subsectors comprising it, including markets and development potential. An assessment of the roles and responsibilities of various actors in the sector in ensuring development and sustainability of agroforestry will also be discussed in light of current and potential challenges, including gender issues. The second subtheme provides an introduction to basic marketing concepts and their relevance to the agroforestry endeavor, the changing agroforestry scenarios and how they impact on the livelihoods of smallholders and communities. It also outlines some basic steps in marketing agroforestry products through market research, marketing plan preparation, implementation, and evaluation.

The marketing theories tackled under Theme 2 are preparatory concepts that will lead to a better understanding of market structure, conduct and behavior "personified" under Theme 3.

Theme 3 aims to enhance the understanding, appreciation and skills of learners on product development, value chain analysis and agroenterprise development. The product development subtheme will specifically discuss principles and processes from the initial concept to determining product form (i.e. nature, size, packaging etc.) with emphasis on emerging quality standards and product certification requirements; integrating environmental consciousness versus pricing schemes and positioning strategies. The value chain analysis subtheme will introduce basic concepts such as: product flow and value adding per chain stakeholder; information flow and nature of decisions in coordinating chains; the nature and extent of relationships within the chain that govern processes and behaviors of all concerned. It will also touch on chain assessment, leading to identification of strong and weak links as a basis for chain intervention and enhancement. This also covers the ways and means of enhancing integration and positioning of agroforestry chains. The agroenterprise development subtheme, on the other hand, will provide an overview of the basic concepts of enterprise and entrepreneurship, including the process of identifying opportunities, developing ideas into realities, and the rigors of business planning. Product development necessitates a clear understanding of the market for which it is intended for. Thus, knowledge of the commodity chain and the value adding that transpires along it will lead to a better product concept that needs to be developed.

Theme 4 focuses on the enabling environment of a sustainable agroforestry-based enterprise. It aims to illustrate the degree of responsibility of different institutions involved and how their good or poor governance affects the individual and collective performances of enterprises within a given agroforestry chain.

The design of the entire curriculum is expected to lead to enhanced knowledge and skills of the learners in developing sustainable agroforestry enterprises that would improve quality of life.

Details of the objectives, desired learning outcomes, suggested tools and methods, duration and coverage, for each of the subthemes are found in Table 3. Table 4, on the other hand, contains the suggested reading materials.

Suggested Course Duration and Schedule

The course entails one regular semester consisting of 52 hours of learning discussion and an additional five days (minimum) field exposure and store visits (Table 5). This equates to around 16 weeks in a period of four months for classroom discussion and an additional week for field/study visits.

It is also possible to include an interim activity or project, at the end of the course, which involves conducting agroforestry market research and presenting this to a panel of professors and invited private sector industry players. This activity will be a venue for validating the concepts learned and could act as a motivating factor for the participants to engage or establish an agroforestry enterprise.

An elective subject on Organization of a Small Agroforestry Enterprise can be an extension subject for those participants who are particularly interested or have a long term plan to establish their own agroforestry enterprise.

Table 3. Details of the SEANAFE MAFTP curricular framework.

Themes, Subthemes & suggested Duration	Brief Description	Objectives	Desired Learning Outcomes	Suggested Tools and Methods
Theme 1: State and Trends on Agroforestry Development in Southeast Asia 4 hours	An overview of the current state of agroforestry in the SEA region, its role in economic development, and the opportunities and challenges confronting it given current global concerns	To enable students to: ● gain awareness on the emerging issues of the sector ● broaden their understanding of the dynamics of the sector themes and subthemes ● enhance their techno-managerial skills in addressing the issues of the sector	Students are able to situate their own organization and/or countrys position within the context of regional agroforestry development and articulate issues confronting the sector and critically start formulating solutions	● Mini Lectures ● Panel discussion ● Group Debate
Theme 2: Sustainable Agroforestry Production, Trade and Consumption	Reconciling market and environmental challenges in response tosustainable production and consumption through a review of concepts, practice, and models on agroforestry markets and marketing, including the varying multistakeholders and the roles they play in the process in the light of gender sensitivies.			
Subtheme 2.1 Agroforestry Development and Sustainability 4 hours	An overview of agroforestry, as a development sector, and the subsectors comprising it including markets and development potentials affecting the sector. An assessment of the roles and responsibililties of various actors of the sector in ensuring development and sustainability of agroforestry will also be discussed in the light of current and potential challenges including gender issues.	To enable students to: ● be familiarized with agroforestry sector stakeholders and their resource base and products ● reconcile market and environmental challenges in response to sustainable production and consumption	Students are able to articulate conflict areas between environmental and economic functions of the agroforestry sector in the light of sustainability and taking the points of view of all stakeholders	● Lecture-discussions ● Comparative scenario analysis

Table 3. Details of the SEANAFE MAFTP curricular framework. (continuation)

Theme & Subthemes	Brief Description and	Objectives	Desired Learning Outcomes	Suggested Tools and Methods
Subtheme 2.2: Marketing Concepts and Processes 10 hours	introduction to basic marketing concepts and their relevance to agroforestry endeavor, the changing agroforestry scenarios and how they impact on the livelihoods of smallholders and communities, and some basic steps in marketing agroforestry products through market research, marketing plan preparation, implementation, and reevaluation	To enable students to: ● appreciate basic marketing concepts in relation to agroforestry products ● understand the impacts of changing agroforestry scenarios on the livelihoods of smallholders and communities ● develop a working knowledge on preparing a marketing plan	Students become conversant on basic marketing concepts and issues as applied to agroforestry setting and be able to prepare a simple marketing plan	● Lecture-discussions ● Group exercise on market research and marketing plan development ● Field visit to relevant agroforestry projects ● SWOT analysis ● Short case study analysis
Theme 3: Value Chain Analysis and Agroforestry Enterprise Development	An appreciation of the value chain concepts and processes as well as the various chain participants adding value to the product as it passes through the chain, understanding of the importance of agroenterprise development and promotion, constanst production innovation and quality assurance towards sustaining agroforestry chains			
Subtheme 3.1 Value Chain Analysis 10 hours	Introduction to basic concepts such as product flow and value adding per chain stakeholder, information flow and nature of decisions in coordinating chains, the nature and extent of relationships within the chain governing processes and behaviors; Chain assessment leading to identification of strong and weak links as basis for chain intervention and enhancement, and ways and means of enhancing integration to and position in agroforestry chains.	To enable students to: ● Assess the strong and weak links in the market chain toward introduction appropriate interventions ● Identify ways and means of enhancing integration to and position of smallholders in agroforestry market chains	Students are able to describe market chain concepts, processes, participants behavior and how information flow and points of control affect the same	● Lecture-discussions ● Case study analysis ● Field visits

Table 3. Details of the SEANAFE MAFTP curricular framework. (continuation)

Theme & Subthemes	Brief Description and	Objectives	Desired Learning Outcomes	Suggested Tools and Methods
Subtheme 3.2: Agroforestry Enterprise Development 8 hours	Overview of the basic concepts of enterprise and entrepreneurship including the process of identifying opportunities, developing ideas into realities and the rigors of business planning	To enable students to: ● Acquire working knowledge on designing and developing a road map in establishing a viable enterprise supportive of smallholders integration into agroforestry chains	Students are able to acquire an enterprise mindset and skills in business plan preparation	● Lecture-discussions ● Case study analysis ● Field visit to relevant agroforestry projects
Subtheme 3.3: Product Development 8 hours	Overview of the principles and processes from concept to deteriming product form (i.e., nature, size, packaging, etc.) with emphasis on emerging quality standards and product certification requirements integrating environmental consciousness versus pricing schemes and positioning strategies.	To enable students to: ● Acquire working knowledge and skills on product development and its accompanying processes ● Relate environmental concerns as early as conceptualization and product planning	Students become aware and knowledgeable on the rigors and challenges of product development and its accompanying process and translate product ideas into tangible enterprise plans	● Lecture-discussions ● Environmental scanning exercises ● Product and market research exercises

Table 3. Details of the SEANAFE MAFTP curricular framework. (continuation)

Theme & Subthemes	Brief Description and	Objectives	Desired Learning Outcomes	Suggested Tools and Methods
Theme 4: Enabling Environment for Agroforestry Marketing	Overview of the varying regional and country requisites that enable agroforestry development and product marketing; analysis of what works and did not work to enhance policy input, formulation and implementation in support of sustainable agroforestry			
Subtheme 4.1: Economic Instruments, and Trade Related Policies and Regulations Affecting Agroforestry Marketing 4 hours	An examination of the (a) effects of economic instruments (taxes, fees, etc.) on harnessing agroforestry potentials to the benfit of marginalized sectors; (b) impacts (real and anticipated) of policies and regulations in promoting or constraining agroforestry initiatives in varying levels; and (c) issues on fair trade	To enable students to: • Be aware on the various policies related to agroforestry and how their presence or lack thereof affects agroforestry initiatives • Understand the importance of fair trade concept to key players in the agroforestry value chain and how such understanding affects production decisions, value adding options, and the enabling environment required	Students become articulate on the various policies and regulations related to agroforestry and the importance of fair trade concepts to key players in the agroforestry value chain.	• Lecture-discussions • Policy and institutional mapping/ assessment exercises • Case study analysis • Consultation/dialogue with different stakeholders
Subtheme 4.2: Institutions and Governance 4 hours	Overview and comparative assessment of the emerging organizational forms and modalities and their roles the performance of individual or group enterprises in agroforestry chains; understanding key elements of successful/failing organizational forms as important basis for future planning activities	To enable students to: • Understand how governance and coordination of organizations and institutions affect the performance of agroforestry chains • Be able to measure how this mode of coordination impacts on the interplay of various groups in sustainable agroforestry chains	Students become critical on the dynamics of various individual/organizational interests in pursuit of agroforestry development and how these affect product, enterprise and chain options and consequent decision processes; be able to foresee his/her future role in all these after graduation.	• Institutional mapping and assessment exercises • Corporate analysis • Focused group discussion • Case study analysis

Table 4. Suggested Reading Materials for MAFTP curricular framework sub-themes.

Theme and subtheme	Title/author
1.0 Agroforestry development in Southeast Asia	• Global Forest Assessment 2005: 15 Key Findings. FAO • Meeting Chinas Demand for forest products: An Overview of Important Trends, Part of Entry, and Supplying Countries, with Emphasis on the Asia-Pacific Region. Xiufang Sun et al • Agroforestry systems research: evolving concepts and approaches. Agricultural Systems for Sustainable Resources Management and Community Organization Development: Proceedings of the First Thailand National Agricultural Systems Seminar, Bangkok, 15 -17 November 2000. DE Thomas
2.1 Agroforestry development and sustainability	• Best practices in agroforestry: Lessons generated from the experiences of upland farmers in Northern, Philippines. J. M. Servitillo. • Training manual for applied forestry practices 2006 edition: Section 2 - Introduction to Planning for Agrofroestry.University of Missouri Center for Agroforestry, Columbia
2.2 Marketing concepts and processes	• Reviewing Agroforestry and agroforest markets in Vietnams Uplands: Agroforestry Development Situation in Vietnams Uplands.CARES • Market Imperfections and the Choice of Agroforestry Systems by Tran Chi Thien, Thai Nguyen University • Community-based tree and forest product enterprises: market analysis and development. FAO • Marketing management. Analysis, planning and control. Philip Kotler • How to develop a sustainable agroforest marketing strategy. Peter Calkins • Agroforest marketing methodology.Peter Calkins • Training manual for applied forestry practices 2006 edition: Section 9 - Marketing principles for agroforestry. University of Missouri Center for Agroforestry
3.1 Value chain analysis	• Cornerstones for market interventions that improve smallholder livelihoods. Franzel, S. and Denning, G. • Strategic Management: Value Chain. Net MBA Business Knowledge Center • Actionable Architectures for Value Chains and Value Coalitions Taxonomies for Efficient Information Flow, Effective Decision making and Performance Management: An ICH White Paper. Interoperab ility Clearing House. John Weiler and Bob Schemel
3.2 Agro-enterprise promotion and development	• How, When & Why of Forest Farming: Unit 7 Marketing Specialty Forest Crops (Assessing Markets and consumers behavior). Cornell Cooperative Extension. • Elements of A Successful Business Plan.Steve Bogash.Maryland Cooperative
3.3 Product development	• Training Manual for Applied Forestry Practices 2006 ed. Section 9- Marketing Principles for Agroforestry. University of Missouri Center for Agroforestry, Columbia • Pricing and Positioning for Entrepreneurial Marketers. Knowledge Wharton. Wharton School of the University of Pennsylvania. • Marketing Basics Part 2: Chapter 5 Segmentation, Targeting, Positioning and Pricing

Table 4. Suggested Reading Materials for MAFTP curricular framework sub-themes (continuation).

Theme and subtheme	Title/author
4.1 Policy, regulations, taxes, fees, and trade	Agroforestry policies contribute to sustainable land use.The Environment and Natural Resources policy and Training Project (EPAT) Impacts of policies on upland communities and their livelihoods. Improving Upland Livelihoods in the Lao PDR A Source Book. DE Thomas Policy responses to complex environmental problems: insights from a science policy activity on transboundary haze from vegetation fires in Southeast Asia. Daniel Murdiyarso, et al Historical perspectives on forest policy change in Asia: An Introduction. David Edmunds
4.2 Institutions and governance	Political and institutional transformation in environmental governance: a case study of local governments in the Philippines. 2nd International Conference of the Asian Rural Sociological Association (ARSA), Lombok, Indonesia, March 26-29, 2004. D Catacutan, DP Garrity and RC Cramb Nobody Knows Best: Alternative Perspectives on Forest Management and Governance in Southeast Asia. International Environmental Agreements: Politics, Law and Economics Journal. Vol 4 No.2, June 2004. Springer Netherlands Managing Natural Resources Locallcy: An overview of innovations and ten initital steps for local government. E. Queblatin, D. Catacutan and D. Garrity

Table 5. Suggested semestral schedule in teaching an MAFTP course using the SEANAFE curricular framework.

Sessions	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Total hrs
Theme 1																	
Module 1	----																4
Theme 2																	
Module 2.1		----															4
Module 2.2			----	----	--												10
Field Work						----											
Theme 3																	
Module 3.1							----	----	--								10
Module 3.2									--	----	--						8
Module 3.3											--	----	--				8
Theme 4																	
Module 4.1													--	--			4
Module 4.2														--	--		4
Field Work																----	
Total hours																	**52**

Note: Four hour-long sessions per week; the 16 weeks includes two field work sessions and/or an exchange visit

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Morris, J. , Le Thi Phi, Ingles A., Raintree J. and Nguyen Van Duong. 2004. Linking Poverty Reduction with Forest Conservation: Case Studies from Vietnam. International Union for Conservation of Nature and Natural Resources (IUCN), Bangkok, Thailand.74 pp.

National Forest Policy Review: Thailand by Anan Nalampoon

N. De Baets, S. Garlepy and A. Vezina.2007. Portrait of Agroforestry in Quebec. Prairie Farm Rehabilitation Administration (PFRA), Regional Services, Quebec Region Agriculture and AgriFood Canada.

Queblatin, E., D. Catacutan and D. Garrity, 2001. Managing Natural Resources Locally: An overview of innovations and Ten Initital Steps for Local Government. International Centre for Research in Agroforestry and International Fund for Agricultural Development, 44p.

Roadmap to recovery: The world's last intact forest landscapes. Greenpeace Behring.31 pp.

Research Network Report # 1. Sustaining Southeast Asia's Forests.

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3. The Teaching Case Study Materials

Introduction

Each case study material in this Chapter is divided into 2 parts: Notes for Teachers and the Case. As mentioned in the previous Chapter, the cases presented here are the repackaged versions of the original research case study reports of the country teams. They are as follows:

- Market Chain Analysis of Cashew Nuts in Wonogiri District, Central Java Province, Indonesia
- Bamboo Marketing in Laos
- Market Development for Coconut-Based Agroforestry Farms in Quezon Province, Philippines
- Marketing of Para Rubber Products of Small-scale Farmers in Northern Thailand
- Cashew Nut Supply Chains in Dak Nong and Binh Phuoc Provinces of Vietnam

These case study materials are suggested to be used in discussing specific themes in the SEANAFE MAFTP curricular framework as shown in Table 6.

Table 6. Suggested application of the country case studies in teaching selected sub-themes in the SEANAFE MAFTP curricular framework.

Sub-themes	Country Case Studies				
	Indonesia	Laos	Philippines	Thailand	Vietnam
3.1. Value chain analysis	✓	✓	✓	✓	✓
3.2. Agroforestry enterprise development	✓	✓	✓		✓
3.3. Product development			✓		
4.1. Economic instruments, and trade related policies and regulations affecting agroforestry marketing		✓	✓		
4.2. Institutions and governance	✓ (specifically on gender)			✓	✓

Teaching Case Study Material 1:

Market Chain Analysis of Cashew Nuts in Wonogiri District, Central Java Province, Indonesia

A. Notes for Teachers

Aims and the Methodology Used in Generating the Case Study Material

This case study presents the result of field research conducted in Wonogiri District of Central Java, Indonesia during January-March 2006 as part of the SEANAFE project on Markets for Agroforestry Tree Products. With cashew as the case commodity, the research attempted to answer the question, "Why extensive participation in a government program of growing agroforestry trees does not automatically guarantee sufficient benefit to farmers?".

The research looked specifically at:

a) The extent and efficiency of the cashew nut market;

b) Value chains and actors in the cashew nut market;

c) The contribution of cashew nuts to household income; and

D) Gender division of labor related to the cashew market.

Primary information was obtained from a variety of respondents, including farmers (20), middlemen (3), processors (3), government agencies, financial institutions, farming cooperatives and NGOs. The respondents were interviewed in depth, either individually or in focus groups.

Field work was conducted in Rejosari village, located in the important cashew producing sub-district of Ngadisrono. This village was selected by the government of Wonogiri to be developed as the centre of its cashew nut industry.

Secondary information was obtained from various private and public agencies, and published sources.

The research team proposed a number of strategies to improve farmers' ability to derive income from the cashew growing market.

The research team comprised of lecturers/researchers from Institut Pertanian Bogor, Universitas Gadjah Mada, and Research Institute for Estate Crops of Indonesia.

Problem Statement/Key Issue of the Case

State promotion of agroforestry products is widespread in Southeast Asia. It frequently works towards economic development, and sometimes environmental protection, particularly in rural areas. State promotion is often on a large scale and can fail to consider or monitor the various localized impacts of promoting a particular agroforestry product. In many cases, the emphasis is on production rather than maximizing benefits to poor farm households, which involves marketing issues such as improving bargaining power, value addition and product development.

Brief Description of the Case

In Java, the Indonesian Government agroforestry program has focused on cashew nuts. Cashew has been promoted by the government since the 1980s, aimed at reforestation and rural income generation. Combined with a growing market, this policy has lead to extensive participation of community households in the production and processing of this product.

Wonogiri district in Central Java was among the sites chosen for such an agroforestry program. Here, cashew production remains a home industry, conducted mainly by poor farmers. The area under cashew in Wonogiri has doubled between 1998 and 2004. During the same period, the domestic price for cashew kernels tripled. Yet despite these promising trends, the results have been less than satisfactory. Land degradation and poverty have remained widespread among a full quarter of the district's population until 2005.

Farmers in Java are generally small landholders with a low level of production technology and limited access to market information. They face a range of constraints including: tedious, complex and labor intensive processing; inadequate grading and packing; and lack of market information throughout the marketing chain. In addition, they generally bargain individually with middlemen, which provides them with less bargaining power. Despite this, cashew production contributes significantly to processor's family income, and is well established.

This case study further describes the constraints to, impacts of, and opportunities for cashew nut production in Wonogiri district, Java. If the Indonesian Government wishes to further promote and develop cashew agroforestry, and help achieve the livelihood development goals of the agroforestry program in Java, it should consider tackling some of the obstacles highlighted in the case study.

Key Learning Themes of the Case

The case provides good material to enable your students to learn and develop the skills for critical and analytical thinking on the following themes: a) market chain analysis; b) processing, packaging, and value addition; and c) gender analysis, with cashew nuts as a case example. These themes are not discussed as separate headings in the case, however the guide questions on the succeeding pages will help you determine which learning theme you would like to focus on in your classroom session when using this material with your students. You could formulate other questions for the same purpose. You are also encouraged to develop mini-cases on specific key themes if you deem it necessary.

Expected Learning Outcomes after Discussing the Case

The case study could orientate your students on the kind of research questions required to: profile processors; explore processing procedures; identify types and sources of market information; and identify constraints faced by farmers (particularly women) and small processors. It would also encourage learners to critically examine the role of the state in the promotion and development of agroforestry products and markets, and to suggest reasonable responses to constraints and unexpected impacts.

Guide Questions and Suggested Discussions

Questions	*Discussions*
1. Who are the major actors in the cashew nut marketing chain in Wonogiri district? Suggest some critical roles they should play toward having a more efficient marketing system of cashew nuts there?	A range of actors are involved in cashew marketing in Wonogiri. These actors have a mixture of roles (see Figure 3 in the Case Study): ● Small-scale farmers are the main producers of the cashew drupes. Two types can be identified, based on their role in the marketing chain: those who run a processing business (farmers-cum-processors) and those who do not. Farmers who do not process the drupes into kernels are simply producers. They frequently have larger farms and do not need additional income from processing. ● Middlemen-cum-processors are villagers who buy cashew drupes from the producers. They may process them into cashew kernels themselves, or sell them to the sub-district middlemen who then sell them to wholesalers-cum-processors for processing. ● The village middlemen with no processing business who buy cashew drupes from the producers may then sell them to the sub-district middlemen. These actors either sell the drupes on to the wholesalers-cum-processors or to farmers-cum-processors. ● For sale of cashew nut outside the district, the wholesalers-cum-processors are the major players, with the sub-district middlemen playing only a minor role.
2. What are the key issues confronting the quality standardization, packaging, and branding and promotion of the cashew nut industry in Wonogiri district? What, and how should improvements be introduced in these aspects of the business?	● In Wonogiri district, cashew nuts are classified into three quality categories (A,B,C) according to the physical integrity of the product (i.e. the percentage of broken kernels). This system ignores other qualities in which buyers and consumers might be interested, such as moisture content, age, size, color or flavor. ● The packaging of cashew kernels for transportation is minimal. The nuts are simply placed in large plastic bags. Neither the size nor quality of these plastic bags are standardized or subject to regulation. ● There has been no effort to establish a reputed brand for cashews and to invest in promotion, due to limited funds and a lack of experience among household producers and even middlemen traders to tackle these issues. ● Suggestions for improvement of quality standarization, packaging and branding: 1. Development of a national mechanism to control cashew nut quality standard (SNII); 2. Application of simple technology such as using cardboard boxes for transporting cashew nuts, instead of plastic bags, to reduce profit loss and damage to kernels; and 3. Strengthening of collective action in the district to agree on branding the cashew nuts produced from Wonogiri district and promotion of the same in the local market.

3. How much additional value do marketing chain actors get from the cashew nut industry in Wonogiri district? From what activities are these added values created?	The profit margin received by marketing actors is an added value for them (see Table 2 in the Case Study). Profit Margin per market actors are as follows: 1. Farmers, IDR 1,500 (5.0%); 2. Village Middlemen cum-Processor, IDR 3,000 (8.5%); 3. Village Middlemen, IDR 2,000 (5.7%); 4. Sub-District Middlemen, IDR 1,500 (4.0%); and 5. Local retailers, IDR 1,500 (4.0%). Current activities to get added value: 1. Simple processing such as washing and drying by farmers; 2. Grading and other quality standardization by village and sub-district middlemen; 3. Transporting by village and sub-district middlemen; and 4. Provision of outlets by local retailers. Suggestions to increase added value: 1. Better packaging; and 2. Creating a brand and promotion.
4. What gender issues, in terms of access and control, exist in the cashew nut business in Wonogiri district? How do these issues influence the marketing of cashew nuts and household income in the village?	• There is an unequal gender role in the accessibility and control in the case of both collector traders and wholesale traders. • Men and women in the village enjoy a good partnership in the accessibility of control towards resources and processing technology, though not perfect. • The role of women is limited to the accessibility of price and training information, and women's access and control to obtain credit for production and marketing do not yet exist . • Women have more accessibility of control in the processing of cashew nut, which means they have greater control on the quality of cashew nuts required by the markets. Such a condition certainly influences the price of cashew nuts and the household income that could be received by farmer-cum-processors.

Suggested Activities

This case study describes a real-world situation with all the associated complexities and uncertainties. This is the likely environment many learners will find themselves in during their professional lives. The following activities are selected to help equip the learners with tools to understand and analyze the real work, and to formulate plans for interventions.

1. Based on the case study, conduct a SWOT analysis (strengths, weaknesses, opportunities and threats) for the government's agroforestry program.

   SWOT analysis is a very powerful tool, which learners will find incredibly valuable in their future professional lives. It is very good at helping to understand complex situations and finding solutions to problems. Conducting a SWOT also helps identify differences between stakeholders. For this reason, the SWOT activity could be conducted by a group of students role-playing different participants in the

marketing chain, for example:

- Farmer producer/processors, who would be expected to see weaknesses in government support and unfair practices from middlemen;
- Middlemen, who might be concerned about the high transaction costs of cashew collection as well as low and variable product quality;
- Local government officers, who might empathize with the farmers but feel they have already done enough to promote cashew;
- Outside traders, who are most concerned with a cheap, steady and quality supply of cashew products;
- Any other stakeholder in the case study that the learners would like to act out.

2. Conduct a simple research project on a local NTFP/agroforestry promotion program, specifically looking at market development aspects.

   The Indonesia case study highlights some weaknesses in the government's promotion of a particular product (raw cashew drupes) without sufficient emphasis on developing the market. While cashew production has boomed, the benefits to the target beneficiaries have been somewhat disappointing. Using the case as an example, the learners should select local or national programs and investigate what has been done to ensure market development matches product promotion. Presentations can be made of the results.

3. Conduct a quick market survey for a local product which has been growing rapidly in the last few years, and think about where and how improvements can be made.

   By visiting a small number of shops, processing facilities and farms in your area, learners should be able to start drawing a picture of a local market chain. They should specifically be asked to think critically about where the market chain can best be developed, what the costs and benefits of market development are, and who bears those costs and benefits. This activity is designed to both encourage research skills and to think critically about the different roles and responsibilities in market development of private individuals, private enterprises and the state. (In some settings it might be easier to try to trace back the market chain for an agricultural product that is purchased by the learners on a regular basis, such as market vegetables.)

Suggested Readings

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B. The Case

Section 1: Setting

Historical overview

Java is the largest and the most populous island in Indonesia, covering just six percent of the country but home to almost 60 percent of its population of approximately 215 million. As the centre of industry and the main food production area in Indonesia, Java plays a leading role in the national economy.

This role is increasingly threatened by the long-standing problems of deforestation and soil erosion, which have lead to large scale flooding and landslides during the rainy season and severe shortages of fresh water during the dry season.

The Government of Indonesia has launched a number of initiatives to ameliorate environmental degradation in Java and other parts of the country. One of these, which has been in place since the early 1980s, is reforestation of upland areas through agroforestry. Through this program, the government provides materials and other support to assist upland farmers to plant tree crops such as coffee and cashew nut.

The program's environmental goal is to control soil erosion in river catchments. It is also expected to have a positive impact on incomes, particularly through improved land productivity, water condition and soil fertility. The agroforestry program is therefore also considered to be a poverty alleviation program.

However, after more than 25 years of implementation, the program is yet to deliver the intended results. Despite an increase in cropping intensity and land productivity, poverty remains common. For some reason, the agroforestry program has failed to generate sufficient additional income for upland farmers.

Location and socio-economics

The district of Wonogiri lies in a dry, upland area in Central Java (Fig. 1). Its elevation is about 400m above sea level and the district receives roughly 1,500mm and 67 days of rain annually.

The local economy is based on agriculture which contributes to just over half of the district's gross domestic product. An increasing area of land is considered 'critical', and this now accounts for 23% of the district's total area.

Local authorities have been implementing the government reforestation program since the early 1980s. In Wonogiri, local conditions are highly suited to cashew nut tree cultivation, and this has been heavily promoted under the program. As a result of considerable growth in cashew production, the program is considered successful in Wonogiri.

Official figures for 1999 and 2004 show that during this period the land under cashew production increased by 37% to 7,738ha, and total cashew nut output nearly doubled to 10,833 tons. This stems from a concurrent increase in average productivity, which doubled to 1,400 kg/ha.

Production and marketing of cashew is now big business in Wonogiri and the majority of local farmers are involved to some degree, either in cultivating the trees or processing cashew beans into finished kernels. Cashews therefore form an important part of the local economy.

Rejosari village in Jatisrono sub-district was selected by the local government to become the centre for the district's cashew production. After ten years of involvement, virtually all households in the village now have at least two cashew trees.

Most of the 4,890 households in this village are headed by elderly farmers. In general, education levels are very low, with about two-thirds having only completed six years of state schooling. Landholdings are small, averaging 0.17 ha/household for irrigated land and 1.3 ha/household for hill land.

National and international market trends

The Indonesian cashew nut industry has grown significantly over the last decade, with the area planted to cashed trees increasing at an average of 2.3% annually and a near doubling of total cashew nut output. Although growing at 3.5% annually, domestic demand has not kept pace with the increase in output, which has instead been absorbed by the international market. Exports now account for 50% of total Indonesian cashew production.

Most of the growth in production can be attributed to the Indonesian government's promotion of its reforestation program. Despite this production growth, the market price for cashew nuts continues to rise. The average domestic price of cashew nuts increased at a phenomenal average of 17.7% per year between 1995 and 2004 reaching IDR 40,000/kg.

Research results suggest that in Indonesia, the domestic market price is largely determined by the international market price. Simple calculations show that a 1% change in the international price causes a 1.2% price change domestically. Currently this does not present a threat to the country's cashew exports, as price signals continue to suggest that the supply of cashews is lower than the market demand. This is having an obvious impact on the appeal of cashew production.

Section 2: Market Analysis

Production and harvesting

The cashew (Anacardium occidentale) is a small evergreen tree belonging to the Anacardiaceae family and grows to 10-12m. Originally native to north-east Brazil, the cashew tree is now widely grown in tropical countries for its fruits.

The cashew nut is the most frequently used part of the cashew tree. The cashew nut which is traded domestically and internationally is the kernel from the cashew drupe. The drupe grows at the end of a pear-shaped accessory fruit called the cashew apple, which is yellow or red and about 5-11cm when ripe.

In Rejosari village, cashew trees are never planted as a monocrop but are mixed with other trees such as teak, or with seasonal crops like cassava and chili. Cashew trees are frequently planted as boundary or 'fence' trees. As a result, the size of cashew nut farming is directly related to the farm area and the number of trees is significant. Farm households in Rejosari village have between two and 50 cashew trees with an average of 18.

Most of the cashew trees in Rejosari were planted in the early 1980s and farmers now only provide minimal attention to them. Fertilizer is rarely used, both to save money and because farmers do not think it necessary to fertilize mature trees. Government extension workers believe otherwise and have been promoting regular application of nutrients to both young and old cashew trees.

The harvest season for the nuts normally lasts four months between July and October, with a peak in September. Harvest is carried out manually using bamboo poles to reach the mature fruits, and it is usually done by members of the household rather than hired labor.

Post production processes

Processing

Immediately after harvest, farmers process the fruits. They separate the drupe from the cashew apple which is usually discarded. The drupes are then sun-dried for a few hours. These raw products are locally traded and then processed by small-scale home industries to produce the cashew nut kernel.

Generally the processing of cashew drupes into cashew kernels takes eight steps (Figure 2): (i) cleaning; (ii) soaking; (iii) roasting; (iv) shelling; (v) drying; (vi) peeling; (vii) grading; and (viii) packaging. All these steps have to be conducted with care to obtain good grade kernels.

Shelling is the most difficult step. If it is done with less care, the kernels can be broken and these have a much lower market value. Experience is essential and the task is therefore highly specialized. In the study area, shelling is a small-scale home industry and mainly carried out and managed by women.

Processing adds significant value to the cashew product. In Wonogiri district, the majority of cashew processing is done by small-scale home facilities. There are no companies involved in Rejosari village and only a few at the district level.

Quality standardization

In Wonogiri district, kernels are classified into three quality categories. Grade A kernels are the highest quality and unbroken, Grade B contains 30-40% broken kernels and Grade C has more than 40% broken kernels. The price difference between the higher and lower grades can be as much as IDR 1,000/kg (US $0.10/kg), which is equal to about 14-25% of the total value per kilogram at current prices.

Grading allows better quality control and product selection for buyers and consumers, which ultimately leads to more accurate product pricing. It also allows contractual transparency, so that buyers can order more efficiently. The Wonogiri grading system therefore has obvious benefits for the local cashew market. However, the study found that producers, processors, and buyers saw a number of shortcomings in the grading system.

The main issue is that the current A, B, C system only refers to the physical integrity of the product (i.e. the percentage of broken kernels). This simplification ignores other qualities in which buyers and consumers might be interested, such as moisture content, age, size, color or flavor.

Since pricing is based largely on the grade, any physical damage to the product during harvest, processing or shipment reduces its value, even though other characteristics might not be affected. With at least eight steps, several handlers and considerable distance covered before cashew kernels reach their final market, maintaining quality is a significant transaction cost.

A more practical system for product quality standardization has been called for. The Indonesian Government has already developed a national mechanism to control various commodities and products, known as the 'Standard Nasional Industri Indonesia' (SNII). As yet, there is no SNII for cashew kernels but there is certainly scope to develop one in the near future.

Packaging

Product packaging is fundamental to maintaining product quality, particularly to avoid the product becoming damaged, perishing or contaminated. Appropriate packaging ensures maximum product value that can be obtained from the market.

The study revealed that present packaging methods are far from sufficient to protect products from quality and quantity degradation.

Most of the cashew kernels produced in the study area are sold to other cities on the island of Java before further processing. Transportation is predominantly by road and can take more than ten hours. En route, raw cashew kernels are often mixed with other agricultural produce such as vegetables.

Contrary to expectations, the packaging of cashew kernels for transportation is minimal. The nuts are simply placed in large plastic bags. Neither the size nor quality of these plastic bags are standardized or subject to regulation.

Product damage is frequent. The survey recorded that buyers often complained to sellers about the quality of kernels on arrival; that what they received was not as good as they had expected or agreed to in a contract. Relatively simple technologies such as cardboard boxes could avoid unnecessary complaints and loss of profit.

Branding and promotion

To date, there has been no effort in Wonogiri district to establish a reputed brand for cashews or to invest in promotion. The reason is quite simple-individual household producers and middlemen traders are too financially limited and lacking in experience to tackle these issues.

This is unfortunate since branding and promotion could add significant value to local produce through encouraging customer loyalty and differentiating Wonogiri cashews from those of other regions in Indonesia.

Certainly, promotion is an ongoing expense, but it is one business aspect that benefits from economies of scale. Commercial promotion is efficient only for producers (or traders) with a sufficiently large share of the market. At present, the only other way to achieve this in Wonogiri district would be through some form of collective action.

Marketing Actors

A range of actors are involved in cashew marketing in Wonogiri, including farmers, processors, village middlemen, sub-district middlemen, wholesalers, local retailers and consumers. Contrary to what is often stated in marketing literature, many of these actors have a mixture of roles which makes the relationship between them very complex. This study focused only on identifying and describing the most important actors and linkages.

As Figure 3 shows, small-scale farmers are the main producers of the cashew drupes. Two types of farmers can be identified based on their role in the marketing chain; those who run a processing business (farmers-cum-processors) and those who do not.

Farmers who do not process the drupes into kernels are simply producers. They frequently have larger farms and do not need additional income from processing. For this type of farmer, there are three outlets for their drupes: i) farmers-cum-processors; ii) village middlemen with no processing business; and iii) village middlemen-cum-processors.

Middlemen-cum-processors are villagers who buy cashew drupes from producers. They may process them into cashew kernels themselves or sell them to the sub-district middlemen who then sell them to wholesalers-cum-processors for processing.

Village middlemen with no processing business who buy cashew drupes from producers may then sell them to the sub-district middlemen. These actors either sell the drupes on to the wholesalers-cum-processors or to farmers-cum-processors.

The market chain for processed kernels is even longer and more complex than for the drupes. Almost all the cashew kernels from the district of Wonogiri are sold to other cities on Java such as Jakarta, Yogyakarta, Semarang or Surabaya.

Because of the complexity of distribution channels, the scope of this study did not allow a comparative analysis of the importance of different marketing actors. Nevertheless, it is clear that for sale outside the district, the wholesalers-cum-processors are the major players, with the sub-district middlemen playing only a minor role.

Household income and comparative profit margins of marketing actors

Household income

The generally small size of household plots in Wonogiri district means that the number of trees is usually limited.

As mentioned, an average household in Rejosari village has 18 cashew trees which could produce about 161kg of drupes per year. At IDR 7,000/kg, the average household can expect to earn IDR 1.127 million or about 13% of annual household income. However, these averages hide large variations in the number of

cashew trees on each farm. Harvests actually range from 40 to 700kg which equates to between IDR 280,000 and 4.9 million per year.

To estimate the total income from processing, the study first calculated the operating margin based on average costs and prices in the village (Table 1). This suggests that for every 1kg of kernels produced, small processors make a profit of about IDR 7,500 over and above material and labor inputs.

Typically, during the 120-day harvest season, the average small processor will work seven days a week, converting 30kg of drupes into 7.5kg of kernels each day. The season therefore yields up to 900kg of kernels in total. Processors earn around IDR 7,500/kg for finished kernels, which makes the annual income for the average processor household just under IDR 7 million.

Government figures show that the average annual farm income is IDR 8.6 million. Cashew processing therefore has the potential to boost income by over 75%. Although these figures are averages, it is clear that for production and processing households, changes in the profitability of cashews can have a significant impact on family liquidity.

Comparative profit margins

The study tried to investigate the costs and benefits along the various market chains. Due to the complexity of these chains and a lack of adequate data, it was impossible to compare the efficiency of the different marketing chains. It was possible to calculate the margin of profit enjoyed by a small sample of different marketing actors (excluding wholesalers, from whom data was unavailable) as shown in Table 2.

It is dangerous to draw too many conclusions from the data in Table 2 since it does not indicate the volumes traded nor the capital and labor costs involved. However, it does suggest that the highest margin goes to the village middlemen-cum-processors who earn about IDR 1,000/kg kernels more than village middlemen with no processing business. This added income seems to represent the market value of the capital and labor invested in processing kernels.

Table 1: Average profit per kilogram for cashew processing

A. Production Costs	**IDR**
1. Cashew drupes (20kg x IDR 7,000/kg)	140,000
2. Kerosene (0.5l x IDR 3,000)	1,500
3. Kapur for protecting hands	500
4. Depreciation cost of shelling knife	500
Total (A)	142,500
B. Revenues	
1. Sale of kernels (5kg x IDR 35,000)	175,000
2. Sale of nut shell (15kg)	5,000
Total (B)	180,000
C. Total Gross Family Income/5kg kernels (Total B- Total A)	**37,500**
D. Total Gross Family Income /1kg kernels (Total C/5)	**7,500**

Table 2: Profit margins for key marketing actors in Wonogiri district (IDR/kg of cashew kernels)

Item	Marketing Actors				
	Farmers-cum-Processors	Village Middlemen-cum-Processors	Village Middlemen who do not Process	Sub-district Middlemen	Local Retailers
Sale Price	30,000	35,000	35,000	37,500	37,500
Purchase Price or Production Cost	28,500	31,500	32,500	35,000	35,000
Absolute Marketing Cost	0	500	500	1,000	1,000
Absolute Profit Margin*	1,500	3,000	2,000	1,500	1,500
Relative Profit Margin**	5.0%	8.5%	5.7%	4.0%	4.0%

* The absolute profit margin is equal to the sale price less purchase price, or the cost of production less marketing costs.

** The relative profit margin is equal to the absolute profit as a percentage of the sale price.

Farmers' Credit Access and Bargaining Position

Credit Access

For cashew farmers, not being in debt to middlemen is probably an advantage, but loans from buyers are one less source of credit available to them. For farmers wishing to expand production, or those experiencing financial constraints, access to credit can be vital.

Although there are some private and public banks operating in Wonogiri district, the poorest farmers do not have sufficient collateral to guarantee a loan. At the present time, farmers in the study area are highly restricted in the capital they can borrow.

Farmers' bargaining position

Farmer-producers and processors clearly see benefits from participation in cashew cultivation, and in many cases derive a significant income from it. However, there are two reasons to suspect why they are not receiving all of the economic benefits that might be expected.

Firstly, farmers trade their product from a relatively weak position. Reports from other rural areas of Java suggest farmers sometimes sell agricultural products prior to harvesting in order to have access to cash. This is not the case in the study area where the sale of both drupes and kernels is strictly cash-on-delivery. Farmers do not take loans from middlemen and are therefore largely free to choose whom they will sell to and under what terms.

This position of strength is countered by the small output of any individual farmer which is relatively insignificant to the middlemen who are able to negotiate prices down by using the threat of not buying. So despite some freedom in their relationship with traders, farmers on the whole still feel they get a raw deal.

Secondly, farmers lack proper market information, both because they are remote from the final markets themselves and because there are few information sources. Middlemen therefore have a considerable bargaining advantage because they have a better knowledge of market prices.

Gender Analysis

Gender analysis is a process of analyzing data and information systematically to identify and indicate the status, function, role and responsibility of men and women and their affected factors in a particular situation. (KPP-BKKBN-UNFPA 2003).

In general, this study showed that good partnerships exist between men and women in the cashew nut business in Rejosari village of Wonogiri district, even though it is not yet balanced and perfect (Table 3). There is an unequal gender role in the accessibility and control by collector traders and wholesale traders, however there is an equal gender role in the accessibility of control by farmers and processors though women have more accessibility of control in processing. Further, men and women in the village enjoy a good partnership in the accessibility of control towards resources and processing technology, though not perfect. The role of women is limited by accessibility to price and training information. Women's access and control to obtain credit for production and marketing do not yet exist in Rejosari village, Wonogiri district.

On the other hand, the role of women is greater than men in terms of accessibility and control toward the use of 'kacip' machinery for shelling the cashew nut and other methods of processing. This means that women have greater control of the quality of cashew nuts, which influences the price received by farmer-cum-processors, and therefore their household incomes.

Guide Questions

1. Who are the major actors in the cashew nut marketing chain? Suggest some critical roles they should play towards having a more efficient marketing system for cashew nuts in Wonogiri district?
2. What are the key issues confronting the quality standardization, packaging, and branding and promotion of the cashew nut industry in Wonogiri district? What and how should improvements be introduced in these aspects of the business?
3. How much additional value do marketing chain actors get from the cashew nut industry in Wonogiri district? From what activities are these added values created?
4. What gender issues in terms of access and control exist in the cashew nut business in Wonogiri district? How do these issues influence the marketing of cashew nuts and household incomes in the village?

Table 3. Gender Analysis of Cashew Nut Business in Rejosari village, Wonogiri district

No	Activity	Female		Male	
		Accessibility	Control	Accessibility	Control
1	**Classification of Cashew Nut Farmer**				
A	Farmer				
B	Processor				
C	Collector Trading	-	-		
D	Wholesale Trading	-	-		
2	**Resources**				
A	Land				
B	Credit of Production	-	-		
C	Credit of Marketing	-	-		
D	Information on Price				
E	Information on Training				
3	**Processing Technology**				
A	The use of Pengacip machinery				
B	Practice of Processing				
4	**Marketing**				
A	Organization of Marketing	-	-		
B	Marketing Channel	-	-		
C	Extension of Market	-	-		

Note : : indicates a high level of female/male role

: indicates a low level of female/male role

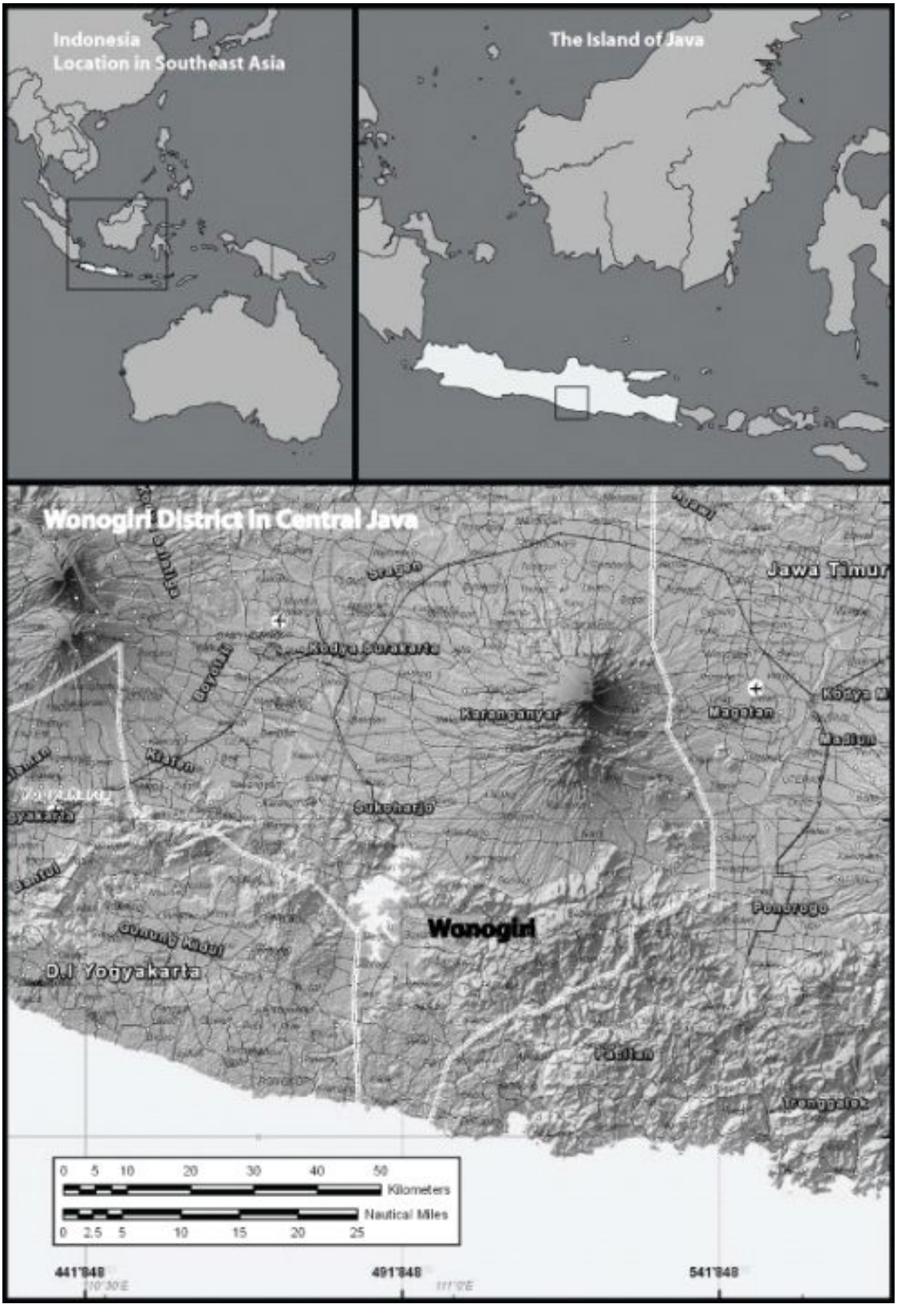

Figure 1. Map showing locations of case study sites

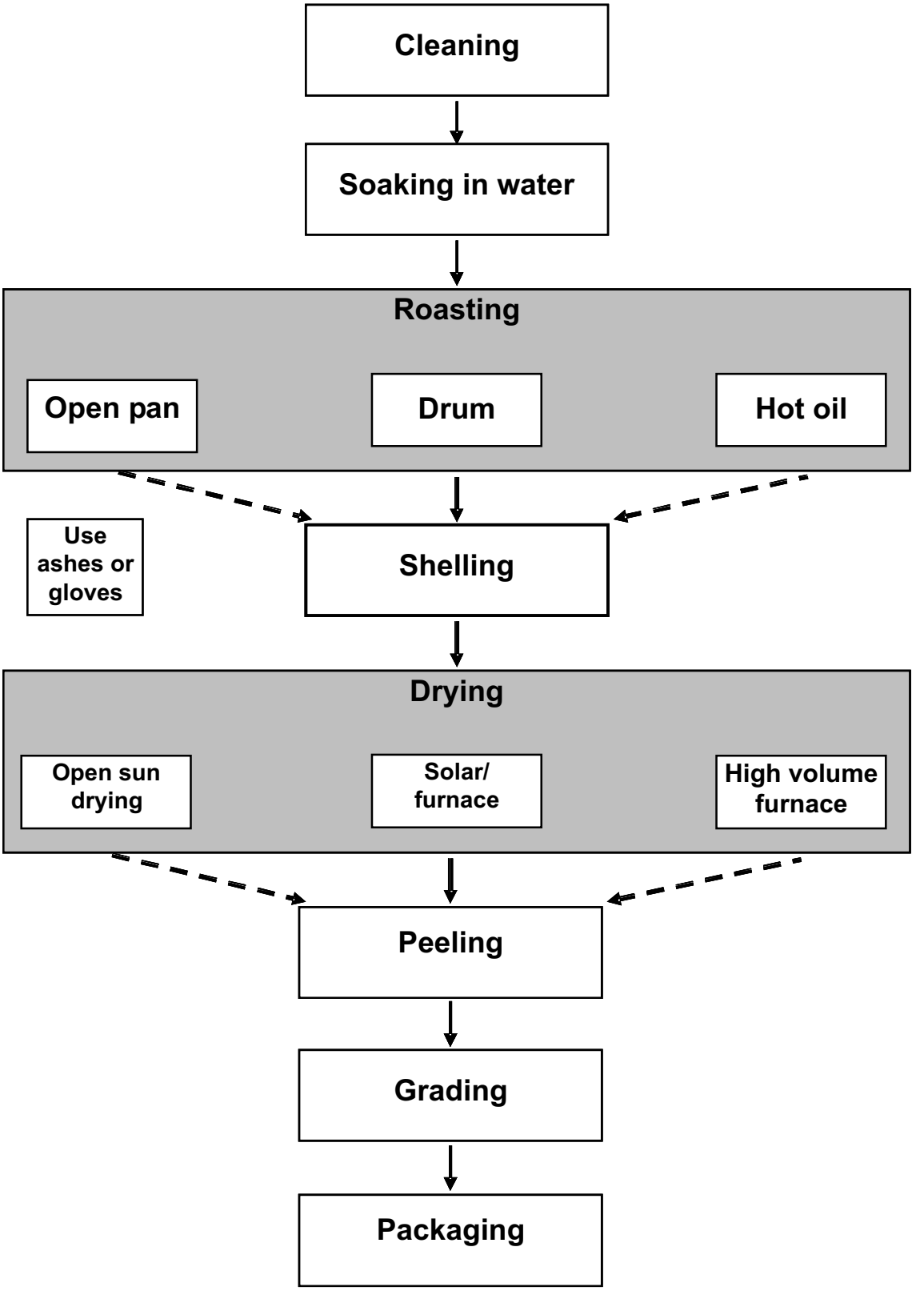

Figure 2. The processing of cashew fruit (drupes) into kernels

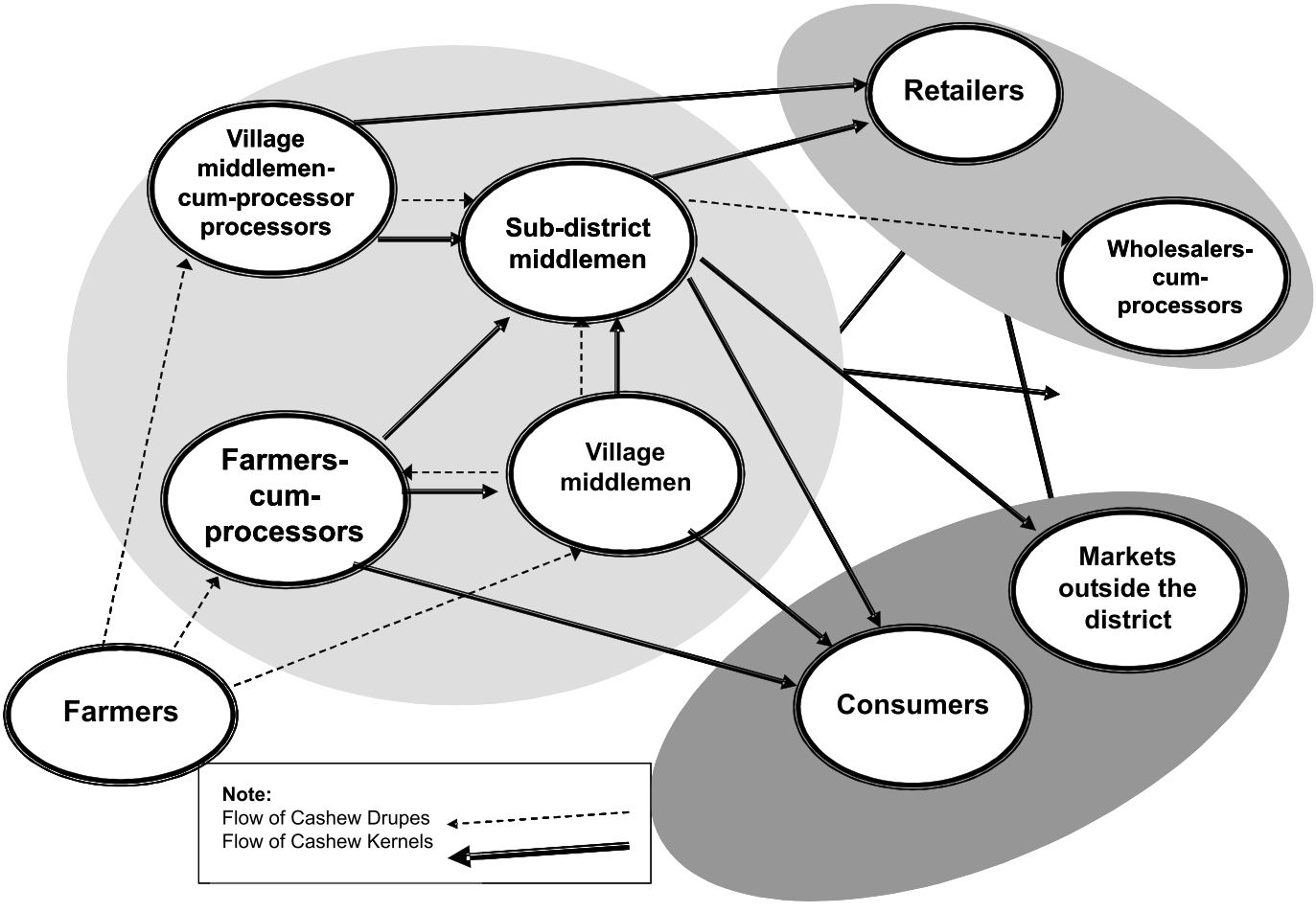

Figure 3. The processing of cashew fruit (drupes) into kernels

Teaching Case Study Material 2:

Bamboo Marketing in Laos

A. Notes for Teachers

Aims and the Methodology Used in Generating the Case Study

This case study presents the result of field research conducted in Vientiane municipality during January-March 2006 as part of the SEANAFE project on Markets for Agroforestry Tree Products. The research aimed to describe the marketing chain for bamboo as a means of identifying the main constraints to development of the sector.

Bamboo was selected as the commodity for research because of its good latent potential for income generation and poverty alleviation in rural areas. Sangthong district in Vientiane municipality (see map, Figure 1) was selected as a study site as it is considered a key bamboo production area, and close to much of the country's commercial bamboo processing. It is also on the doorstep of the capital, which generates domestic demand for bamboo material and products.

The research consisted primarily of semi-structured interviews. These were based on four pre-prepared checklists of questions, one for each of the main respondent groups: bamboo producers; bamboo traders; village heads; and local government officials. This was backed-up with a review of relevant documentation.

The emphasis was on identifying the main constraints within the market channels, the movement of the product through the chain from producer to consumers, the differences between product prices received and offered at each link of the market chain, and the key factors influencing the pricing of products along the market chain.

Following field work and analysis, the research team hosted a stakeholder workshop in Sangthong district to validate the results. The outcome of the workshop is integrated into the case study.

The research team comprised researchers from the National University of Laos, Burapha Development Consultants Co., Ltd., and Netherlands Development Organization (SNV).

Problem Statement/Key Issue of the Case

Market chains for agroforestry and non-timber forest products (NTFPs) provide important income benefits to farmer producers. This case study shows the complexity of such market chains. It is difficult to maximize the benefits for farmer producers for three reasons: a) the tendency for most value to be added high up the market chain; b) poor regulation and management of shared natural resources; and c) relatively high and opaque transaction costs imposed by government.

Brief Description of the Case

The case describes the market chain for wild bamboo and its derivative products on the Laos-Thailand border.

Bamboo is an important income source for villagers and provides extra cash security to cover livelihood expenses. In the west of Vientiane municipality (i.e. the province), poor villagers collect and partially process a number of wild bamboo species. Poles are then transported by road or river to Vientiane city or one of several commercial processing units. In many villages, bamboo handicraft production is highly skilled and the demand from the local market and Thai markets is relatively high.

The bamboo market chain in the case study suffers from several constraints at the levels of supply, storage, transportation, processing, marketing and market development. To provide a steady and greater source of income to villagers, value could be added by more sophisticated processing and better management of bamboo resources. Several bottlenecks need to be removed to make this happen.

1) The complicated tax system needs to be simplified to facilitate trade, and tax income should be applied for forest management and other services to the population. The government could conduct regular stakeholder workshops to discuss these issues and to develop options for improving the regulatory system.
2) The present quota system has little effect on the preservation of bamboo resources and threatens to take away an important livelihood of poor families in the district if it were to be imposed strictly. A more realistic resource management system is needed, based on actual monitoring of the resource base. This would allow poor families to have a good income from bamboo and protect the bamboo resource.
3) More research is needed to develop clear guidelines for the sustainable management of natural bamboo forests.
4) Market information systems need to be set up by the government to link farmer producers to new markets, develop new products, and attract investors.

These constraints are presented and discussed in the case study. Detailed supporting data allows the opportunity for students to conduct secondary analyses of their own.

Key Learning Themes of the Case

The case provides good material to enable your students to learn and develop the skills for critical and analytical thinking on the following themes: a) market value chain; b) value addition and processing; and c) marketing policy, regulation and fees with bamboo as a case example. These themes are not separately discussed in the case, however the guide questions on the succeeding pages will help you to determine which learning theme you would like to focus on in your classroom session when using this material with your students. Other questions could be formulated for the same purpose. You are also encouraged to develop mini-cases on specific key themes if you deem it necessary.

Expected Learning Outcomes after Discussing the Case

This case helps learners understand the many factors that determine the sustainability and development potential of an agroforestry or NTFP market chain, taking bamboo as the specific example. It gives insight into the kind of research questions that a market value chain analysis seeks to answer. The case study encourages learners to critically evaluate the role of the state in facilitating and regulating agroforestry and NTFP product markets.

Guide Questions and Suggested Discussions

Questions	*Discussions*
1. Describe the main differences in the bamboo market chains between Napo village and Kuoy and Huoy Tom villages? What could be the possible factors for these differences?	Kuoy and Huoy Tom mainly sell unprocessed bamboo stems; sold in Laos with lower profit. The people live close to bamb oo forests. As the villages are difficult to reach by car, traders do not visit them. The villages are close to a stream, so the raw bamboo stems can easily be floated to the city of Vientiane. It is easier for the villagers to focus on cutting bamboo in large quantities for a low p rice than to produce bamboo handicrafts in smaller quantities for a higher price. Napo sells bamboo handicraft products, many of which go to Thailand . This village has better road access and is closer to the market than the other two, but has no access to a stream. Because they do not have a stream, they cannot sell bamboo stems, and road transport of raw stems would be too expensive. They can sell processed bamboo products as traders come to their village by road. The income per amount of raw material is higher, but the quantity of raw material extracted from the forest is lower.
2. What are the opportunity costs of the bamboo industry in the Santhong district compared to those lowest down the market chain? What are the implications?	Two main opportunity costs are of interest. The first is the opportunity costs to the villagers labour. Many complained of the low income derived from bamboo compared to the effort expended. However, the fact that so many people are involved suggests that bamboo is still a more practical and profitable use of their time than any other current option. A second transaction cost is incurred primarily in Sanod village, where the delay in payment from Thai traders drives up the opportunity cost to capital. This is because Sanod traders lose flexibility in purchasing products or investing their income in other activities.
3. What forms of value addition in bamboo are practiced in Santhong district? Which value addition process should farmers undertake to generate more income?	At present, the main value adding processes are: a) cutting and floating bamboo to the city; and b) weaving bamboo mats and baskets. The farmers choice depends mainly on access factors such as nearness to bamboo forest, nearness to stream and nearness to road. Farmers could only generate more value from bamboo processing by attracting investors who can develop higher value products, e.g. in bamboo flooring or furniture products.

4. What are the constraints on enforcing the bamboo quota? Should it remain, and if not, what are the alternatives?	The quota system is an effort to address a serious problem, but seems difficult to enforce. The report does not explicitly state why, but from the information provided we can suggest some reasons . Firstly, the quota is imposed on traders of products, not the harvesters, which confuses responsibility. Secondly, there may be confusion over which of the numerous check points should enforce the quota, and how they should share records. Thirdly, the informal taxes mean that products are going unrecorded and traders are probably trying to bypass these taxes where possible. Current rates of extraction are likely to lead to the collapse of the Sangthong market. An alternative to regulation is local resource management. We do not know how amenable the government would be to this idea. At the very least, villagers would have to demonstrate a strong commitment to sustainable bamboo management to have any chance of reversing the quota or the intended ban. This may seem unlikely, but the case study provides strong evidence that the quota does not work. Additional village economic surveys would also highlight the livelihood impacts were they to do so.
5. What recommendations should be given to the various stakeholders in order to improve the bamboo marketing chain in Sangthong district?	The research team gave the following recommendations in their report: • Conduct research into the ecological impacts and sustainability of bamboo shoot and pole extraction; • The government should prioritize sustainable use and conservation in resource policy; • Develop and enforce sustainable bamboo harvesting, forest conservation and trade regulations; • Revise the quota system based on estimates of current bamboo resources and allowable annual take-off; • Introduce bamboo handicraft manufacturing in Kouy and Houy Tom villages to increase income; • The government should improve business conditions to attract more buyers and bamboo processing industries to the Sangthong area; • Strengthen the Sanod trading group and establish producer groups; • Empower villagers in the marketing process by providing training in market organization, including the establishment of cooperatives; • Look for new markets; Vietnam and China are big consumers of bamboo handicraft products. • Government trade promotion agencies could develop linkages with these countries; • Reduce and clarify the tax burden on bamboo traders; and • Develop an effective marketing information dissemination system.

Suggested Activities

This case study describes a real-world situation with all the associated complexities and uncertainties. This is the likely environment many learners will find themselves in during their professional lives. The following activities are selected to help equip learners with tools to understand and analyze the real work, and to formulate plans for interventions.

1. Design a methodology (including goals, staff list, schedule and budget) for a market analysis

   Either use a situation already known to the learners or use the one presented in the case study. Ensure the students consider what mixture of interviews and questionnaires they would use, who would be consulted, and how much time each part of the research should take. Learners should also consider what the purpose of the research is, and therefore who should be informed of the results and how (a section on outputs and dissemination could be included). This could be a home assignment or a team activity.

2. Conduct a stakeholder analysis for the Sangthong bamboo market chain

   The Sangthong bamboo market involves and affects many people the 'stakeholders' including those mentioned in the text and a range of others who were not central to the story. Thinking about who the stakeholders are, helps us to imagine the possibilities for improving the situation; who should be involved and how, and who the winners and losers of an intervention might be. Conduct the analysis as a group activity by completing a matrix that describes primary and secondary stakeholders at different levels in the market chain (e.g. village, district, province, national and international).

3 Undertake secondary analysis using the figures in the case study

   The case study contains a great deal of data that can be further analyzed and combined with additional information to investigate, for example:

   - The mark-up made at different levels of trade in the chain (i.e. the profit as a percentage of the original buying price);
   - Possible monthly profits for different actors; e.g. villagers, collectors and traders. (This may require some assumptions about monthly collection and trade rates.); and
   - The area of bamboo being used by each village in a year. (This will require some background information on the growing densities of the species being used.)

Suggested Readings

Enterprise Orpportunities, 2006 "Mekong Bamboo Feasibility Study" Final Report, prepared for Oxfam Hongkong and MPDF, August 2006.

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The Case

Section 1: The Setting

Historical overview

The Lao Peoples' Democratic Republic (Laos) is a landlocked country located in Southeast Asia. It is the least populous country in the Greater Mekong Sub region (GMS)[1] with only six million people. The country has by far the lowest population density, which at 26 per square kilometre is almost one tenth that of Vietnam, with which it shares nearly 2,000km of its eastern border. Much of the country is rural and most of its people make their livelihoods from the land. Use of non-timber forest products (NTFPs) is widespread and the sector is economically very important. For these reasons, much is expected from the potential development role of NTFP markets in the country's growth.

Bamboo is common in Laos. It is found throughout the country and its use and consumption are well established. It has many direct and indirect economic and environmental benefits, including: shoots for food; poles for housing, furniture and handicraft products; soil and water conservation; and reducing fuel wood consumption. Wild bamboo stands are abundant in many provinces. Bamboo is also planted by farmer households in and around most villages.

Despite the importance of bamboo, its processing into commercial products is largely undeveloped as a household income generating or business activity. To the extent that there is a domestic bamboo processing sector, it is primarily based around handicraft and other household processing, especially in rural areas.

A small number of more commercial bamboo processing businesses are currently operating around the capital, Vientiane. Products are mainly for export, but the local producers seem to be receiving little return from them.

Location and socio-economics

Sangthong district lies roughly 75 km from Vientiane City and is one of the poorest districts of Vientiane municipality (see map, Figure 1). It covers about 5,080 ha and has a population of 18,753. The district consists of 35 villages, comprising 3,288 households with an average of six people per household.

Sangthong district contains one of the richest areas of natural bamboo forests in Vientiane municipality. It occupies an estimated area of 3,600 ha which is approximately 70% of the total land area. Bamboo is distributed widely on hillsides, and along streams and rivers.

This study describes marketed bamboo products originating in Napo, Kouy and Houy Tom villages (see map, Figure 1).The livelihoods and resources of these three villages are summarized in Table 1. Table 1. Summary of the livelihoods and resources in the three study villages.

[1]Cambodia, the People's Republic of China (PRC; Yunnan and Guangxi Provinces), Lao People's Democratic Republic (PDR), Myanmar, Thailand and Vietnam.

Table 1. Summary of the livelihoods and resources in the three study villages.

Item	Napo village	Kouy village	Houy Tom village
Population (Households)	425 (86)	557 (107)	370 (64)
Ethnic groups (% of village population)	Phouan: 85% Khamu: 15%	Phouan: 95% Khamu: 5%	Phouan: 1% Khamu: 99%
Topography and vegetation	Slope and forest with a large area of natural bamboo forest; mountainous with high forest cover.	Lowland and slope, and forest with a large area of natural bamboo forest.	Slope and forest with a large area of natural bamboo forest.
Infrastructure	- Poor, dirt road to village. - No electricity. - Primary school (only grades 1-3). - Two temples.	- Poor, dirt road to village. - No electricity. - Primary school. - Health clinic.	- Dirt road to village. - Primary school (only grades 1-3). - No electricity.
Main sources of household income	Rice, livestock, NTFPs and bamboo handicraft production.	Rice, livestock, NTFPs and bamboo poles.	Bamboo poles, NTFPs, livestock and rice.

Formal and informal regulations

The Laos Government has a number of regulations on bamboo harvesting:

- Bamboo can only be taken from forests allocated for village use, not from protected forests;
- Quantities of bamboo harvested should follow the quota set by the municipality; and
- There is no monitoring of production quantities in the forest, only at district border checkpoints.

Marketing of bamboo products in Sangthong officially follows the quota set by the Vientiane municipality Province Agriculture and Forestry Office. For 2005, the quota was set at 100,000 poles; for 2006, 50,000 poles. Out of this, the toothpick producing factory gets about 20,000 poles while the rest is sold to a number of smaller bamboo handicraft companies in the Vientiane area.

The government is gradually reducing the quota in line with a policy to phase out commercial harvesting of forest products in the Vientiane municipality by 2010.

Despite this, Sangthong district government officers admit that bamboo harvesting in the area is difficult to manage. In order to exert some control, they recently established a bamboo selling group in Sanod village. The group also facilitates tax collection.

The district has established an official border checkpoint at Ban Kok Hae on the Mekong River, where exports of bamboo and other products to Thailand are registered and taxed. The border checkpoint is staffed by officers from the district department of trade and tax, the department of agriculture/forestry, and the police.

Villagers in Sanod used to sell bamboo products freely. However, since 2000, the district government imposed the selling of bamboo products only in trade groups. These groups report their results every month to the village and district leadership. Although they are called a group, the eight members within a group continue to sell their products individually.

Five main Thai traders buy products from the group. The relationship between the Sanod trader group and Thai buyers is good as they have been trading with each other for many years. The relationship is strong enough that it sometimes extends to credit arrangements.

Developmental and environmental concerns

Many local respondents believe that the area under natural bamboo is in decline. They attribute this to over harvesting and the clearing of land for agriculture.

As a result, the viability of bamboo in some village areas is decreasing, and harvesters have to travel increasing distances. Bamboo used to be available within one kilometer of the village, though now it is up to four kilometers away.

The government is concerned about the possible environmental problems of this bamboo loss, as indicated by the current logging ban and the phasing out of commercial bamboo exploitation by 2010 through reducing quotas.

The government quota is not based on any field observations on the status of the bamboo resource. Using bamboo survey data from other sites and from field observations, the study team estimates the average yield of bamboo in Sangthong to be at least 10,000 stems per hectare per year. The 3,600ha of bamboo forest in Sangthong district could produce at least 36 million stems annually. The present off-take of 370,000 poles per year represents only 1% of the total resource. In other words there is no real sustainability issue.

Section 2: Market Analysis

Production and harvesting

Six main types of bamboo grow in Sangthong district, each having a number of household and commercial uses (Table 2).

The focal villages have a long tradition of bamboo handicraft production, and special skills in the production of bamboo fences, mats for drying tobacco, wall mats, roof tiles, baskets and other handicrafts.

Table 2. Bamboo species in Santhong district.

Lao name	Scientific name	Main uses
Mai Phang	*Dendrocalamus lonoifimbriatus*	Mats, baskets, edible shoots
Mai Hia	*Schizostachyum virgatum*	Mats, baskets, edible shoots
Mai Lai	*Oxythenanthera albociliata*	Edible shoots
Mai Sod	*Oxythenanthera parvifolia*	Mats, baskets, edible shoots
Mai Bong	*Bambusa tulda*	Baskets, edible shoots
Mai Loh	*Dendrocalamus. pendulus*	Baskets

Harvesting of bamboo poles is mainly done by men while the harvesting of bamboo shoots is mainly done by women, children and the elderly. Since shoots are mostly collected for local consumption, this study focuses on bamboo collected by men.

Pole stems are selected based on age and size, with only those older than two years (or 5cm in diameter) cut for commercial use. One man can cut up to 100 stems per day, depending on the species. He can carry up to three poles of Mai Phang or five to six poles of Mai Hia on his shoulders at a time. The distance from the

bamboo source to the point of processing or collection is therefore highly important in determining total possible output per unit of effort. All bamboo is collected within a range of not more than 30 minutes walking distance from the village or from the river where bamboo can be floated down to the village.

Bamboo poles can be harvested all year round, but most harvesting is done during the rainy season from July to October because it is easier to float the poles down streams and rivers to markets in Vientiane. Bamboo poles for weaving mats and baskets are mainly harvested during the dry season as villagers have more time to work on this after the rice growing season of November to April.

Men usually harvest the bamboo poles using a large knife and hammer. Women assist in cutting and splitting the bamboo poles into shorter pieces as required for producing different products.

At the time of the study, there was an outbreak of flowering in Mai Hia which resulted in the death of the affected plant. Affected areas need four to five years to recover fully. The effects of this natural event had implications for product sustainability that were felt at various points in the market chain. Flowering of bamboo occurs at different intervals for different species. For Mai Hia, flowering occurs around every 30 years.

Products, sources and quantities

Table 3 shows the main products, sources and quantities produced in the three villages of Sangthong district. Village data suggests that households earn, on average, 3,500,000 to 4,000,000 kip per year from bamboo products.

Of all the villages, Napo village processes raw bamboo poles into different products. Table 4 shows the products produced per type of bamboo species and the volume sold per product type by Napo farmers.

Table 3. Key characteristics of bamboo products in focal villages.

Item	Napo village	Kouy village	Houy Tom village
Bamboo products	Wall mats, roof tiles, baskets and other handicrafts.	Poles and baskets.	Poles.
Village involvement	All households engaged in weaving in the dry season.	45 families sell bamboo, all cut bamboo.	All households are engaged in bamboo harvesting; four bamboo traders.
Source	Within 1km of the village.	200m from village.	Within 30 minutes walk from riversides.
Quantity	10-15,000 poles/year. Each farmer can collect 100 poles/day.	20,000 poles/year (80% are sold unprocessed). Each farmer can collect 50 poles/day.	Up to 70,000 poles/year.

Table 4. Products produced by Napo farmers.

Product	Size	Poles used per item	Volume sold per family
Bamboo wall mats for making tobacco drying sheds, made from *Mai Hia* and *Mai Phang.*	70x170cm	1-2	300 sheets per year
Bamboo wall mats for house construction, made from *Mai Hia.*	200x300cm	10-15	30 sheets per year
Bamboo mats for garden fencing, made from *Mai Hia.*	170x170cm	10	Variable
Bamboo roof tiles.	20x60cm	10 tiles per pole	Variable

Based on the volumes of traded bamboo commodities recorded for nine villages in 2005, the research team estimates that the products represented around 370,000 poles plus 62 tons (Table 5). This figure represents only a portion of the total output from Sangthong district, yet it is already six times the official annual quota of 50,000 poles.

Table 5. Estimates of bamboo outputs from Napo, Nong Boa, Taohai, Natan, Partaep, Napho, Nasa, Sanod and Kokhae villages in 2005.

Product	Volume sold, 2005	Poles used per unit	Inferred quantity of bamboo poles used
Wall mats are made from *Mai Hia.*	26,000 sheets	10	260,000
Bamboo mats for tobacco drying are made from *Mai Hia* and *Mai Phaang.*	52,000 sheets	2	104,000
Fence mats are made from *Mai Phaang.*	600 sheets	6	3,600
Chicken coops are made from *Mai Phaang.*	600 units	3	1,800
Egg baskets are made from *Mai Hia.*	700 units	1	700
Baskets for tree seedlings.	100 units	1	100
Joss sticks are made from *Mai Hia* and *Mai Paang.*	52 Tons	1.2 tons	62.4
Inferred total raw bamboo used.	370,000 poles and 62.4 tons		

Market actors

The main operators in the bamboo market chain in Laos are farmers, 'collectors', factories, local traders and foreign traders. Farmers are predominantly involved in harvesting and mat production, while the others are engaged in sorting, storage, processing and transportation to varying degrees. Each is discussed in more detail below.

Village harvesters/producers

As shown in Tables 3 to 5, the villagers are the source of both raw bamboo poles and products. Men usually do the harvesting of the poles while women assist in cutting them into the sizes required to make the different bamboo products.

Napo village has quite a different relationship with external bamboo markets than Kouy or Houy Tom. As Table 4 shows, Napo villagers process raw bamboo into mats and other products. These they sell to local traders, predominantly from Sanod village (see map, Figure 1), although about 10% of their products are also sold at the village to local consumers and passers by.

Kouy and Houy Tom villagers collect bamboo poles in the forest for sale to middlemen 'collectors' who sell them on to local traders and the toothpick factory in Vientiane. Houy Tom is reportedly the largest bamboo producing village in the district.

Poverty often forces villagers to accept the lowest prices from buyers, and it constrains their ability to improve processing technology. It also increases the chance of them engaging in illegal or unsustainable activities.

Traders

There are three groups of traders identified in the Sangthong market chain. The first group comprises local traders, predominantly from Sanod village, who purchase finished bamboo products from producers in Napo village.

The volume of trade between Napo and Sanod villages is significant. In 2005, approximately 25,800 sheets of mats for tobacco drying and 2,580 sheets of wall mats were sold to Sanod traders. This represents the entirety of Napo village's output of these products for the year.

Sanod traders sell the products on to the second group- Thai traders-who introduce the products to their own domestic market. Although the reason is not known, most of the demand for bamboo products from the Thai traders falls from January to April and September to October each year.

The third group comprises four 'traders' who buy raw bamboo poles originating in Kouy and Houy Tom villages from the local 'collectors'. These traders sell some bamboo to a toothpick factory, and process some in Vientiane into wall mats, bamboo fence mats, baskets and bamboo shading mats. These products are sold directly to consumers in the capital.

Factory processors

The Panthavong factory near Vientiane processes bamboo into toothpicks and skewers for barbecuing and for ice-cream. These they sell to consumers around the country. The bamboo waste from toothpick production is also sold to a factory in Naxaythong district that makes ceremonial paper.

In 2005, the toothpick factory purchased about 20,000 poles from Kouy and Houy Tom villages.

Most traders and processor are private small-businessmen with five or more years of experience. Some are farmers, while others are retired government officers. None have formal business training and therefore there are many weaknesses in their business practices.

Transaction Costs

A number of costs are incurred at various stages in the market chain, two of which significantly affect product prices and profitability.

The first of these is transport. The roads in Laos are generally of poor quality, and motorcycles are the most commonly used form of transport. River transport is an attractive alternative, although it is limited by seasonal changes in water level and the cost of fuel (where engined boats are used). The costs associated with transport of bamboo and products from the three villages are presented in Table 6.

In addition to transportation costs, further costs are also incurred higher up the market chain. The case study does not look into these, although the researchers note that export of bamboo mats from Sanod village to Thailand costs two baht (about 540 kip) per item to cross the Mekong River (one baht each for the boat and labor).

The second significant transaction cost is tax. As in many developing countries, Laos struggles under an overly complex and inefficient government bureaucracy. The main impact of this on bamboo traders and processors is a range of poorly coordinated taxes, some of them 'informal'.

Taxes include local administrative or service charges, resources taxes, 'rehabilitation fees', village fees and value added taxes. These are imposed by both the district and province, and are paid in the villages and at inspection points.

Table 6. Transportation costs in the bamboo market chain for the focal villages.

Village	Transport Means and Costs
Napo	Mostly by diesel-engine car and trailer that can carry approximately 15 large mats per load. Costs entail 15,000kip/trip for gasoline, 60,000kip for return trip to collectors house from Vientiane via taxi; labor cost is excluded.
Kouy	Mostly by river to Vientiane. Dry season = 100/150 pole rafts, 4 days Wet season = 500 pole rafts, 2 days Car = 800-900 poles; 700,000kip/load
Houy Tom	Mostly by river to Vientiane; rafts of 2,000-3,000 poles each towed by engined boats at 150,000kip/raft (taken 5km before Vientiane).

Most traders or collectors who transport products by road or river are also obliged to pay un-receipted 'fines' at police or forest inspection stations, regardless of the legality of their load. Payment ensures swift passage and so traders are inclined to pay.

The extent of this tax burden is exemplified by the several formal and informal taxes that are incurred along the market chain by Kouy and Houy Tom villagers (Figure 3). Cumulatively, taxes add considerably to the cost of bamboo and bamboo products, and lower the price that traders can pay to the village producers. It is not always clear who benefits from the taxes. Each district department follows its own rules and procedures. There are no mechanisms to address this over-regulation through harmonizing taxes or streamlining procedures. Altogether the complicated regulatory environment is becoming an obstacle for bamboo-based private sector development. The district government should consider solutions to facilitate bamboo trade.

Credit arrangements

The Sanod traders usually have to wait for the Thai buyers to sell their products before they are paid for their bamboo mats. In fact, they say their Thai counterparts are frequently in debt to them, and it usually takes one or two months after the delivery of products before full payment is made. This could be seen as a type of credit given by the Lao traders to their Thai colleagues. However, other buyers sometimes deposit money with the group in advance of delivery of goods.

The traders group explained that the exact credit situation depends on trends in the supply and demand of products.

Market Information Sources

Villagers get most of their market information from collectors and traders at the time of purchase, and therefore are not sensitive to market and price fluctuations. Collectors buy bamboo to order.

On the other hand, traders and processors have better access to market information and know the costs and profits at each link of the market chain. They also know the risks they face.

There is also a lack of information on bamboo resources and their development options among larger investors who could add value by setting up bamboo processing plants. There is a growing global market for bamboo flooring products. There is a need to develop market information systems that can link trade and resource data from districts and provinces to international markets.

Guide Questions:

1. Describe the main differences in the bamboo market chains between Napo village and Kuoy and Huoy Tom villages. What could be the possible reasons for these differences?
2. What are the opportunity costs of the bamboo industry in the Santhong district compared to those lowest down the market chain? What are the implications?
3. What forms of value addition in bamboo are practiced in Santhong district? Which value addition process should farmers undertake to generate more income?
4. What are the constraints on enforcing the bamboo quota? Should it remain, and if not, what are the alternatives?
5. What recommendations could be given to the various stakeholders in order to improve the bamboo marketing chain in Sangthong district?

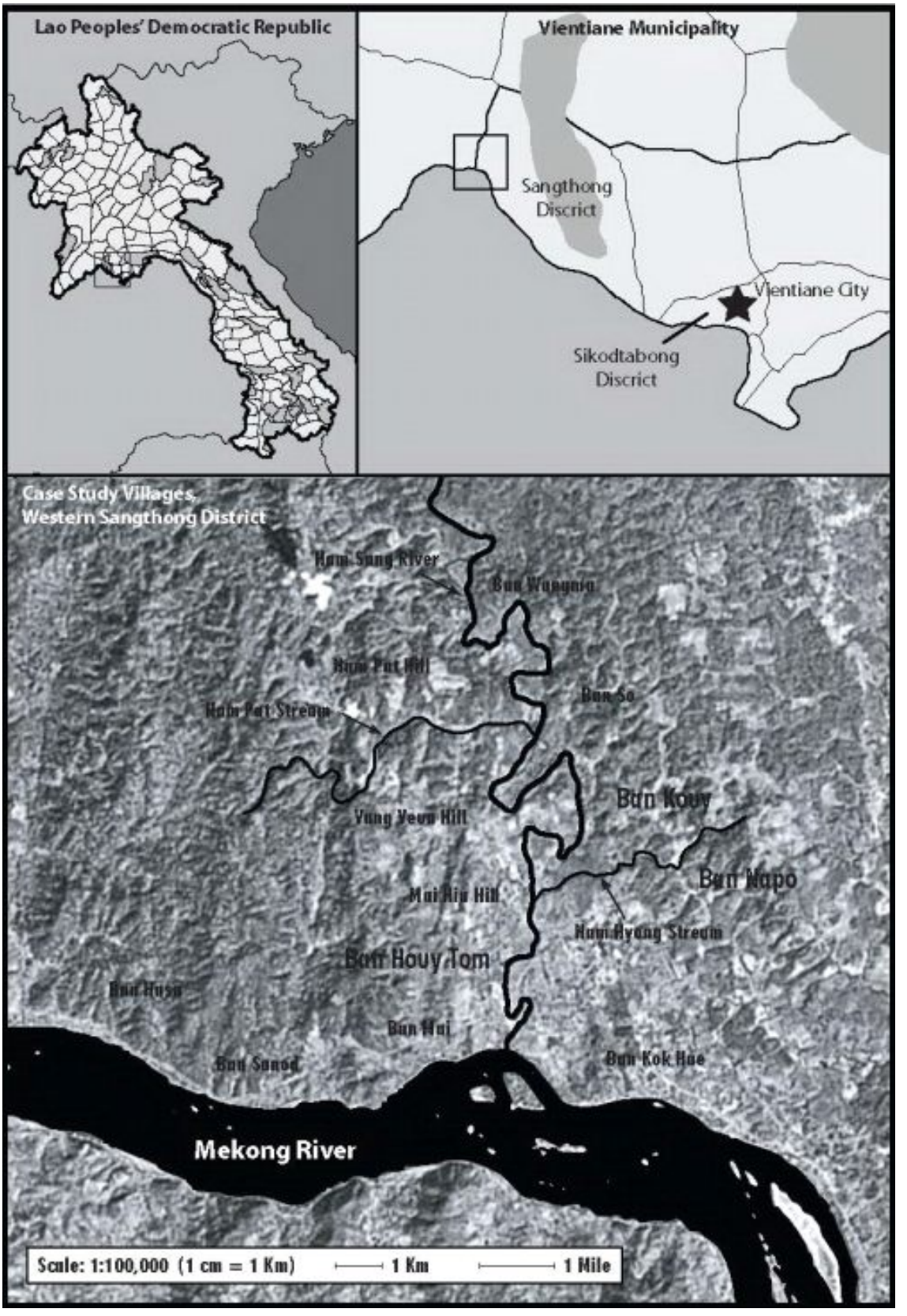

Figure 1. Map showing location of case study sites in Vientiane Municipality, Laos

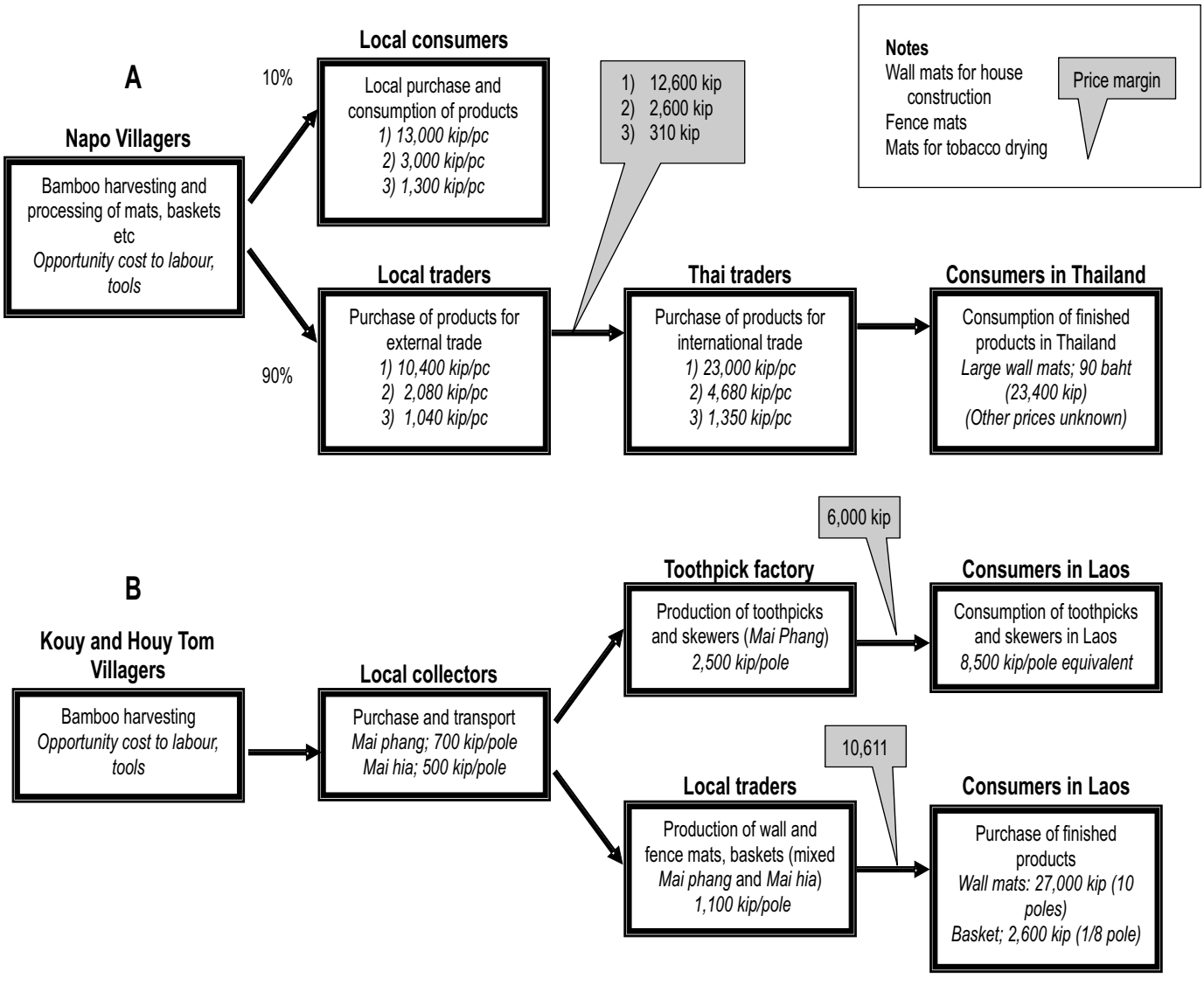

Figure 2: Market chains and prices for products from Napo village (A),and Kouy and Houy Tom villages (B)

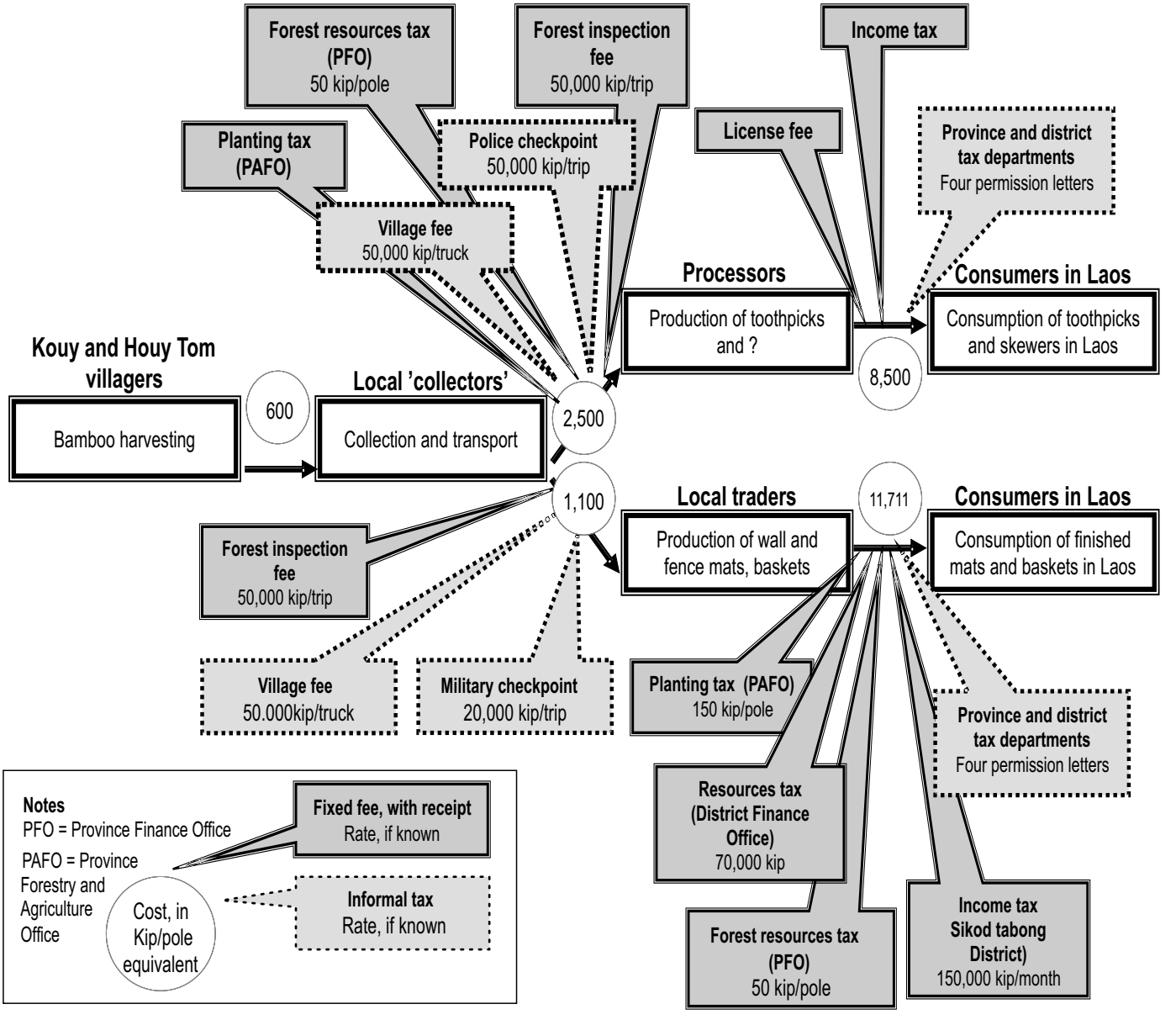

Figure 3: Formal and informal taxes along the market chains from Kouy and Houy Tom villages

Teaching Case Study Material 3:

Market Development for Coconut-Based Agroforestry Farms in Quezon Province, Philippines

A. Notes for Teachers

Aims and the Methodology Used in Generating the Case Study

This case study presents the findings of research conducted in Quezon province, Philippines from February to August 2006 by a team of faculty members and researchers from the University of the Philippines Los Banos. The research aimed to analyze development needs and potential interventions for the coconut-based agroforestry farms in the province. The specific objectives were to:

1. Analyze the distribution channels for coconut-based agroforestry products, including the price and marketing margins of the different market participants;
2. Identify the marketing constraints faced by farmers and other market chain actors; and
3. Evaluate different coconut-based enterprises and marketing possibilities in relation to the marketing needs of farmers, and as alternatives to coconut logging.

The research was conducted at the provincial level, although much of the primary data came from Sariaya and Tayabas municipalities. These municipalities were selected as representative of the diversity of coconut products produced, based on consultation with the Philippine Coconut Authority (PCA).

Data was collected from two main groups of respondents: market participants (75), including producers, processors and traders; and other key informants (14) representing government agencies and industry.

Problem Statement/Key Issue of the Case

Many countries within Southeast Asia have specialized in a specific agroforestry crop or product. Among other things, this reflects the importance of competitive advantages in geography, experience and pre-existing markets. However, markets for agroforestry products shift and evolve, and changes in large, complex markets can be difficult to predict. In most cases, small farmers are the ones who experience constraints in adapting to such changes. The coconut industry in Quezon Province, Philippines is a typical example of this scenario. Without sufficient market flexibility and the right government support, opportunities for sustainable rural development might be missed. In particular, small farmers may remain in a poor socio-economic situation while other key players in the market benefit from positive developments.

Brief Description of the Case

The case study describes the market chain for coconut and coconut products in Quezon province, Philippines. It examines the coconut market chain and discusses the main constraints in the development of markets for four products of greatest importance to small-scale farmers, namely: 1) husked nuts and copra; 2) virgin coconut oil; 3) coco wine; and 4) coco wood.

Small-scale farmers in the studied province own up to 4ha of coconut trees or from 180 to 480 trees which are integrated into their farming systems. The trees yield a range of primary products, including nuts, leaves and timber, which are sold as raw materials for further processing.

The research shows how small-scale farmers are truly the backbone of the highly diverse Quezon coconut market. However, they remain poor despite the considerable economic potential of coconut products. This stems primarily from small marketable surplus per household, fluctuating prices, and limited value addition and marketing at the household level. Involvement of small-scale farmers in the market is confined to production. Processing is limited.

Other factors, external to the farmers, also contribute to their poverty. Poor infrastructure and a lack of cooperation increase transport costs and reduce bargaining power, respectively. Both result in relatively low farm-gate prices for most coconut products.

Immediate cash return from coco wood is encouraging felling. With inadequate replanting, this is threatening the long-term survival of the sector.

The situation of small-scale farmers and producers is in stark contrast to that of large operators and processors, who have adequate investment in equipment and facilities and access to capital, technology, skills and markets. Under such conditions, coconut-based enterprises with good value addition and marketing are proving highly profitable.

Given the scale of the market, it seems that opportunities for poverty reduction are being lost. Because they lack in options for fuller integration into coconut markets, small-scale farmers are increasingly tempted to sell their trees for coco wood, the price of which is rising.

A number of efforts have been made to support and regulate the industry, but success has been limited so far. This case study hints at some possible solutions to the main constraints.

Key Learning Themes of the Case

The case provides sound material to enable your students to learn and develop skills in critical and analytical thinking relating to the following themes: a) market value chain; b) processing, packaging and value addition; c) product development; and d) policies and regulations with coconut as a case example. These themes are not discussed in the case under separate specific headings. However, the guide questions on the succeeding pages should help you to determine what learning theme you would like to focus on in your classroom session when using this material with your students.

Expected Learning Outcomes

This study highlights the difficulties faced by researchers interested in understanding market constraints in product processing and marketing. It does this using the example of a particularly complex market chain with a wide diversity of products and actors. The study is particularly focused on finding solutions. Learners are encouraged to critically evaluate market constraints, and to consider practical means of developing a more pro-poor and sustainable coconut market.

Guide Questions and Suggested Discussions

Questions	Discussions
1. The case study concentrates on individual products, but what are the main constraints in terms of overall sustainability of the coconut market chain in Quezon? Draw a problem tree to indicate the interrelationships of the various constraints on the Quezon coconut market industry as discussed in the case.	The main constraints are: a) Weak policy implementation → illegal cutting of trees, inadequate replanting, non-adoption of copra grades and standards at the farm level; b) Inadequate support and extension services for technology, credit, information and markets → poor farm management, incidence of diseases, inconsistent product quality, lack of access to favorable markets, inadequate processing due to lack of skills, equipment, and capital; c) Weak farmers organizations → weak bargaining power of farmers, no collective marketing; and d) Poor infrastructure → high marketing costs, difficulty of delivering products to high-level markets. These constraints lead to low marketable surplus, low prices received and limited value-addition; all contributing to low income and poverty. Due to poverty, there is illegal, even over-cutting of trees that could lead to an unsustainable coconut resource base, environmental problems and even greater poverty.
2. What forms of value addition in coconut are practiced in the study area? What factors might the coconut farmers consider in determining the form of value addition they should undertake?	Examples include processing into copra, desiccated coconut, coconut milk, virgin coconut oil, coconut oil, coco wine, and other food products. Among the important factors that should be considered are: a) Price differential due to processing relative to processing costs (net value-added); b) Availability of markets for processed products; c) Technology and skills; and d) Financing requirements.
3. How are the present government regulations addressing the problems of the coconut industry? Can you identify other forms of support that the government and the private sector could provide to help coconut farmers improve the marketing of their products?	Policy implementation in regulating coconut cutting and the adoption of copra and VCO standards (particularly at the farm/household level) is weak. Aside from effective implementation of policies, there is a need to: a) Re-orient coconut extension programs to effectively deliver an holistic package of services on technology, information, credit, markets and entrepreneurship; b) Strengthen farmers organizations into homogeneous units or clusters (e.g. VCO farmers groups) to address common concerns, enact efficient delivery of support services, undertake viable business investment options, and enhance their bargaining position; c) Improve farm-to-market roads; d) Provide training on business planning, market development and entrepreneurship, linkages to credit institutions, product processing and packaging, product quality and standards.
4. Coco wine and virgin coconut oil (VCO) represent two contrasting cases of product development. Coco wine has long been produced and traded in the market but primarily only in the local market. VCO has become commercially important only in the last 5-6 years but has rapidly developed into various forms and has already penetrated the export market. Explain why coco wine has lagged behind other coconut products like VCO. What particular form of support is needed by coco wine producers?	For coco wine, the problems include inadequate quality control among small-scale producers, absence of product standards, poor linkage with higher-level markets, limited product development, and rising costs of production. Specifically, there is a need to develop formal product standards (similar to VCO) and ensure that these will be consistently adopted by all market participants. The government and private sector should work together to promote the product (especially in the international market) and pursue further product development such as packaging, labeling, and flavoring. The usual credit, technology and market linking support should be provided, particularly to small producers.

Suggested Activities

This case study describes a real-world situation with all the associated complexities and uncertainties. This is the likely environment many learners will find themselves in during their professional lives. The following activities are selected to help equip your students with tools to understand and analyze the real world, and to formulate plans for interventions.

1. *Draw a diagram to capture the numerous aspects of the Quezon coconut market*

   Markets are systems, and presenting systems as two-dimensional diagrams (flow diagrams or 'rich pictures') can help to understand and analyze them. The object of this exercise is to encourage learners to: a) improve their ability to conceptualize aspects of complex situations; and b) consider what additional understanding or questions arise from constructing a diagram.

   A diagram can be used to depict many different aspects of the case study:

   - The market participants, and links between them, based on product flows.
   - The geographical distribution of the market, depicting actors at the village, town and city levels.
   - The financial, technical and/or material flows within the market.
   - All factors and actors that influence the profitability of a farmer's coconut operation.

   In each case, teachers should ask learners to think carefully about: a) what aspect of the market they are trying to depict (i.e. to define the system and purpose of the diagram); and b) how it should be depicted (i.e. to define the symbolism they use).

   The diagram can be brainstormed in a group or completed as an assignment on an individual basis. Since there is no 'correct' diagram, open discussion can be encouraged about the pros and cons of different types of diagrams and what they help to understand.

2. *Construct a 'problem tree' to indicate the relationship between the different constraints highlighted in the case study.*

   This study is very much focused on market chain development. It highlights many constraints to equitable and sustainable development of the coconut market. However, there are different types of constraints; some will be direct (e.g. lack of knowledge) and some will be indirect (e.g. poor extension).

   Some constraints will be internal to the market system (e.g. farmer access to credit or government regulation), while some will be external (e.g. consumer preferences or the weather). A problem tree is a way of identifying the relationship between the various constraints and their causes, and helps indicate what can be done to improve the situation.

   One of the easiest ways to construct a problem tree is to write down all the problems the learners can identify (i.e. the constraints) on cards, then try to organize them into a hierarchy, with the most important problems higher up, and the causal problems lower down. Figure 1 gives an example of a problem tree, though the exact structure and links depend on the outcome of group discussion.

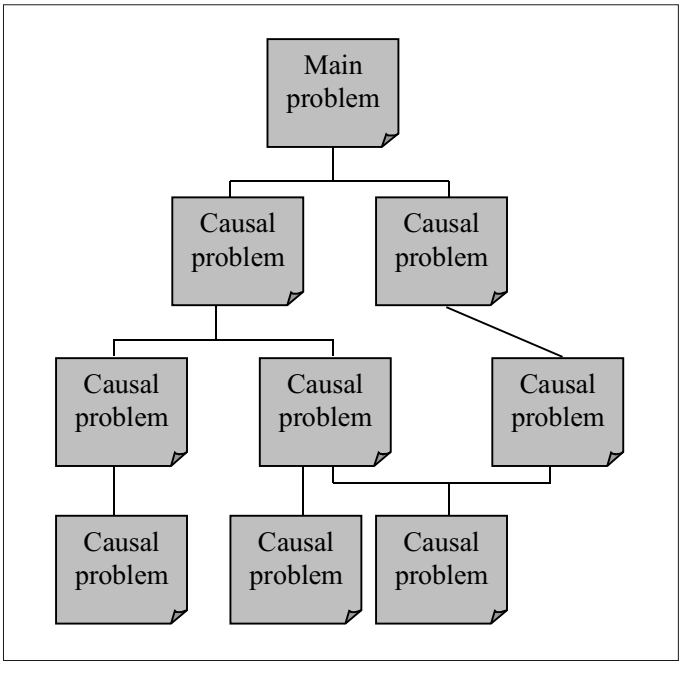

Figure 1. An example of a problem tree

3. *Based on the above discussions, create a simple logical framework for the comprehensive strategic framework to improve the Quezon coconut market.*

   Logical frameworks are powerful and important tools for planning development interventions, and teachers can encourage students to become familiar with them by applying them to case studies such as that presented here. The previous questions and activities (particularly Figure 1) should provide ample material to complete a simple logical framework. An example is provided in Figure 2. For this exercise, the 'inputs' row is optional. For guidance on the use of logical frameworks for planning interventions, please refer to the Further reading section.

Narrative summary	Indicators of success	Means of verification	Assumptions
Wider objective:			
Specific objectives:			
Activities:			
Inputs:			

Figure 2. Example of a logical framework

Further Reading:

Administrative Order No.01, Series of 1996 and Memorandum Circular No.02 Series of 1996. New Assessment Rates Pursuant to AO 01,1996, Philippine Coconut Authority (PCA).

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B. The Case

Section 1: The Setting

Sometimes called the 'tree of life', coconut is hardy, easy to grow and yields a diverse range of products and benefits. These factors make coconut ideal for integration into the agroforestry cropping systems of impoverished farmers.

The Philippines is the number one global producer of coconut oil and several other coconut products. It is second only to Indonesia in terms of total area under coconut, a significant proportion of which is on small-scale farms. The Philippine coconut industry supports an estimated three million farmers and about 20 million more people directly and indirectly through numerous coconut-based industries. In 2005, the industry had a total export value of just under one billion USD.

Despite these impressive figures, there are concerns about the sustainability of the industry. Firstly, there has been an unforeseen external threat from the timber industry with constraints in the supply of traditional wood species shifting the emphasis to coconut. The resulting increase in the relative value of coco wood, combined with farmers' frequent need for cash, has encouraged widespread felling of the tree. Replanting has not kept pace. Secondly, the industry suffers from marketing-related problems such as inconsistent product quality and inadequate market infrastructure causing limited producer incentives. And thirdly, disease and pest incidence threatens to reduce yield.

The study team suggests the Philippine coconut industry "is exhibiting the symptoms of a possible decline" if these problems and constraints are not addressed. Yet they find many reasons to be optimistic about the potential of coconut.

Quezon province is both a major coconut producing province and one of the Philippines' poorest. The study uses Quezon to explain some of the issues facing the coconut industry and to offer suggestions for future directions.

Location

Quezon is one of ten provinces in the Southern Tagalog region of the Philippines (see Figure 1), and the county's sixth largest. It comprises two sub-provinces: Quezon 1; and Quezon 2, with Lucena City as the provincial capital. Tayabas and Sariaya are two of 41 main towns in Quezon 1. This study was conducted in these two municipalities.

Quezon province is well-endowed with natural resources, including highly productive agricultural lands, although many coconut farms are located in undulating areas with 18-30% slopes. In addition to coconut, major products include rice, corn, banana, vegetables, root crops, poultry, livestock and fisheries.

There are good roads linking the province to Metro Manila, roughly 150km or three hours to the northwest. Although the farm-to-market roads in rural areas are of poor quality, other communications are generally good, with mobile phones fairly common.

Due to its favorable conditions and proximity to Manila and other major market centers, Quezon has become a significant producer of coconuts and derivative products for export (see Table 1). Coconut now makes a significant contribution to the economy of the province, although outputs per household are fairly modest.

Table 1. Summary statistics for the Quezon coconut industry.

Item	Description
Major products	Copra, copra cake, coconut oil, desiccated coconut, fresh young coconut, and coconut coir (fiber)
Coconut area	414,565 hectares; 79% of regional total
Number of coconut trees	63,674,395; 80% of regional total (69% bearing, 17% non-bearing, 14% senile)
Total nut production	2 billion nuts (approx); 82% of regional total
Number of coconut villages	1,060 out of 1,244 in total (85%)
Number of coconut farmers and workers	161,539
Average nut production	35 nuts per tree per year
Industries	21 coconut oil mills, 3 coconut oil refineries, 4 desiccated coconut plants, 5 coir decorticating/defibering plants, 1 coco-chemical plant
Registered traders and dealers	127 copra buyers, 321 coco wood dealers, 413 chainsaw operators

Source: PCA, Quezon province (2005)

Institutional environment

There are a number of institutional issues which characterize the coconut market in Quezon, and these fall under the categories of: government regulation; market support; and market organization. The government has intervened in the coconut market in a number of ways, chiefly through the Philippine Coconut Authority (PCA). The PCA is intended to support and promote the coconut industry and market, and receives regular government budgetary appropriation as well as raising its own funds through processor fees.

The State, particularly through the PCA, has also attempted to regulate the coconut industry in the following ways.

1. Coconut tree cutting and replanting is regulated through Republic Act 8048 (the 'Coconut Preservation Act of 1995'). It is implemented by the PCA, local agriculture department and private business, and aims to offset the loss of senile and cut trees.
2. Copra quality and moisture content is regulated through PCA Administrative Order 02, 2003.
3. Virgin Coconut Oil (VCO) production and marketing standards are regulated through PCA Administrative Order 01, 2005.

A number of institutions provide support to the coconut market: i) the Land Bank of the Philippines and the United Coconut Planters Bank-Coconut Industry Investment Fund both provide credit to market participants; ii) the Department of Trade and Industry promotes market linkages; iii) the Bureau of Agricultural Statistics provides price information; iv) the Cooperatives Development Authority supports farmer organizations; v) the Agricultural Training Institute promotes technical capacity; and vi) the Department of Land Reform oversees agrarian reform.

Market organization in Quezon is provided through 349 farmer organizations which collectively represent over 18,000 members or roughly 10% of the total number of coconut farmers and workers in the province.

Section 2: Market Analysis

Coconut has a diverse array of applications and products, both edible and non-edible. The study sought to identify the main coconut products of importance in Quezon, and the various steps in their production. It then looked at the market participants and chains that brought these products to market. Since the focus of the study is on the small-scale farmers that form the backbone of the industry, the third step in chain analysis was to look at the main coconut products from farms in more detail in order to identify the marketing constraints and problems.

Product types and distribution

Coconut products are either chiefly for local consumption or for export. The traditional export products are copra (dehydrated coconut meat), coconut oil (CNO), desiccated coconut, copra meal, activated carbon, and coconut shell charcoal. Historically, traditional products comprised up to 93% of total coconut exports, though this share has recently dropped to 88% as newer products have grown in importance.

Most of the non-traditional exports were being used for local consumption long before they began to be exported. In recent years, virgin coconut oil (VCO), a purer form of CNO, has become increasingly popular both for export as well as for use as a local health product.

Completely novel products are also emerging, such as coco-chemicals and bio-diesel (coco methyl-ester) that provide new business opportunities for those in the industry.

Products traded locally include copra, VCO, coco wine, whole husked nuts, coco wood, coconut shell, charcoal, coco husk, brooms, coco vinegar, coconut carvings and other handicrafts, and coco-based food products such as 'buko' juice and coco jam.

Details on the product types and their distribution are discussed below:

Husked nuts and copra

The main outputs from coconut farms are husked nuts and copra. The husked nuts are mature nuts with the outer husk removed, and they can be sold immediately after harvesting for processing into desiccated coconut, VCO or coconut milk.

Alternatively, farmers can process the husked nuts into copra, the coconut meat that is dried and from which coconut oil is extracted. The husk and shell are by-products from copra-making.

Copra takes at least three to five days to dry properly. This is mostly done using a traditional, low-technology sun-drying method.

Both nuts and copra are therefore required as raw inputs by processing plants, or by retail markets for direct sale to consumers in the case of nuts.

To reach these outlets, farmers sell their husked nuts or copra to town traders. However, most farms only have a small output of these materials (for example, 450-636 kg of copra or 300-1,500 nuts per harvest) and the farms are not usually accessible by motor vehicle. Farmers therefore rely on intermediaries, who are either village traders or town traders' agents, to whom they transport their nuts or copra on horseback.

Intermediaries usually have a small assembly area or storage warehouse in a local village for consolidating the small volumes from farmers. Once enough volume is assembled, the intermediary either delivers it to the town trader or the trader collects it.

Town traders have bigger storage facilities and own larger trucks for delivery to their outlets such as oil mills and desiccating plants in large market centers.

The decision whether to sell husked nuts or process them into copra is complex. Due to the extra labor and time involved in copra production, the price needs to be high relative to husked nuts in order for farmers to undertake the additional primary processing.

Copra prices were considered low during the survey period so most farmers were selling husked nuts and receiving more than one-third of the final value of the equivalent CNO. Consistently low copra prices means the product is increasingly produced from low quality nuts that cannot otherwise be sold, and by farmers with no access to nut buyers.

Farmers say they find the current nut and copra marketing arrangements with local traders acceptable, given their situation, for several reasons.

1. There is no requirement for minimum or maximum volume, pre-order or contract.
2. Product can be collected or delivered whenever it becomes available.
3. Buyers can easily be contacted whenever there is product for sale.
4. All sizes and qualities are accepted (though some buyers may reject over-mature and cracked nuts and impose price discounts for copra not meeting their moisture and quality requirements).
5. Farmers are paid in cash immediately upon sale, and can request cash advances or loans charged against future sales.
6. Relationships between farmers and traders are often well established.
7. Farmers do not have to worry about transport to higher-level markets.
8. Farmers believe there is no significant price advantage from selling directly to town or provincial buyers.

Virgin coconut oil

VCO is produced from raw husked nuts. At the level of the farmer-processor, production takes from two to three days, and involves breaking, grating and pressing the raw nuts to extract the oil. One liter of VCO is derived from 12 nuts, and the main by-products- coconut shell and meal- both have economic value.

Processed oil is delivered by the farmer or small processor to a village-based buyer who examines the product to determine price. The buyer then undertakes final filtration and prepares the oil for delivery to buyers in Manila. Unlike copra and husked nut, VCO is purchased according to quotas given to producers by the village trader, who in turn has to meet production volumes set by his or her buyers.

Alternatively, local consumers may buy VCO directly from local producers in small plastic bottles (250, 350 or 500ml). Popularity and competition are increasing, and branded local VCOs (now even available in capsule form) are appearing in drugstores, supermarket chains, convenience stores and shopping malls. Some urban-based manufacturers flavor the oil with sweet corn, banana or jackfruit. These forms of value-adding and product development are undertaken by medium and large firms which have adequate capital, skills, management capability and market access.

With the exception of some large and export-oriented VCO producers, output of coconut households remains small due to poor links with big purchasers. Processing of VCO results in roughly a 100% increase in farm-gate price compared with the equivalent quantity of husked nuts.

Coconut 'wine'

Coconut wine is a traditional product with a relatively small but established local market. It is produced from the sap of cut coconut flowers, which is collected in a bamboo tube. After up to one day, this aromatic liquid, known as toddy, begins to ferment. It is then processed into coco 'wine' via distillation.

The distillation process is specialized. At nearly 200,000PhP for an average facility able to produce 4,300 gallons per year, the equipment is a considerable investment. Consequently, farmers who produce coco

wine usually pay rental for distillery services and have their product absorbed by the distillery owner. Alternatively, distilleries lease coconut trees for toddy production from local farmers.

No chemical analysis is done by buyers. They simply check for clarity, aroma and taste, from which they infer the alcohol content.

The market chain is relatively simple: from the producer to local wholesalers and retailers, then to the consumer. Most producers have their own small stores for retailing the coco wine in small bottles or by the gallon, while some wine is delivered to other provinces. Product development and linkages to higher level markets are limited, though a few entrepreneurs have tried to differentiate and brand coco wine for export.

Coco wood

Coco wood is growing in demand as other timber sources in the Philippines are declining. It is mainly used for low-cost construction and can last a number of years if protected from rain and termites.

After sawing, the finished board is either distributed locally, through other dealers, or transported to other provinces and urban centers. Retailers include hardware stores and temporary roadside pick-up points. So far, coco wood has not been exported.

Once a farmer decides to sell a tree, he or she contacts a local agent or dealer directly. Usually the coco wood dealer does all the felling and sawing, and also secures the necessary cutting and transport permits required under the Coconut Preservation Act of 1995.

Coco wood buyers prefer trees that are large, straight and mature, and these fetch the best prices. The yield per tree varies from 200 to 300 board-feet depending on size. At about 3.5PhP/board-foot, coco wood trees are worth roughly 700 to 1,000PhP each. However, trees sourced from less accessible farms are priced lower to offset higher haulage costs.

Farmers receive 88% more value from good quality trees which have a much higher coco wood recovery rate. High yield trees are usually older, while low yield trees are younger and more productive in terms of coconuts. Limiting cutting to old, unproductive trees seems consistent with increasing farmer income from coco wood and maintaining an adequate coconut resource base.

Market actors

The study looked at the market participants and chains that brought these products to market, and the institutional environment in which they operate.

Due to the diversity of products and steps in production, at least 13 main market participants can be identified (Table 2). What this analysis shows is that apart from growing coconut trees, farmers are involved in coconut markets as producers of five products: husked nuts; copra; VCO; coco wine; and coco wood. The market chain is presented in diagram form in Figure 2.

Table 2. Actors and their main roles in the Quezon coconut market chain.

No	Actor	Main role
1	Husked nuts/copra farmer	Owns or manages (tenant or leaseholder) a coconut farm and produces mainly husked nuts and copra for sale as raw material for processing.
2	Husked nuts trader	Buys and sells husked nuts on a wholesale basis and may process rejected nuts into copra for sale. May include retailers who buy and sell nuts for processing into coconut milk.
3	Copra processor	Buys nuts for processing into copra for sale.
4	VCO farmer	Owns or manages a coconut farm, produces nuts and processes these into VCO primarily for sale.
5	VCO processor/trader	Buys nuts and processes them into VCO. May also buy VCO from other producers for sale in larger volumes.
6	Coco wine farmer/processor	Owns or leases a coconut farm, collects toddy (i.e. coconut sap from unopened coconut flower) and processes it into coco wine. May or may not own a distillery. Without own distillery, farmer pays rental services for processing to distillery owner.
7	Coco wine processor	Owns distillery; leases farm for raw materials (toddy) and may provide rental services for processing to others.
8	Coco wine trader	Buys and sells coco wine from processors or other traders.
9	Coco wood farmer	Owns a coconut farm and sells coco wood or trees to be processed into coco wood. Usually continues to produce husked nuts from remaining coconut trees.
10	Coco wood processor/trader	Buys coconut trees, processes into coco wood and sells coco wood.
11	Coco wood trader	Buys and sells coco wood. May include those selling on retail basis.
12	Coconut oil processor (miller, refiner)	Buys copra and processes it into crude and/or refined coconut oil.
13	Desiccated coconut processor	Buys husked nuts and processes them into desiccated coconut.

Constraints and problems per product type

Husked nuts and copra

The study indicates that the farm-gate price of both husked nuts and copra are determined primarily by demand-side forces. Although there are times when farmers believe the price is unfavorable, they have little bargaining power and the price is invariably set by the buyer. This can be explained by a number of constraints identified during the study.

Small-scale production

Low output quantities per farm provide little opportunities for farmers to obtain favorable terms of sale. The power to demand higher prices is also undermined when the farmer has obtained either a cash advance or loan from the buyer.

Despite the number of farmer organizations in the province, coconut farmers interviewed during the study all reported selling husked nuts and copra on an individual basis, even if they are members of a cooperative.

Limited access to markets and buyers

Farmers believe that looking for an alternative buyer or market outlet is not advantageous since it is costly for them to transport their products to the processing plants. Long-standing relationships with buyers further discourage change, as these relationships are seen as positive by the farmers themselves.

Pests and diseases

Several ailments reduce coconut yield and quality, including mealy bug, 'cadang-cadang' virus and coconut leaf beetle. Most are avoidable with good tree management such as regular application of fertilizer and rapid response to communicable diseases.

Poor post-harvest handling

Poor handling reduces product quality due to breakage and a lack of sorting mixed nuts of different sizes. The resulting price discounts can be significant. This problem is attitudinal or behavioral on the part of farmers.

Poor timing of harvest

When nuts are not harvested on time they may be either over or under mature. This results in nuts that may otherwise have been acceptable, being rejected by buyers.

Outdated copra processing technology

Traditional air-drying methods are unreliable, and intermittent rain and high humidity result in deteriorated product. Farmers rarely meet the optimum 6% moisture content of premium price copra.

Need for copra storage

It usually takes some time for a farmer to accumulate a minimum quantity of copra before selling it to a trader. Traders must also consolidate copra from several farmers before transporting to an oil mill, but have better storage facilities and can stockpile product until the market price is favorable. Farmers can lose out through poor storage.

Poor regulation of standards

Although there are standards for trading copra, these are not objectively implemented at the farm level. Farmers mainly rely on traders' visual inspection to assess the quality of their product and therefore the price they receive.

Inadequate farm-to-market roads

Farmers use horse and water buffalo to transport husked nuts to the main road. In view of recent price increases in oil products, the cost of onward transport has risen considerably. This discourages farmers from bringing their products to town traders and processors.

Virgin coconut oil

The study shows that rising demand for husked nuts used to produce VCO has discouraged processing of copra by farmers. However, while many farmers feel that VCO has good market potential, production in the study area remains limited for a number of reasons.

Lack of big buyers

Local markets for VCO remain underdeveloped and traders' production quotas are small. Yet farmers say

they have limited access to traders and buyers who could absorb larger volumes. As long as regular and quality-controlled supply can be maintained, larger orders would allow farmers to increase output and extend the production period.

Lack of capital

The survey found that a small household processing plant costs around 17,500PhP. For some farmers, a lack of start-up capital hinders them from taking advantage of increasing demand for VCO. However, a number of financing facilities do exist in the province. If these are not being taken advantage of, the most likely explanation seems to be either that farmers are not aware of them, or they have difficulty meeting (or are reluctant to meet) the borrowing requirements.

Lack of technical and entrepreneurial skills

Training on VCO production has been undertaken in some villages by PCA and local government officers. However, training quality has been variable, and farmers have not always been able to meet buyers' quality requirements. It was reported that there was no follow-up or business and marketing support after the training.

Limited quality control

Although product standards for VCO already exist, most small-scale producers have problems maintaining the correct quality, partly due to a lack of the laboratory equipment which is available to larger producers. Local VCO buyers simply taste, smell and visually examine the product, so standardization is difficult, which creates uncertainty for the urban market. Product is sometimes rejected by buyers.

Coco wine

Although coco wine remains a locally consumed item, some producers consider it ready for the international market. The study notes a number of constraints to realizing this possibility.

Inadequate quality control among small-scale producers

Coco wine manufacture is largely unregulated and processing plants are not inspected unless consumer complaints are received by the government regulatory body. Production hygiene standards are variable and product contamination seems likely. Without suitable microbiological or other tests, coconut wine remains a small-scale local practice with local markets.

Absence of product standards

Unlike VCO, coco wine standards are still being developed, and their absence hinders access to international markets. While export quality has been achieved by a few producers, regular export requires sufficient guarantees of quality and volume.

Poor linkage with higher-level markets

Small producers sell to local traders, usually individually and on an ad hoc basis. While a few producers sell a limited volume to local consumers, the presence of local traders means the producers make little effort to find alternative markets. Even among those with export-quality wine, links with international buyers is the exception.

Limited product development

Most producers are content to trade the traditional pure coco wine packed in unlabeled containers. Among the few producers who have invested in value-adding activities such as labeling, flavoring and packaging, significant returns have been seen. There is plenty of scope for further product development and differentiation.

Rising costs of production

Coco wine producers are affected by increases in costs for a number of inputs, including labor (for sap collection), bamboo (used for access between trees during collection), and sugar (used in processing).

Coco wood

Despite the income potential of coco wood, the supply of coconut seems to be declining. The study identified four issues key to the sustainability of this aspect of the coconut industry.

Illegal and over-cutting of coconut trees

The regulations on felling coconut trees for wood are fairly strict, however they are often improperly applied or sidestepped altogether. Illegal cutting is widespread and local officials sometimes issue permits without coordinating with the regulator, the PCA. This leads to more trees being cut than is legally permitted. Sub-standard techniques mean that some newly-planted and smaller trees may be damaged during felling operations.

Poor quality trees give lower yields

When buyers make large orders on short notice, traders and farmers allow cutting of small, immature and still productive trees. The resulting low coco wood yield means that cutting and processing costs are higher per unit than for mature trees, and farmers receive lower prices.

Inadequate replanting

The PCA replanting scheme suffers from a number of weaknesses. The PCA reportedly cannot supply sufficient seedlings to meet their planned 100% replanting rate and compliance requires farmers to pay for the seedlings, which some of them cannot afford. Even if the replanting regulations are followed, there is no way to ensure proper care and maintenance of plants.

Avoidance of regulatory checks

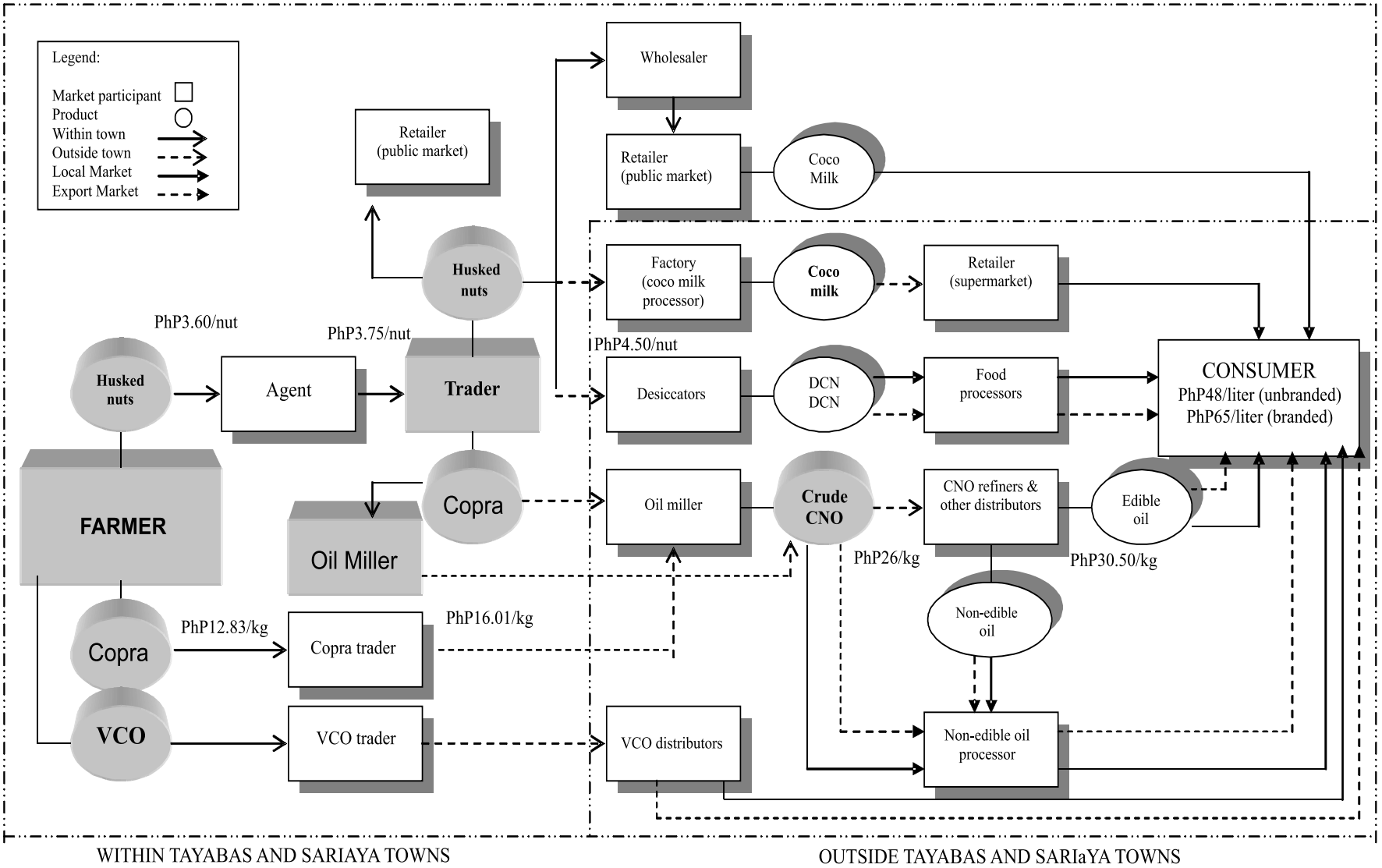
Traders avoid regulation in three main ways: i) under-declaring coco wood volumes to avoid fees; ii) illegal 'recycling' of transport permits; and iii) unofficial payments to checkpoint officers to avoid delays. The result is reduced tax revenue which could be used for compliance monitoring, and incomplete knowledge of the coco wood volumes being traded.

Guide Questions:

1. The case study concentrates on individual products, but what are the main constraints in terms of overall sustainability of the coconut market chain in Quezon? Draw a 'problem tree' to indicate the interrelationships of the various constraints of the Quezon coconut market industry as discussed in the case study.
2. What forms of value addition in coconut are practiced in the study area? What factors might the coconut farmers consider in determining the form of value addition they should undertake?
3. How are the present government regulations addressing the problems of the coconut industry? Can you identify other forms of support that the government and private sectors could provide to help coconut farmers improve the marketing of their products?
4. Coco wine and virgin coconut oil (VCO) represent two contrasting cases of product development. Coco wine has long been produced and traded in the market but primarily locally. VCO has become commercially important only in the last five to six years, but has rapidly developed into various forms and has already penetrated the export market. Explain why coco wine has lagged behind other coconut products like VCO and what particular form of support is needed by coco wine producers.

Figure 1. Map showing the location of Quezon Province

Figure 2. Market chain diagram for coconut in Quezon province



Case Study Material 4:

Marketing of Para Rubber Products of Small-scale Farmers in Northern Thailand

A. Notes for Teachers

Aims and the Methodology Used in Generating the Case Study

This case study presents the findings of research conducted in Northern Thailand from February to August 2006 by a team of faculty members and researchers from Chiang Mai, Naresuan, and Maejo universities. The research had the following specific objectives:

1. To understand the para rubber production system and products of small-scale farmers in northern Thailand;
2. To understand the para rubber marketing system and development for small-scale farmers in northern Thailand; and
3. To identify and understand government policies and their impacts on the para rubber market.

The research was conducted in four northern provinces of Thailand, namely: Phitsanulok; Phetchabun; Chiang Mai; and Phayao.

Data was collected from both primary and secondary sources. For primary data, 51 para rubber growers, six traders, and four government officials were interviewed using a structured questionnaire and marketing appraisal technique. In addition, records and research papers from various government and non-government sectors served as secondary sources.

The data collected was classified into five categories, namely: a) production systems (i.e. socio-economic characteristics, production practices and constraints of small farmers); b) products and by-products (i.e. processing and grading standards); c) domestic markets (i.e. market structure, chain, actors, pricing, information systems and constraints); d) export markets (i.e. volume and export trends of para rubber products, buyers and main actors, competition, support systems and constraints); and e) policies and regulations (i.e. domestic and trade polices of the Thai Government).

Problem Statement / Key Issue of the Case

Efforts to promote pro-poor markets for agroforestry products frequently single out the importance of government intervention. The state clearly has an important role to play in encouraging better management of imperfect markets and promoting the interest of its citizens, and is often pushed to provide better regulation, more reliable market information and sometimes to become a market participant itself. Yet good examples of these are rare. The Thai Government's successful intervention in the rubber market offers a number of lessons for other countries.

Brief Description of the Case

Thailand has had a rubber industry for over 100 years, and is now the world's leading rubber producer. Ninety percent of domestic production is exported, generating an important source of foreign exchange for Thailand.

Small-scale farmers are the backbone of the industry and account for over 90% of all producers. The government therefore sees rubber as bringing important social benefits, in the form of rural income opportunities, and as a means of slowing economic migration to urban areas.

The success of the Thai rubber industry is at least in part due to the government's market management and support, which ranges from legislation to institutional measures designed to provide research and development, improve yield, standardize product quality and simplify reinvestment in the industry, to market development and information systems. A major expansion began in 2003, targeting previously untapped northern and north-eastern parts of the country.

Based on this experience, the Thai rubber industry represents a welcome example of responsible state-supported pro-poor market development.

The Thai rubber market is large and complex but holds a number of lessons for other countries. Perhaps the most immediate of these is that, while the state is clearly active in the market (and the owner of considerable rubber estate), it has mostly acted to regulate and facilitate rather than directly control the market. Most market activities are undertaken by private individuals and organizations.

Among the main interventions by the Thai Government is the establishment of three supporting institutions, namely: Office of the Rubber Replanting Aid Fund (ORRAF); Rubber Research Institute of Thailand (RRIT); and Rubber Estates Organization (REO). These have responsibility for providing financial security to small-scale farmers, conducting research and development, establishing product standards, and generating and communicating market information.

The government has also facilitated 'open' (central) and 'paper' markets for rubber, which are both taking a growing share of trade. The 'futures' market is currently still in its infancy, but is also likely to grow in importance based on current trends.

Finally, in the absence of strong private sector development of the north and north-eastern regions, the Thai Government has identified a number of soft measures to promote rubber in these areas.

It is unlikely that any of the government's steps, taken alone, would have resulted in the impressive growth seen in the rubber industry. Based on this experience, successful sector development seems to involve a number of mutually-supportive and market-friendly measures.

Key Learning Themes of the Case

The case provides sound material to enable your students to learn and develop skills in critical and analytical thinking relating to the following themes: a) market chain; b) marketing information systems; and c) institutions influencing agroforestry marketing, using rubber as a case example. These themes are not discussed in the case under separate headings, however the guide questions on the succeeding pages should help you to determine which learning theme you would like to focus on in your classroom session when using this material with your students.

Expected Learning Outcomes

This case study describes some of the main features of the Thai rubber industry and offers learners the opportunity to critically examine a number of overlapping market support mechanisms. It looks particularly at the form and function of a number of market institutions, and is intended primarily as a discussion starter. The learning value of the material can be augmented significantly by further study.

Guide Questions and Suggested Discussions

Questions	Discussions
1. Figure 2 shows the product flow of rubber products while Figure 3 shows that growers can sell their rubber products directly and indirectly to different existing markets. Which do you think is the best marketing channel arrangements for the different products of small growers that could give the most benefits to them? Explain why?	Access to marketing channels differs according to locations. Each channel would yield different benefits to small scale farmers. Therefore, the channel that could be considered appropriate for small-scale farmers is one that is easily available in their area and provides high level of benefits to them.
2. What are the functions performed by the Thai Government in marketing rubber and how do they benefit each of the actors in the market chain?	The Thai Government plays a significant role in domestic and international marketing of its rubber products. It has established 3 Rubber Central Markets (RCMs) since 1991 to serve the northern, central, and southern parts of the country. The RCMs benefit all the actors in the rubber market chain in terms of (a) purchasing different kinds of rubber products; (b) providing storage facilities; (c) implementing the governments price support policy and providing information on rubber prices and trends; and (d) formulating rules and regulations to ensure product quality according to international standards. Rubber rejected by the RCM is sold in informal town markets, after which it is generally reprocessed.
3. What are the likely advantages and disadvantages of the rubber price support mechanism provided by the government?	This type of producer protection is quite common throughout the world, and students should realize the importance of a good understanding of the economic and social implications of price support. A few of the main ideas are outlined here. The main benefit of price support is that it protects farmers from temporary dips in the market which might otherwise force them out, e.g, bankruptcy. Price support is therefore a type of social support, which in this case offsets the cost to society of a large number of unemployed rubber farmers. The disadvantages are less obvious, but stem from the fact that price support is forcing an above-equilibrium price and amounts to a subsidy. The main argument against subsidies is that they encourage inefficiency; in this case, the use of land for uncompetitive rubber rather than something else. Subsidies are also difficult to make fair; they use taxpayers money without consulting the tax payer and they cannot reach everyone. Learners can probably think of several more issues. Overall, they should be encouraged to consider both the costs and benefits of price support, under what circumstances it can be justified, and what other options exist for achieving the same end result.
4. What are the available sources of marketing information for para rubber in Thailand? The country research revealed that Thai rubber marketing information systems are well established and reliable. However, information sources are rather scattered. What recommendations could you give to make the system more effective and efficient?	Marketing information system for rubber is better than many other crops in Thailand. Market information is easily available and accessible through various sources such through websites, the RMCs and other government related agencies, mobile phones, newspapers, and personal contacts. However, careful synthesis and analysis of information from these various sources should be taken into consideration by users before making a decision. Thus, an integrated information system is needed.
5. What are the main roles of futures markets? What is the difference between a futures contract and a forwards contract?	The Thai futures market is mentioned briefly in the case study but does not go into detail. Futures markets were established to ensure contracts are honored by buyers and sellers. Futures originally evolved to even out the chaotic fluctuations in price that are seen in many markets of agricultural commodities, where gluts and shortages are common. They allow buyers and sellers to agree a price some time in advance of a trade, thus insulating both parties from changes in the market value of the commodity at the time the trade takes place. Futures are always traded through an exchange, and futures contracts are highly standardized (eg, in terms of product units, type of settlement, currency of trade etc) in order to ensure liquidity in the market. Buyers and sellers never meet, and risk is assumed by the exchange which always takes the other side of the trade. On the other hand, forwards are exchanged between two parties and are unique. The risk with a forward is that either the buyer or seller is unable to honor the contract.

Suggested Activities

This case study describes a real-world situation with all the associated complexities and uncertainties. This is the likely environment many learners will find themselves in during their professional lives. The following activities are selected to help equip your students with tools to understand and analyze the real world, and to formulate plans for interventions.

a. *Construct a 'map' or 'rich picture' diagram of the government and institutional support to the Thai rubber industry.*

   The Thai rubber industry has been an incredible success story, due in part to progressive government support in the fields of regulation, standards, price support, promotion and market facilitation. Learners can better understand the complexity of overlapping government policies by using a graphical representation of the situation.

   This can be augmented by web-based research to examine other government and private support mechanisms not discussed in the case study, such as the First World Rubber Summit held in Thailand in 2006 and the proposed Rubber Authority of Thailand. This activity would be best conducted in small groups.

b. *Organize a debate to elaborate on the strengths, weaknesses, opportunities and threats of having central markets for a commodity such as rubber.*

   Central markets are common for a number of commodities, and considerable material has been written on these. This activity will require individual literature research by members of both debating teams. The research results could be combined with a role playing exercise where different team members could represent different market stakeholders during the debate.

c. *Investigate the form and function of a central commodity market/exchange known to the learners.*

   This will require some research and is best conducted as a team activity over a number of weeks. Students can chose to focus either on: a) one commodity (as in the example of Thai rubber, which is traded through a number of domestic markets); or b) one market, such as a provincial agricultural market.

   The research needs to focus on answering a number of questions that should be discussed and agreed in advance, such as the following.

   - Who established the market and why?
   - What is the management structure and how is it paid for?
   - Who can use the market and what are their obligations?
   - What is the legal situation surrounding the exchanges that take place?
   - What are the strengths and weaknesses of the market?

   Some of this research could be conducted via the internet and telephone.

d. *Make a matrix of market information for the cashew nut producers in north and northeastern Thailand*

   The aim here is to enable learners to acquire a good appreciation of the importance of having a defined list of market information needs, the sources from, or methods by which, they can be obtained, and the relative strengths and weaknesses of these information channels. In doing so, learners can recommend strategies for effective access to market information by para rubber entrepreneurs. The sample matrix below could be used for this exercise.

Information need	Source/ channel	Strengths and weaknesses of the source/ channel		Overall suitability of the source/ channel (i.e., low, medium, or high)
		Strengths	Weaknesses	

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B. The Case

Section 1: The Setting

Historical overview

The Pará rubber tree (Hevea brasiliensis), or simply rubber tree, is of major economic importance for its sap-like latex, which forms the primary source of natural rubber. Although Pará rubber originates in the Amazon rainforest of South America, it is now widely grown in Southeast Asia.

Following the discovery of the vulcanization process in 1839, the tree has been increasingly cultivated for rubber manufacture. Its value as a cash crop became properly established when the worldwide 'rubber boom' was sparked by the invention of the pneumatic tire in 1888, followed by the introduction of motorized vehicles at the turn of the 20th century.

Since then, investment has poured into Southeast Asian plantations, led by large multinational tire makers such as Goodyear, Dunlop and Michelin, who still remain important buyers.

Over the last decade, Thailand has become the largest natural rubber producer and exporter in the world. In 1998, Thailand produced 2.065 million tons of rubber, around 90% of which was exported with a value of nearly 1.5 billion USD. The leading export markets for Thai rubber are Japan, USA, China, Malaysia and South Korea.

Tire manufacturers account for 47% of domestic rubber consumption, with most of the remainder used to produce products such as rubber gloves, condoms, balloons, auto parts, cushions and elastic bands.

The traditional centre of Thai rubber production is in the south of the country (see Figure 1).

Until 2003, the north and northeast produced rubber in limited quantities, predominantly smallholders who were either self-financed or under contract to private companies that provided technical advice and inputs such as fertiliser.

The situation changed dramatically in 2003 when the government committed to promoting an additional one million hectares of rubber plantation, particularly focussing on new areas in the north and northeast. This was in recognition of the important economic, social and environmental role of rubber in Thailand (Table 1). It also augmented a number of other market management and support measures designed to maximise the country's benefit from this industrial crop.

Institutions supporting the Thai rubber industry

The Thai Government has taken an active role in the promotion and regulation of the domestic rubber industry since at least the 1960s. They have implemented a package of legal, institutional and financial measures designed to ensure maximum benefits to the Thai economy from rubber. The most important of these measures are discussed below.

Three main State organizations oversee and promote the Thai rubber industry, all of which come under the Ministry of Agriculture and Cooperatives.

Office of the Rubber Replanting Aid Fund (ORRAF)

Thailand established the ORRAF in 1960. Its main task is to provide financial assistance to farmers and to facilitate the movement of their raw rubber product to the marketplace.

Financial support comes from fees levied on exportation of rubber products. This income is divided into three: 10% for administration; 5% for rubber research; and the remainder for an aid fund targeted at small-scale farmers.

Table 1. Important roles played by rubber in Thailand

Area	Role
Economic	1. Pará rubber is nationally very important; it is grown by more than 6 million Thai farmers and is one of the country's top ten export products (in terms of latex and rubber products) by value. Rubber wood (or *parawood*) exports grew by over 40% to 0.85m USD between 1998 and 2000 alone.
	2. It is a high value crop, and considered as providing hope to many poor people in rural areas who are yet to cultivate it.
	3. Rubber yield has increased significantly in the past; from 60kg/ rai in 1966 to 268kg/rai in 2000, or fourfold over 35 years. It is hoped that this potential may be increased further by planting new high yielding varieties.
	4. Numerous domestic manufacturing industries depend on latex and parawood for their raw materials.
Social	1. Pará rubber creates job opportunities in rural areas and may reduce rural to urban migration. The Office of Agricultural Economics estimates that rubber could reduce the labour movement in the northeast by one third.
	2. Rubber has an 11 month harvest season. It thus helps maximise the efficiency of household labour and provides income stability.
Environmental	1. Pará rubber has a productive life of up to 30 years and thus helps create semi-permanent forest.
	2. Rubber is highly suitable for agroforestry systems and can be planted in mixed systems with vegetables, fruit trees, upland rice, peanut, mungbean, chilli, cucumber, pineapple, papaya, banana and other crops.
	3. Parawood is particularly valued in furniture manufacture and can be regarded as somewhat 'environmentally friendly' since it comes from trees felled at the end of their productive lifetime.

Rubber Research Institute of Thailand (RRIT)

The RRIT is responsible for research and development aimed at increasing latex and wood yields. It focuses on developing rubber varieties and planting stock, and on improving tapping methods. It is responsible for setting the Standard of Thai Rubber (STR) product specifications for un-smoked sheet (USS), air dried sheet (ADS), ribbed smoked sheet and rubber block.

Rubber Estates Organisation (REO)

The REO manages the government's rubber estate, which represents approximately one tenth of the total area of rubber planted in Thailand. It also implements the government's price support mechanism.

Government's promotion program and price support policy

Promotion program

A major rubber expansion program was launched on 26 May 2003 after a meeting in Phuket province. This was, at least in part, a response to the opportunities presented by sustained high global demand for rubber.

At the meeting, the government committed to expand rubber planting in every region of Thailand under a comprehensive new programme, titled 'Rubber Cultivation for Raising Sustainable Income to Farmers in the New Planting Areas, Phase 1 (2004-2006)'.

The new policy set the target area of one million rai (121,870 hectares) of new rubber, divided into 300,000 rai for seven northern region provinces and 700,000rai for 13 north-eastern region provinces. Shortly after, the areas of new plantation were expanded further to include another nine northern and six north-eastern provinces (Figure 1). It also sought to increase productivity.

A mixed incentive package was offered to potential rubber farmers. Firstly, new market entrants were eligible for a free contribution of 90 rubber seedlings/rai for not more than 10rai (1.62ha). Secondly, low interest loans were made available through the Bank of Agriculture and Agricultural Cooperatives (BAAC) at the rate of 5,360THB/rai during the first six years of planting.

The Department of Agriculture of the Ministry of Agriculture and Cooperatives was given responsibility for zoning land for rubber and for increasing productivity. Their results have been impressive coupled with a further increase in the price of rubber. The program has successfully increased the area under Pará rubber in the two target regions. Thailand now claims about two million hectares of Pará rubber plantation with a total production output of 2.8 million ton/year.

Price support

The majority of rubber growers are small-scale and relatively poor in capital. They are therefore susceptible to any fluctuations in rubber prices.

To protect farmers, the Thai Government operates a price support policy through the REO during periods of suppressed rubber price. Under the policy, certain market signals trigger the government to buy rubber at an intervention price determined by the Ministry of Agriculture and Cooperatives.

This rubber is then kept in stock until the price rebounds. Though the size of the intervention stock is not public information, the REO indicates it is somewhere in the region of 230,000-300,000 metric tons.

State price support covers only around 10% of total annual rubber production, which means the rest is still sold at the market price.

Nevertheless, the 10% still introduces a measurable market distortion. It has been estimated that the government increased the domestic price by an average of 0.27THB/kg, or 1% between 1997 and 2000. The cost to the tax payer of this policy is unknown.

Other legal instruments

Thai law requires all rubber traders, exporters, importers, processors, commercial rubber propagators and quality controllers/analysts to register their operations. Import and export of rubber is subject to permission from the Ministry of Agriculture and Cooperatives and customs clearance (Figure 4).

Section 2: Market Analysis

Ecology and habitat of rubber

Thai growers cultivate rubber in both lowland and upland areas up to 600m above sea level (asl) and on slopes up to 45 degrees. Usually, rubber is planted as a monoculture crop under rain-fed conditions. However, during the first two or three of the seven years before latex production begins, other crops may be intercropped with young rubber trees.

Over 20 varieties of rubber are grown in Thailand, bred variously for improved latex or wood output. Most of the rubber planted in the new northern and north-eastern areas (80%) is the high-latex-yielding variety RRIM600.

Production

Rubber production in Thailand is dominated by the smallholding sector, characterized as those cultivating 50rai (8.1ha) or less. At the other end of the scale, large estates account for only a tiny proportion of rubber plantation. Table 2 indicates the relative distribution of rubber plantation between producers, and highlights just how important smallholders are to the sector.

Some producers have formed cooperatives to sell rubber, both in the traditional and new rubber producing areas. However, group action is not widely practiced compared with individual selling.

Table 2. Classification of rubber growers in Thailand.

Classification	Size	Total number of holdings	Proportion of total holdings	Average area per holding
Smallholding	2-50rai (0.4-8.1ha)	1,012,000 holdings	93%	13rai (2.1ha)
Medium size holding	51-250rai (8.3-40.5ha)	73,000 holdings	6.7%	60rai (9.7ha)
Rubber estate	>250rai (>40.5ha)	3,000 holdings	0.3%	395rai (63.9ha)

Source: Office of Agricultural Economics

Products and product flows

Figure 2 gives a simplified representation of the main product flows and processing stages in the Thai rubber market. The chain starts with farm production of field latex - the main primary rubber product - which farmers themselves process in two main ways.

Firstly, it can be processed into un-smoked sheet (USS) or air dried sheet (ADS) by farmers themselves, before they sell to the primary processing factories. The primary processing factories then process the USS or ADS into smoked sheet before selling to high-end processing factories or exporting. About 83% of rubber plantations produce USS or ADS.

Secondly, farmers might sell fresh field latex to middlemen. They then turn it into concentrated latex before exporting or selling to high-end processing factories within Thailand for manufacture into tires or other products. These products may be consumed domestically or exported. Only 17% of rubber plantations sell field latex.

Farmers also sell various 'waste' products including coagulated residues from the collection cups and un-accepted rubber sheets and sheet parts. This lower quality rubber is sold to factories that produce 'STR20' rubber, or low quality rubber block, which is then on-sold.

Pará rubber cultivation also provides a number of non-rubber products, several of which have a market. There is a ready market for seedlings due to current expansion, particularly in the north and northeast. Pará leaves are used to make artificial flowers, key chains and name cards, mostly by small-scale women's groups. Parawood is the most valuable non-rubber product and is usually sold directly to mills for processing into wood or plywood.

Marketing actors and channels

The rubber marketing actors in Thailand include growers, processors and traders.

There are three types of rubber growers in Thailand, namely: 1) farming families; 2) farmers' groups; and 3) farmers' cooperatives. The local market is the physical market that buys rubber products from the small growers. Most rubber growers use this local market, and it handles about 94% of total rubber produced in the country. The local market consists of shops and traders scattered throughout 46 provinces, and include several types of traders and processors (Table 3).

Table 3. Types and number of market operators in Thailand.

Type of Market Operator	Number
Rubber farming families	1 million
Rubber farmer-cooperatives	**675**
Registered traders (hawkers and traders at village, district and provincial levels)	**>2,400**
Rubber primary processors	**200**
Rubber central markets	**3**
Rubber product manufacturers	**630**
Registered exporters	**321**

The local market is very important as it connects small growers to markets, especially those in remote areas.

The air dried sheet or un-smoked sheet produced by farmers can be sold through a number of different levels of traders, depending on its volume and the need for transportation. Six types of traders can be identified, and their relationships are summarised in Figure 3. The Rubber Central Market (RCM) is discussed under 'Market Classifications' below.

1.Hawkers

These traders buy ribbed rubber sheet direct from the farmers and use motorcycles to transport it to local or city traders. Hawkers provide an essential service to farmers by simplifying market access. They may either sell the products they have collected from farmers to processing factories or RMCs, but usually they sell it to other local traders.

2. Local village traders

Traders at this level own shops that also provide inputs to rubber farmers, such as fertilizers and other chemical inputs. These traders buy air dried sheet from farmer-producers and sell it to traders at the district and/or provincial level. Most local traders have a license for rubber trading.

3. District or provincial traders

These traders frequently have rubber shops based in large towns or cities and concentrate solely on trading/buying either USS or smoked sheet, which they bear the cost of preparing. Product is sourced through hawkers or local village traders, and sometimes directly from rubber smallholdings or rubber estates. Trade volumes are likely to exceed 1,000 kg/day. These traders are licensed and sell to exporters.

4. Rubber primary processors

These are the owners of facilities which process field latex and ADS into ribbed smoked sheet or rubber block (STR). Because of the large volumes they handle, processors usually buy both types of raw material through traders. Processors sell their product to domestic high-end rubber processors/manufacturers (i.e. for gloves, condoms, balloons, support equipment, tires etc.) and to exporters. Large processing companies may export the rubber themselves.

5. Rubber farming families and farmer-cooperatives

Small rubber farmers/growers may form themselves into a cooperative.

A cooperative buys rubber products from its members and sells it to local traders, either in the rubber central markets or primary processing factories. The cooperative carries out re-grading, cleaning or primary processing according to the product received. It also provides production inputs to its members.

6. Exporters

This is the highest level of trader within Thailand. Exporters usually have their own facilities for primary processing and finished product manufacturing. They buy the ribbed smoked sheet from traders at the district or provincial level, from smaller rubber processors or direct from large rubber estates. If necessary, they smoke ADS or USS themselves and base the buying price on the final product quality. An exporter is required to have a license to process, trade, and export.

Market classifications

Within Thailand, the Pará rubber market is divided into spot and futures markets. The spot or physical markets in the country include both local markets discussed in 'Product Flows' and 'Market Actors' and three 'open' markets collectively known as Rubber Central Markets (RCMs). In each case, the availability of timely and up-to-date information is essential to market operation.

The RCMs

The RCMs are a type of physical market established in Thailand some years ago. Since 1991 the Rubber Research Institute of Thailand (RRIT) has developed them into auction markets.

The first central market opened in Songkla province to service the southern rubber producing area. In 1999, a second market was opened in Surratthani province, and a third followed in 2001 in Nakhon Srithammarat province.

The RCMs do not only purchase different kinds of rubber products, including cup lump, concentrated latex, ADS, USS and ribbed smoked sheet, but they also provide rubber storage. Each RCM can accommodate a capacity of about 16,000 tons.

Although State mandated, the RCMs serve the private sector, including farmers, processors and traders. They also help implement the government's price support policy and provide information on rubber prices and trends.

The Songkla RCM lays down rules and regulations and grades all rubber brought to it. It also monitors quality according to international standards. Rubber rejected by the RCM is sold in informal town markets, after which it is generally reprocessed.

Paper markets

A new type of RCM operates without the product being physically present at the point of purchase. Instead, buyers and sellers negotiate an agreement and the product changes hands once the deal is complete. Due to the lack of product, the ORRAF market is sometimes referred to as 'the rubber paper market'.

A large paper market is organized by ORRAF and a number of others are run by private groups in the southern and eastern regions.

Figures on the volume and value of rubber transaction, as well as the number of customers, show that the role of RCMs in the country is increasing. For example, the volume of rubber serviced through these markets rose from 43,894 tons in 1999 to 159,435 tons in 2003 (Table 4).

However, as of 2003, only 6% (by volume) of the total Thai rubber market was handled by the RCMs. This means there is still a substantial role played by various traders and middlemen in the Thai market.

Futures market

The Thai Pará rubber futures market is part of the Agricultural Futures Exchange of Thailand (AFET) which opened in May 2004. Currently, only Grade 3 ribbed smoked sheet (representing 80% of all RSS produced in Thailand) is traded in the AFET, up to six months in advance.

Regionally, similar futures markets operate for palm oil in Malaysia, and for rubber in Japan (a large consumer of the product). Singapore, which neither produces nor consumes a great deal of rubber, also operates a futures market for the product. These exchanges are used primarily to manage the risk associated with price variations, and in the long-term, to help even out price spikes. Futures prices are referenced worldwide and used by manufacturers to plan production levels.

Table 4. Tons of rubber traded through three Regional Central Markets (RCMs) in Thailand, 1999-2003

Year	Hat Yai RCM, Songkla province			Punpin RCM, Suratthani province			Chawang RCM, Nakhon Srithammarat province		
	USS	RSS	Other	USS	RSS	Other	USS	RSS	Others
1999	32,189	-	-	11,705	-	-	-	-	-
2000	33,865	14,490	554	25,092	493	-	-	-	-
2001	21,285	9,697	825	27,287	1,241	1	10,481	-	-
2002	21,745	24,552	295	44,274	2,062	-	32,415	2,739	-
2003	16,733	31,633	7,852	49,067	5,238	97	42,812	5,992	11
Total	**125,817**	**80,372**	**9,526**	**157,425**	**9,034**	**98**	**85,708**	**8,731**	**11**

Source: Rubber Research Institute of Thailand, 2004

Market information

Given the history and importance of the Thai rubber industry, it is unsurprising that market information systems are both reliable and well established, and regarded as better than those for many other crops. Buyers and sellers, particularly in the RCMs, are generally well informed of current market prices and conditions. Local prices are broadcast daily on the radio and many websites also publish price and production information.

In addition, the domestic mobile phone network is fairly comprehensive and handsets are common. With around 400 subscribers per 1,000 people, Thailand's mobile saturation is over ten times higher than neighbouring Cambodia or Laos.

Most market participants can check prices daily, either via public media, friends and business contacts or the RCMs. The futures price is also available from AFET and world prices are readily available via the internet.

Despite this bright picture, rubber marketing information is still rather scattered and the government is aiming to provide even more synthesis and analysis.

Price relationship between RCMs and local markets

The efficiency of the current market information system is indicated by the price relationship between the local markets and the RCMs (Figures 5a and 5b). The data shows that the two prices are very closely related, indicating that domestic rubber markets are well integrated. Local market prices also seem quite healthy compared to the RCMs, being only 1-2 THB/kg lower, or just over 3% of the average selling price in the two example provinces in 2003.

Guide Questions

1. Figure 2 in the case study shows the flow of rubber products while Figure 3 shows that growers can sell their rubber products directly and indirectly to different existing markets. Which marketing channel arrangement do you think would give the greatest benefit to small growers for their different products? Explain why?
2. What are the functions performed by the Thai Government in the marketing of rubber, and how do these benefit each of the actors in the market chain?
3. What are the likely advantages and disadvantages of the rubber price support mechanism provided by the government?
4. Thailand's rubber marketing information system is well established and reliable. However, information sources are rather scattered. What recommendations could you give to make the system more effective and efficient?
5. What are the main roles of futures markets? What is the difference between a futures contract and a forwards contract?

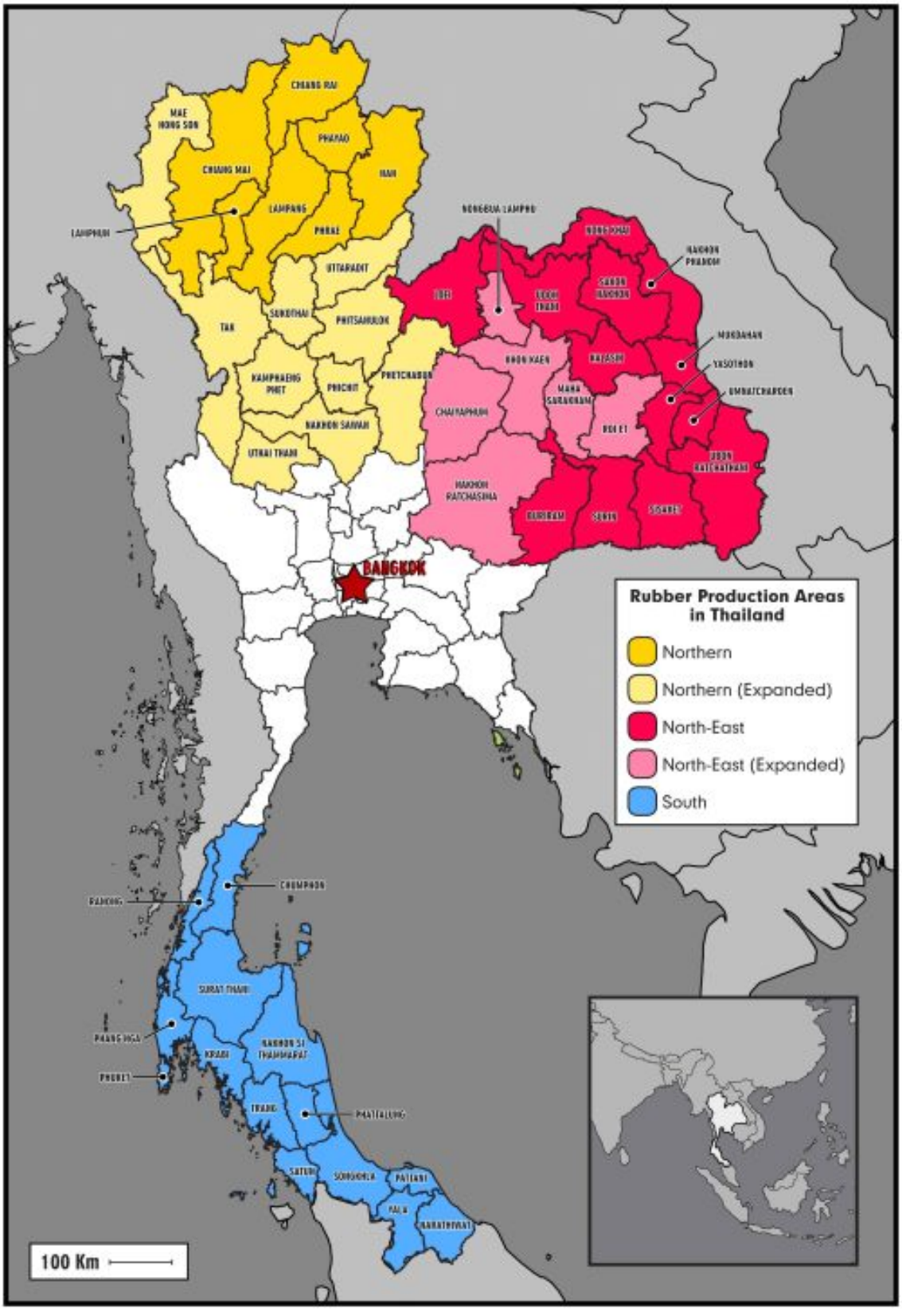

Figure 1. Map showing locations of Para rubber-producing provinces in Thailand

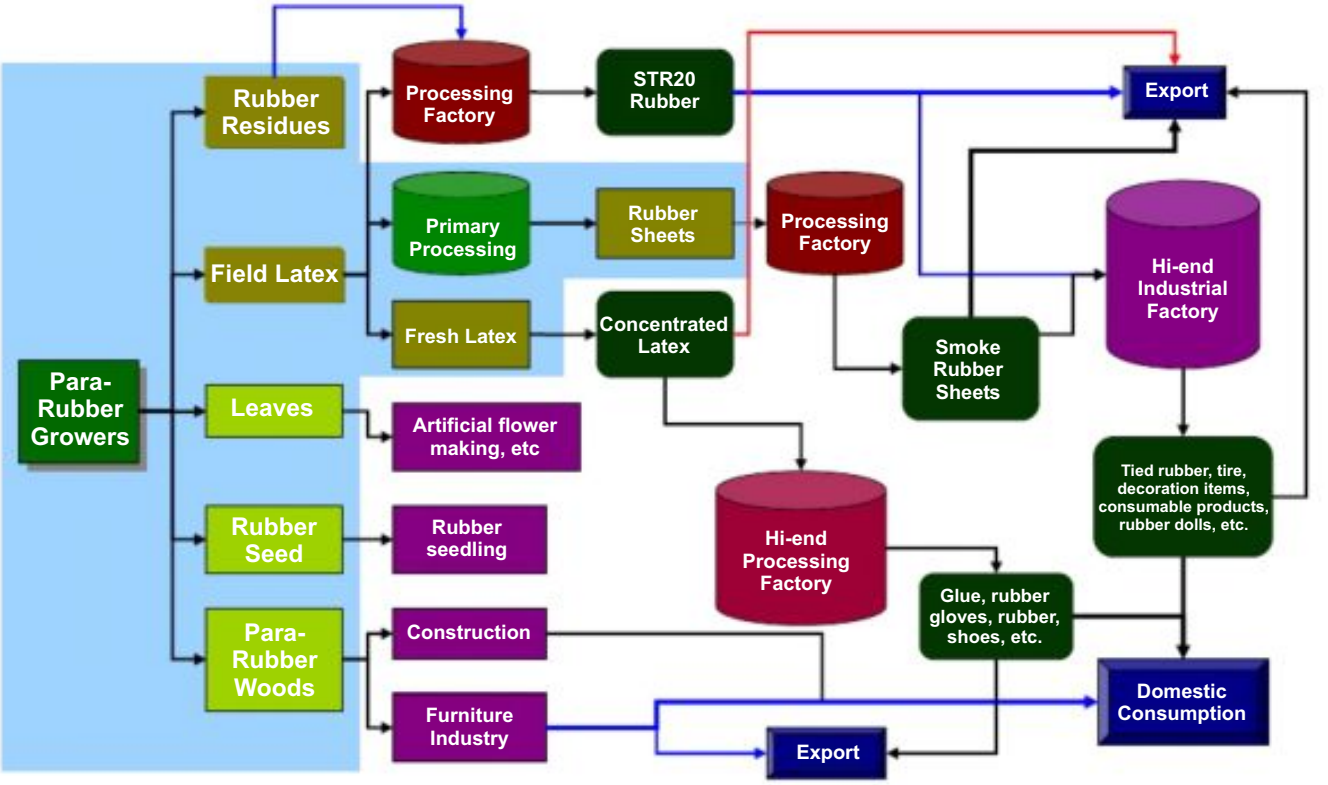

Figure 2. Thailand para rubber industry and product flows (shaded areas indicate the participation of small scale growers in the industry).

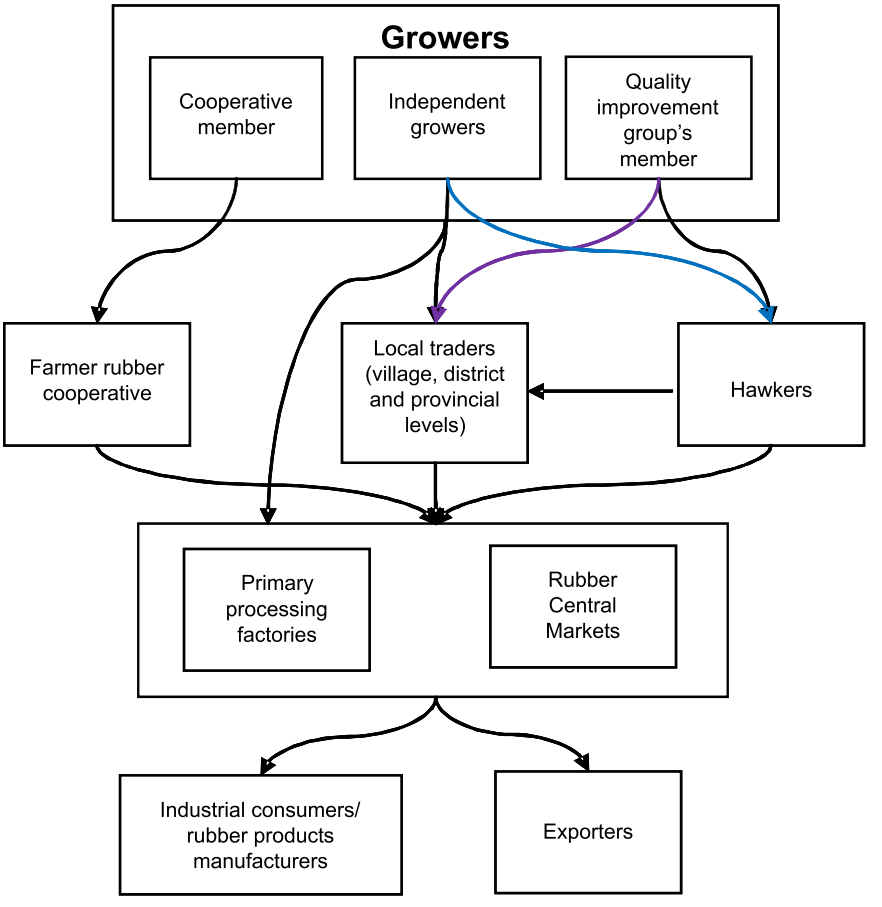

Figure 3. Marketing channels of Para rubber in Thailan

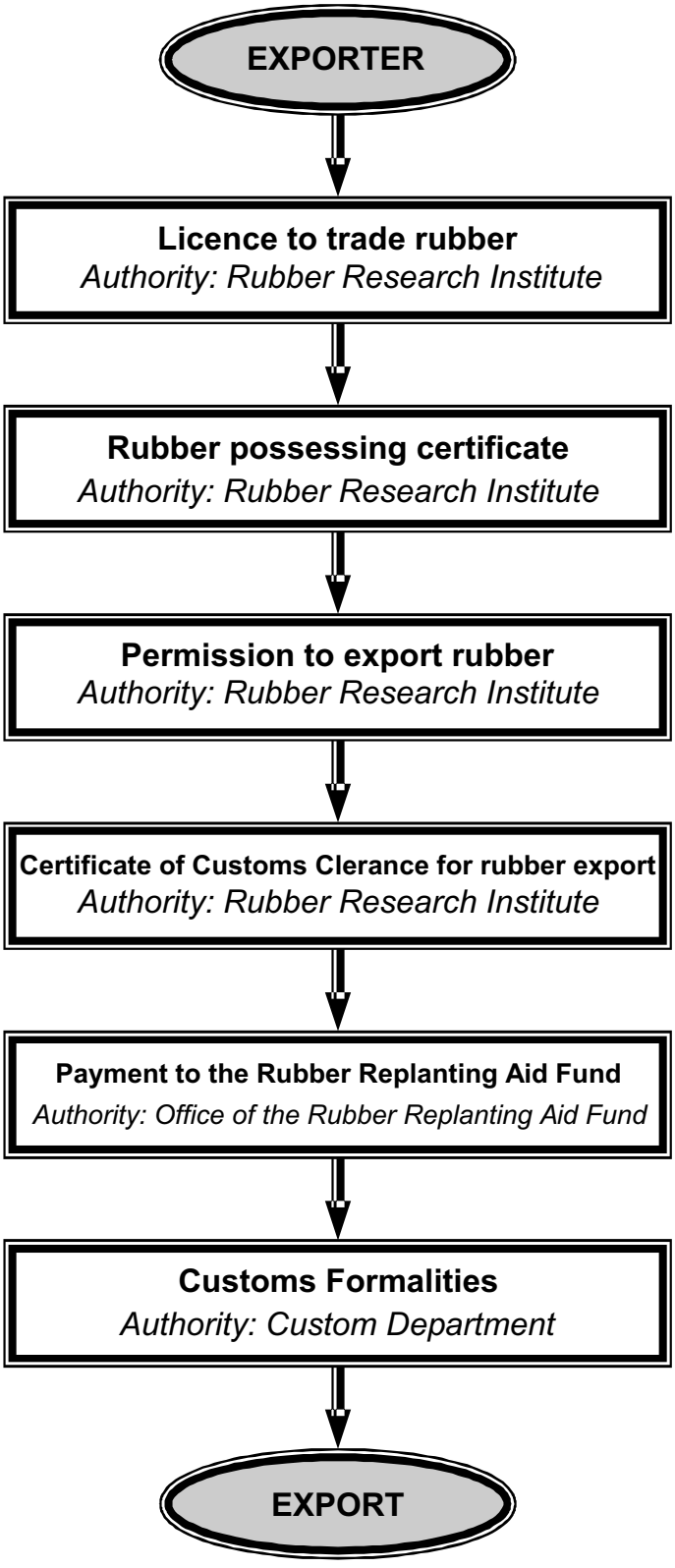

Figure 4. Para rubber export procedure in Thailand

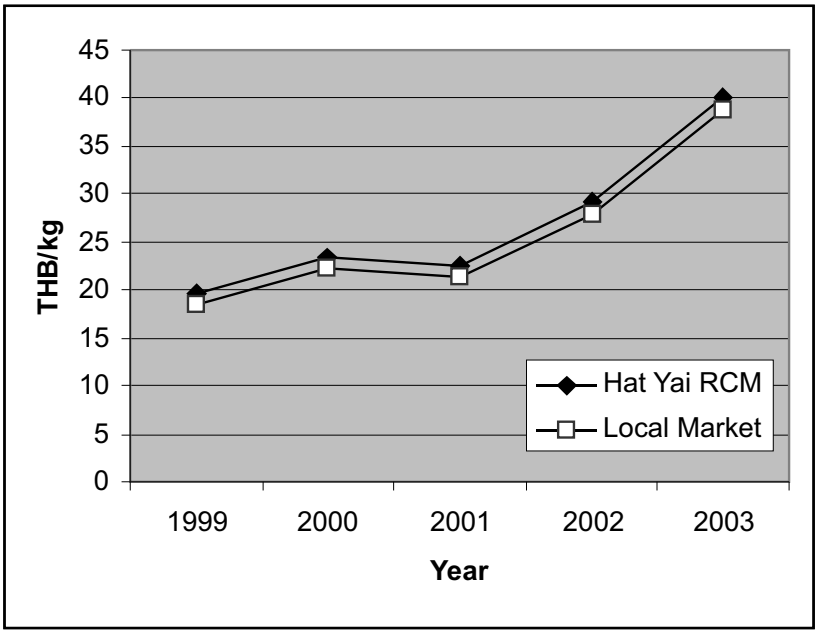

Figure 5a. Market prices, Songkla Province, Thailand

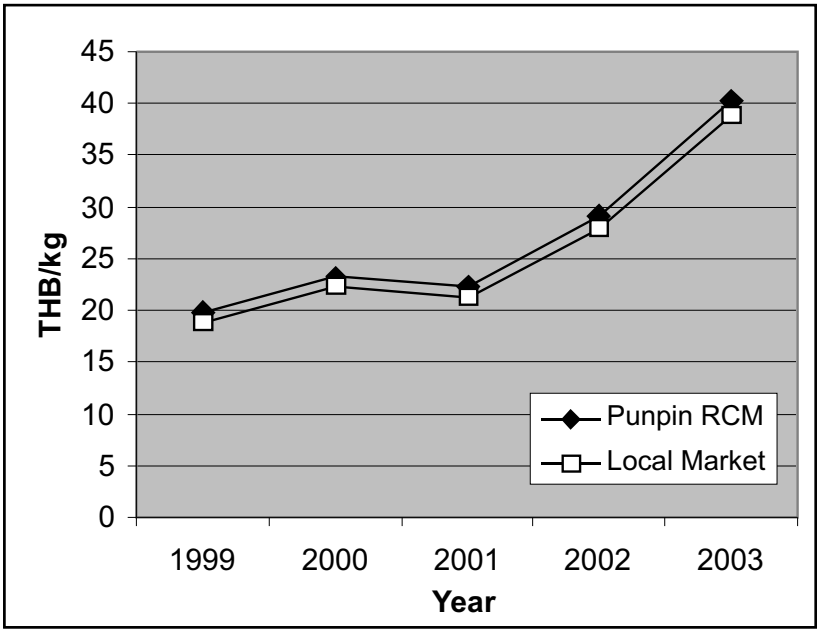

Figure 5b. Market prices, Suratthani Province, Thailand

Case Study Material 5:

Cashew Nut Supply Chains in Dak Nong and Binh Phuoc Provinces of Vietnam

A. Notes for Teachers

Aims and the Methodology Used in Generating the Case Study

This case study presents the findings of a research on cashew nuts supply chains in Dak Nong and Bin Phuoc provinces in southern Vietnam by a team of faculty members from Nong Lam and Tay Nguyen universities in February to August 2006. The research sought to answer the question: "What are the determinants of the farmgate price of cashew nuts in Vietnam's rural upland areas, and can the farmgate price be increased?

Specifically, the research aimed to explore:

1. The cashew market chain, using a market chain analysis approach.
2. The factors that most affect the farmgate price.
3. Comparison among the market performance of different farmers to suggest policy improvements that will improve household income from cashew.

The research used the Hedonic regression method in which the price of goods is expressed as a function of the good's characteristics (in production and transaction conditions). Where necessary, 'dummy' variables were employed to represent non-numerical (or unknown) characteristics of goods. In regeression analysis, a dummy variable is one that takes the values 0 or 1 to indicate the absence or presence of some categorical effect that may be expected to shift the outcome (http://en.wikipedia.org/wiki/Dummy_variable).

Ninety-nine households were interviewed (see Table 1), all of which had been cultivating cashew for at least three years (the minimum time to the first harvest). As much as possible, interviews were conducted with whomever took responsibility for cashew sales. Households reported up to five different farmgate prices within the research year, which gave a total of 252 different transactions on which the analysis was based.

From the literature review, the research investigated six factors, or groups of factors, believed to have the most important influence on cashew farmgate price: i) infrastructure, ii) buyers, iii) product characteristics, iv) household characteristics, v) seasonality, and vi) access to information.

Table 1. Breakdown of household respondents

Ethnicity	Binh Phuoc Province			Dak Nong Province	Total	
	Bu Dan	Phuoc Long	Dong Phu	Dak Lap	No.	%
Kinh	2	9	14	4	29	29.29
Non-Kinh	21	10	5	34	70	70.71
Total	23	19	19	38	99	100

Data collection involved two steps. Secondary data on the scale and scope of the cashew market were collected from the provincial Departments of Statistics (DoS), Agriculture and Rural Development (DARD) and Trade and Tourism (DoTT), and from district and commune government officers.

Primary qualitative data was collected using questionnaire-based in-depth interviews. The questionnaire was designed to collect general households' information, transaction behaviors and factors determining farmgate price under the hedonic pricing approach; ie, considering the six groups of factors as they related to the research hypotheses.

Problem Statement/Key Issue of the Case

Efforts to develop pro-poor markets need to be based on a sound understanding of the issues involved. Market value chain analysis is good at identifying market linkages and the relative importance and profitability of those links. However, such analyses are often more descriptive than explanatory. Comparative analyses can improve understanding of market chains by looking at why some farmers do better than others. Combined, the two approaches should allow researchers and policymakers to identify appropriate pro-poor market improvements.

Brief Description of the Case

This case study analyzes factors affecting cashew nut's farmgate price variation in Binh Phuoc and Dak Nong provinces in 2006. Both areas involve Kinh ethnic group and non-Kinh ethnic minority small-scale farmers, and suffer from the usual infrastructural constraints of rural Vietnam such as poor roads, few market support services and limited access to education.

For the study households, family income is heavily dependent on the farmgate price they receive for unprocessed cashew, usually sold through dealers. Yet some farmers receive a better price than others, and understanding why should help identify means of improving the market for poor farmers.

The study hypothesizes a number of explanations for differential prices, which are then tested through a extensive market analysis and questionnaire-based interviews with 99 farm households. The findings suggest some market improvements.

The research sought to describe the cashew nut value chain in Dak Nong and Binh Phuoc, flowed by some regression testing of possible determinants of farmgate price based on the hedonic pricing model.

The findings showed that although there is little post harvest processing, and limited direct sale to processing plants, farmers still retain almost all of the final value of the product. On the other hand, selling direct to producers netted farmers 2.5% more of the total final value of the product than selling through collectors and purchasing stations.

The value chain analysis also identified several factors constraining the further development of the market, including:

- Limited price information.
- Limited farmer bargaining power, particularly due to indebtedness.
- Limited competition between buyers.
- Little collective bargaining.

A comparative analysis based on the hedonic pricing model was used to shed light on other constraints not indicated by the value chain analysis. It considered a number of explanatory factors why some farmers gained a higher farmgate price than others.

Based on the research findings, it should be possible to identify a number of improvements in the cashew market to further benefit rural households.

Key Learning Themes of the Case

The case is a good material to enable your students to learn and develop the skills for critical and analytical thinking on the following themes: a) market value chain, b) processing, packaging and value addition, c) market information systems, and d) institutions affecting agroforestry marketing with cashew nuts as a case example. These themes are not discussed as separate headings in the case. However, the guide questions on the succeeding pages would help you determine on what learning theme you would like to focus your classroom session when using this material with your students.

Expected Learning Outcomes

This module uses a specific case from Vietnam to indicate a rational research methodology that tests a number of questions through comparative analysis. The module introduces two aspects of the research. Firstly, more traditional market analysis tools are used to establish the nature of the cashew market. Secondly, questionnaire survey provides quantitative data for statistical analysis. Learners should come away with a heightened sense of the value of objective, evidence-based policy recommendations, which they are encouraged to develop themselves.

Suggested Activities

This case study describes a real world situation with all the associated complexities and uncertainties. This is the likely environment many learners will find themselves in during their professional lives. The following activities are selected to help equip the learners with tools to understand and analyze the real work, and to formulate plans for interventions.

1. Create a 'problem tree' for the cashew market in the study. What additional research questions does the problem tree lead to?

   A problem tree is a diagrammatic representation of a problem that helps identify possible solutions. It begins with the overlying problem in this case, e.g., cashew producers are not making as much income from their cashew farms as they would like, and then asks "Why?" The main reasons are written down in a tree structure, and for each one, the question "Why?" is asked. This continues until the 'root' causes of the problem are found.

   For this case study, the research was able to identify several possible explanations for weaknesses in the market chain, but also raised a number of questions that can only be answered through further research. For example, why do ethnic minorities receive a lower farmgate price, on average, than ethnic Vietnamese? It could be that they live further from the purchase stations, have smaller farms or grow cashew under conditions that mean they are harvested a little later in the season. However, we cannot know the reason based on the research. Several other research questions will emerge from constructing a problem tree.

   Problem trees are a type of rational brainstorming, and are best conducted in groups. The different problems in the tree will probably move and change as the tree is conducted, so it is best to use cards for each problem rather than a whiteboard.

2. Design a methodology (including goals, participant list, schedule and budget) for a comparative analysis of a local market chain.

   The aim here is to encourage learners to think about how to design empirical market chain research. There should be at least three steps in research design:

   Preliminary research; identifies a rough outline of the situation; who are the main players, what are the main problems and issues?

   Question identification; based on the preliminary research, what questions will the research try to answer? These can be constructed as hypotheses, or left as questions.

   Methodology design; once the research questions are clear, the most appropriate methodology can be

found. This is a slightly iterative process, because some questions may be too difficult to answer, or will need to be rewritten based on what research is realistic.

3. Make a matrix of market information framework for the cashew nut producers in the two provinces

The aim here is to enable the learners to acquire a good appreciation of the importance of having a defined list of market information needs, the sources from or methods by which they can be obtained, and the relative strengths and weakness of these information channels. In doing so, the learners can recommend strategies for an effective market information access for cashew nut entrepreneurs. The sample matrix below could be used for this exercise.

Information Need	Source/ Channel	Strengths and Weaknesses of the Source/ Channel		Overall Suitability of the Source/ Channel (i.e., low, medium, or high)
		Strengths	eaknesses	

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Guide Questions and Suggested Discussions

Questions	Discussions
1. Describe the three supply chains for cashew nuts existing in the two provinces. Which of them do you think should be encouraged more? Why?	Cashew nuts reach both local and external processing companies through three main chains (see **Figure 3 of case study**): 1. Farmer - purchasing station level 02 - purchasing station level 01 - processing company. 2. Farmer - collector - purchasing station level 01 - processing company 3. Farmer - purchasing station level 01- processing company. The third supply chain should be encouraged since it has less transaction cost and could enhance farmgate price. Further, it establishes better communication on quality and market information between producer and processing company.
2. What factors determine the time, level, and type of buyer that the farmers consider in selling their cashew nuts? What recommendations could you give to improve the bargaining position of farmers?	When to sell: Households normally sell their produce immediately for the following reasons: (a) they do not have the facilities to dry or store cashew nuts; and (b) they are in debt or cash shortage. On the other hand, households hold the selling of their produce when they are in strong financial status to wait for the best price. Which level to sell to: Households sell in 3 levels, namely: dealers (collectors), purchasing stations and processing factories. Which individual to sell to: Households sell their produce to a buyer who either (a) has a previous business relationship with them; (b) Has provided them a loan as a payment, or (c) offers the best price. To improve the bargaining position of farmers, they should decide on when, to whom, and at which level to sell in the best manner possible. Furthermore, bargaining as a group is found to be advantageous to the farmers rather than doing it at individual level.
3. Figure 1 shows the different stakeholders surrounding the farmers in cashew nut industry in Vietnam. What linkages exist among these stakeholders? What vital role should each of them play to help farmers improve their production and marketing of cashew nuts?	Four main factors in the cashew nut industry in the study area: (a) government; (b) inputs; (c) ouputs; and (d) other support factors (extension research, physical and market infrastructures, financial assistance). These factors operate within a given set of market mechanism under government rules and regulations. The government provides quality control in production, trade regulations and market price information. Private companies mostly provide the seeds, fertilizers, pesticides, labor, and credit assistance as production inputs. Middlemen, processing companies, and the buying consumers compose the output factors. On the other hand, extension service agencies, research centers and universities, and financial institutions also provide support to the cashew nut industry through technological transfer, credit assistance, physical and market infrastructure development. All stakeholders within these factors should be aware of each others roles and should coordinate well to help improve farmers production and marketing of cashew nut.

4. What are the main market price infomation sources of cashew farmers in Dak Nong and Binh Phuoc Provinces? What recommendations could you give to improve their access to market price information? (Please see related suggested activity below)	Farmers heavily rely on dealers, relatives and neighbors as informal sources of market information. Purchasing stations also provide prices to farmers, either face to face or by telephone for unofficial price list. Their price information would frequently vary, even within the same day. Purchasing stations are thus regarded as unreliable sources of price information. Official information sources such as television, radio and newspaper, are probably more objective but were not found to be very popular among farmers in the survey area. Compounding the problem, neither local agricultural extension staff nor farming associations provide accurate and timely prices. Market price information for cashew nuts calls for the governments fairness to both farmers and traders. The effective formal source should be utilized to update price information day by day at least in the trading period from January to May. Market consultation should be designed in the activities of agricultural extension institutions and farming associations.
5. Describe how postharvest activities at household level can increase value of cashew nuts in the market chain? What recommendations could you give to promote these activities?	Overall, the post-harvest activities for cashew nut have been found to be feasible and profitable at the household level. This is either through farmers making affordable investments in order to carry out such activities for their own business or through working as hired labor. By doing their own processing business, farmers can additionally obtain 956 VND/kg of cashew nut beans or equivalent to 10% in selling price of cashew nut kernel. Farmers can gain monthly earnings for their post-harvest peeling of 1,647,701 VND with a normal processing capacity of 1000 kg of cashew nut beans. This income is relatively high and stable in comparison with their farming. More importantly, farmers can make the best use of their working time after harvesting cashew nut (see Table 3 in case study). Being a hired labor in processing establishment for a based -product wage, a farmer can obtain a seasonal monthly income of 1,080,000 VND by peeling cashew nuts. This income is also acceptable to them and nearly equals their farming income (see Table 4 in case study).

B. The Case

Section 1: The Setting

Historical overview

Vietnam has a population of over 80 million people. Most of its people survive on agriculture, and the poorest live in the mountainous uplands of the country's northern and central regions. Agricultural development is regarded as perhaps the most important pillar of sustainable development in these areas.

Vietnam's upland areas suffer from several common constraints, including poor infrastructure, relatively low levels of education, poor information on advanced technologies and little market support. These factors leave rural farm households with limited access to markets and weak bargaining positions when selling farm produce. From a development perspective, improving these two overlapping issues could significantly impact on rural livelihoods.

Rural upland Vietnam is typically populated by ethnic minorities whose livelihoods are usually dependent on agriculture and non-timber forest products. But farming systems for many minority groups are changing as the government promotes 'sedentarization' over shifting agriculture, and encourages the cultivation of cash crops, including pepper, acacia, eucalyptus, coffee and rubber.

Among these industrial plants, cashew nut has become one of the most important sources of household income, especially in some of the south-central provinces where the conditions are more suitable for its growth.

Cashew nut is particularly popular among the rural poor due to its stable market price, low investment costs and simple cultivation requirements. It has thus become an essential source of income and livelihood security in many upland areas.

Importance of cashew to the local economy

Cashew is extremely important to the rural economy of the survey area. Farming is the chief occupation of 96.97% of all households. An average of 57% of household income is derived from cashew; ranging between 39% in DaK Nong to 62% in Binh Phuoc. In fact, even these figures underestimate the situation, with over one fifth of surveyed households earning 90% of their income from the crop. Half of all respondents had been involved in cashew cultivation for over 12 years.

Location

This case study examines the situation in four districts of two provinces (Figure. 1). Quang Tin and Dak R'tih communes, which lie in Dak R'Lap district of Dak Nong province, were selected for their high proportion of ethnic minorities; representing about 80% of the total population.

Bu Dang, Dong Phu and Phuoc Long districts of Binh Phuoc province have the largest cashew crop volume in the province, but have different ethnicities, market infrastructure and scales of production.

Institutional environment

Although the study was not able to go into detail regarding institutional and policy matters, it did seek to identify all the factors that determined the shape of the cashew market. This is represented diagrammatically as a 'map' of the sub-sector in Figure 2.

Section 2: Market Analysis

Market actors

Cashew nuts reach both local and external processing companies through three main chains (see Figure 3):

1. Farmer purchasing station level 02 - purchasing station level 01 processing company;
2. Farmer collector purchasing station level 01 processing company; and
3. Farmer purchasing station level 01.

While the first two chains are common, the third is quite rare considering the large scale inputs that these purchasing stations require.

The collector is therefore the main link between the farmers and other middlemen in the purchasing system. He or she collects smaller lots of scattered cashew using personal capital then combines and grades (classifies) them. They are usually then sold to purchasing stations.

Most purchasing stations level 02 act as middlemen, buying cashew nuts from farmers and dealers, possibly classifying them, and then reselling them to the next purchasing station.

Purchasing station level 01, on the other hand, possibly carries out drying of the cashew nuts at the end of harvest time, when the selling price drops considerably.

The main difference between level 01 and level 02 purchasing stations is who they resell the cashew to. While level 01 stations sell directly to processing units, level 02 stations distribute cashew to processors via their parent stations, which provide supply guarantees to processing units.

Value addition

The study analyzed the costs and benefits to each stakeholder in the three value chains of cashew nut, from farmer to processing company. This was done by considering: i) farmers' production costs, comprising the type of initial investment (excluding land) and recurring (annual) costs; and ii) farmers' income, in VND/ha. The research team then identified the value added to the product at the various purchasing levels, disaggregated by ethnicity.

The distribution of costs, profits and margins for all chains during the study period are presented in Table 1.

In all three chains, farmers' costs represented roughly one third of the final sale price, which varied between 8,300 and 8,500 VND/kg depending on the value chain. Farmer's profit, calculated as the farmgate price less costs, was roughly two thirds of the final sale price of approximately 8,500 VND/kg. This clearly leaves only a small percentage as operating profit for collectors and the purchase stations, which typically operate on margins of around 1-2% of the final sale price.

Table 1. Costs, profits and margins in the cashew market chain.

Costs/profits as % of final sale price		Farmers marg in as % of final sale price		Profit distribution within the whole value chain	
Chain 1: Farmer - purchasing station level 02 - purchasing station level 01 - processing company.					
Farmers costs	30.1	Farmers margin	95.3	Farmers % of profit	97.1
Farmers pr ofits	64.4	Level 02s margin	2.3	Level 02s % of profit	1.2
Level 02s costs	1.6	Level 01s margin	2.3	Level 01s % of profit	1.7
Level 02s profits	0.8				
Level 01s costs	1.2				
Level 01s profits	1.2				
Chain 2: Farmer - Collector - purchasing station level 01 - processing company					
Farmers costs 30.2		Farmers margin	95.3	Farmers % of profit	95.7
Farmers profits	64.4	Collectors margin	2.3	Collectors % of profit	2.6
Collectors costs	0.6	Collectors margin	2.3	Level 01s % of profit	1.7
Collectors profits	1.8				
Level 01s costs	1.2				
Level 01s profits	1.2				
Chain 3: Farmer - purchasing station level 01.					
Farmers costs	31.7	Farmers margin	97.7	Farmers % of profit	98.2
Farmers profits	66.0	Level 01s margin	2.4	Level 01s % of profit	1.8
Level 01s costs	1.2				
Level 01s profits	1.2				

Note: All prices were calculated in VND/kg for comparison

As might be expected, the analysis suggests that the farmers' profit is highest when the number of participants in the chain is lowest, varying from 95.7% of the total final value in chain 2 to 98.2% in chain 3.

While 1-2% profit margin for the dealer must be economical, given the large volumes of product traded through the purchase chain, the figures suggest that farmers already extract a good margin from the cashew chain. An increase in absolute household income is unlikely to come from an increase in farmers' relative profit margins.

Though the farmer achieves a high profit for each kilogram, monthly earnings are not correspondingly high for two reasons. First, the calculation does not take into account the 'economy of scale' effect (or operational capacity of each stakeholder). While the middlemen, like collectors and purchasing stations, easily operate at several hundred tons in 3-4 months, farmers can only attain moderate output depending on their planted areas, yields, and more importantly, the high vulnerability in cultivation. Second, farmers' cultivation is a year-long process, whereas traders perform their business for only four months during the harvesting period.

The estimate of monthly earnings for each stakeholder is presented in Table 2. The figures demonstrate that farmers' monthly earnings are the lowest among all participants in the chain. Their high vulnerability in cultivation gives them a moderately low gain compared to other stakeholders in the supply chain. The remaining stakeholders' monthly income is higher according to their trading capacity, which is less time-consuming. To attain such a high trading capacity, traders have to invest capital both for purchasing cashew nut (which was not taken into account in the calculation), and for previous funding to farmers (which was considered as a cost of capital in the calculation).

Table 2. Estimation of participants' monthly earnings in distribution chains

	Profit (VND/kg)	Capacity (kg)	Time (month)	Earnings (VND/month)
• Farmers				
+ Farmer 1	5,494.69	6,000	12	2,747,347
+ Farmer 2	6,623.00	2,000	12	1,103,833
• Collector				
+ Collector 1	147.95	55,000	1.1	7,397,475
+ Collector 2	150.10	42,500	1	6,379,167
• Purchasing station (level 02)				
+ Binh Phuoc	68	730,833	3	16,565,556
+ Dak Nong	172	257,333	3	14,753,778
• Purchasing station (level 01)				
+ Binh Phuoc	98.28	1,275,000	4	31,326,750
+ Dak Nong	99.60	1,500,000	3	49,800,000

Source: Survey data, 2006

Post-harvest processing at household level

Some households have started to carry out certain post-harvest activities in Binh Phuoc province. Among the four main steps in processing, namely drying, steaming, peeling and kernel processing, they can perform the first three steps either for their own investment or for a base-product wage (processing labor fee). Cost and benefit analyses have been conducted for these two situations, as shown in Table 3 and 4.

By doing their own processing, farmers can obtain an additional 956 VND/kg of cashew nut bean or equivalent to 10% of the sale price of cashew nut kernel. Farmers can gain monthly earnings for post-harvest peeling of 1,647,701 VND with a normal processing capacity of 1,000 kg cashew nut bean. This income is relatively high and stable in comparison with farming practices. More importantly, farmers can make the best use of their working time after harvesting the cashew nut.

Table 3. Analysis of cost and benefit of peeling at farmer's own establishment

Cost/Income items	Unit	Value	
Kernel selling price	VND/kg	40,000.00	
Output (kernel/1000 kg cashew nut bean)	kg	240.00	
Income on kernel sale	VND	9,600,000.00	
Direct cost			
Cashew nut bean as raw material	kg	1000.00	
Opportunity cost of cashew nut been	VND/1000 kg	8,132,000.00	84.71
Labour cost	VND/1000 kg	435,000.00	4.53
Indirect cost (cost in a month)			
Depreciation	VND/01month	8,333.33	
Rental of premise	VND/01month	100,000.00	
Knife sharpening	VND/01month	25000.00	
Fixed cost in a month	VND/01month	133,333.33	
Capacity	kg/01 month	1,724.14	
Fixed cost per 1000 kg cashew nut bean		*77,333.33*	*0.81*
Total cost		8,644,333.33	
Profit per 1000 kg cashew nut bean		955,666.67	9.95
Profit on peeling in a month		1,647,701.15	

Source: Survey data, 2006

There are two requirements for post-harvest activities: (1) initial investment in equipment, premise and labor skill after one week's practice; and (2) contract with processing companies to collect the by-product. Affordable equipment investment includes an iron barrel and a peeling machine at a total cost of 1,000,000 VND). To obtain a contract with processing companies, the household has to obtain a rather high processing capacity. For this reason, some small scale farmers have been discouraged from conducting post-harvest activities. The processing is, therefore, normally performed by collectors, the purchasing station or large-scale production farmers.

Table 4. Analysis of cost and benefit of peeling when farmers work in a peeling establishment

Cost/Income items	Unit	Value
Seasonal income on peeling		
Income per kg of kernel	VND/01 kg	1,800
Capacity in a month	kg of cashew kernel	600
Earnings in a month	VND	1,080,000

Source: Survey data, 2006

Working as hired labor in a processing establishment for a base-product wage, a farmer can obtain a seasonal monthly income of 1,080,000 VND for peeling cashew nuts. This income is acceptable to them and nearly equals their farming income.

Overall, the post-harvest activities for cashew nut have been found to be feasible and profitable at the household level. This is either through farmers making affordable investments in order to carry out such activities for their own business or through working as hired labor. When performing such post-harvest activities, farmers can better perceive the quality requirements for their cashew nut bean and improve their farming as a result.

Determinants of farm-gate price

Under the hedonic pricing model, the literature puts forward six groups of variables that explain farm-gate price, namely: household characteristics; seasonal effects; product characteristics; bargaining position; infrastructure; and information.

The study applied, a linear regression using the model. The dependent value was the farm-gate price of cashew in 2006. This was compared with a number of possible options for each of the six groups of variables, based on data from questionnaires conducted with 100 households which yielded 252 farm-gate price observations.

The literature is clearly a good guide, since all the expected explanatory variables proved to be statistically significant in predicting farm-gate price, except for the sex of the seller and the scale of production. The results are discussed below.

Household characteristics

The study investigated the influence on farm-gate price of household ethnicity, years of experience, and the education level and gender of the person in the family who sells the product. Occupation was excluded since nearly all respondents were farmers.

In the sample, 76% of the household sellers were male. The seller's level of education correlated positively with the farm-gate price. Figure 4 clearly suggests higher prices are received by those with a higher level of education.

Ethnicity plays a significant role in price, with the ethnic Vietnamese (Kinh) farmers receiving, on average, 250 VND/kg more than the non-Kinh farmers.

Seasonal effects

There is a strong seasonal aspect influencing the farm-gate price (Figure 5). Most transactions occur in the middle of the January to May season, at the start of which cashews can fetch over 9,000 VND/kg. The price falls steadily as the season progresses, and by May it has lost nearly one third of its early harvest value. This fact relates to farmers' bargaining position as discussed below.

Product characteristics

The survey considered four product characteristics that would be expected to influence farm-gate price, namely: transaction size; product quality; product type (fresh or dried); selling short; and packaging.

Results showed that packaging and selling short did not take place in the survey provinces and there were too few transactions of dried cashew nut to correlate with price. The remaining two variables were placed in a regression with price.

To investigate the effect of product quality, respondents were asked to grade their product from one (lowest quality) to five (best quality) based on color, size and physical integrity. As expected, cashew quality was found to correlate positively with farm-gate price (Figure 6).

Surprisingly, the volume of product sold did not correlate with price. The research team suspected this was due to the generally low volumes being sold.

Bargaining position

Preliminary research into the cashew market chain has raised a number of questions about the bargaining power of households. To answer these, the research team investigated three decisions that households make when selling produce: i) when to sell; ii) which level to sell to; and iii) which individual to sell to.

When to sell

Given the quite significant price fluctuations throughout the harvesting time, how much flexibility do farmers have in choosing when to sell? The questionnaire asked farmers to give one reason for why they sold their product when they did during the previous year.

Results indicate that the main reason (over 45% of transactions) was because households do not have the facilities to dry or store cashew nut. The second most important determinant was household debt or cash shortage, which was the reason that led to the lowest average farm-gate price. Only 13% of household transactions were said to have taken place during a period of high price, although these transactions indeed received the best average prices.

Which level to sell to

Cashew traders were classified into dealers (collectors), purchasing stations and processing factories. The assumption tested was that the type of buyer a farmer chooses influences the price he or she receives.

Farmers most commonly traded with purchasing stations (61% of transactions) or with dealers (38%). Although only one respondent traded directly with a processing unit, the price received 9,500 VND/kg was substantially higher than from the other levels. Of the remaining 267 transactions, the average price received from purchasing stations was only slightly higher (100 VND/kg) than that from dealers. This agrees with the previous finding that dealers take only a 1-2% profit margin.

Which individual to sell to

Farmers gave the following reasons why they sell to particular buyers: i) a previous close relationship; ii) a loan was already received from the buyer; or iii) the buyer offered the best price. Again, the answers were compared with the reported sale price during the previous year. Results showed that over half of the respondents selected their buyer due to a prior relationship, while 24% had little or no choice of buyer due to indebtedness. These findings seem to suggest a lack of competition between buyers which would be expected to force prices down. This is borne out by price correlation; indebted sellers received nearly 2% lower prices on average than those who selected known buyers, while those who shopped around for the best price received 1.3% higher.

Market price information

The research used the farmer questionnaire to identify the most common sources of market information. Given that many farmers used multiple sources, a regression was not possible. However, the results provide some qualitative insights.

Informal sources are heavily relied upon, with dealers, relatives and neighbors being the most frequently cited information sources. Farmers appear largely to trust these sources, yet they all have biases which can be expected to disadvantage farmers.

Purchasing stations also provide prices to farmers, either face-to-face or by telephone. They do not use any official price list, and farmers noted that the prices would frequently vary, even within the same day. Purchasing stations are thus regarded as unreliable sources of price information.

Official information sources, including television, radio and newspaper, are probably more objective yet they were not found to be very popular in the survey area. Compounding the problem, neither local agricultural extension staff nor farming associations provide accurate and timely prices, despite their obvious mandate to do so.

Guide Questions:

1. Describe the three supply chains for cashew nut existing in the two provinces. Which of these do you think should be encouraged more? Why?
2. What factors determine the time, level and type of buyer that the farmers consider in selling their cashew nuts? What recommendations could you give to improve the bargaining position of farmers?
3. What are the main market price information sources of cashew farmers in Dak Nong and Binh Phuoc provinces? What recommendations could you give to improve their access to market price information?
4. Figure 1 shows the different stakeholders surrounding farmers in the cashew nut industry in Vietnam. What linkages exist among these stakeholders? What vital role should each of them play to help farmers improve their production and marketing of cashew nuts?
5. Describe how post-harvest activities at the household level can increase the value of cashew nut in the market chain? What recommendations could you give to promote these activities?

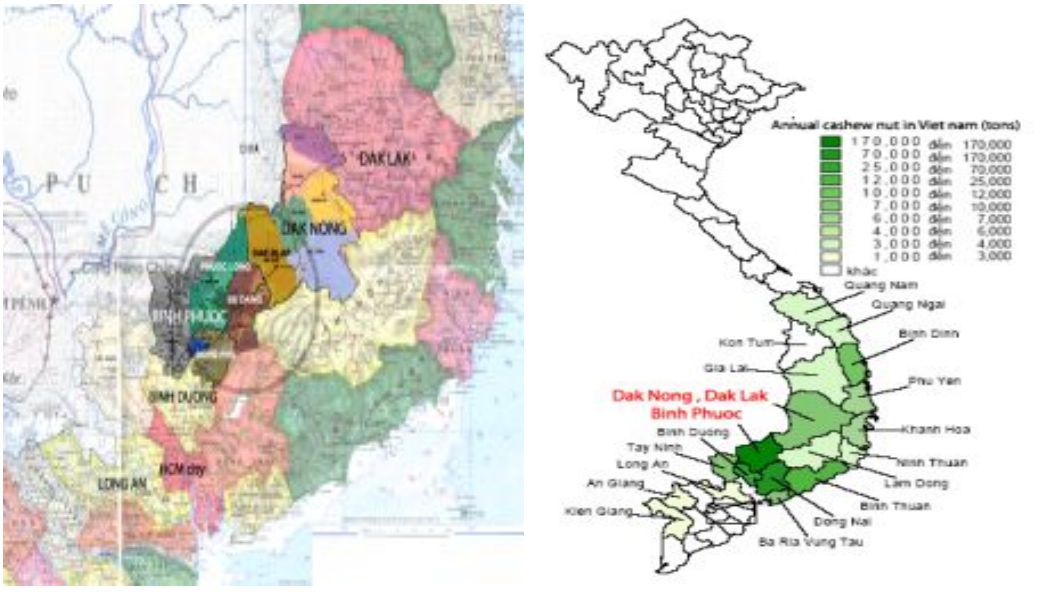

Figure 1. Study sites at DaKNong and Binh Phuoc provinces

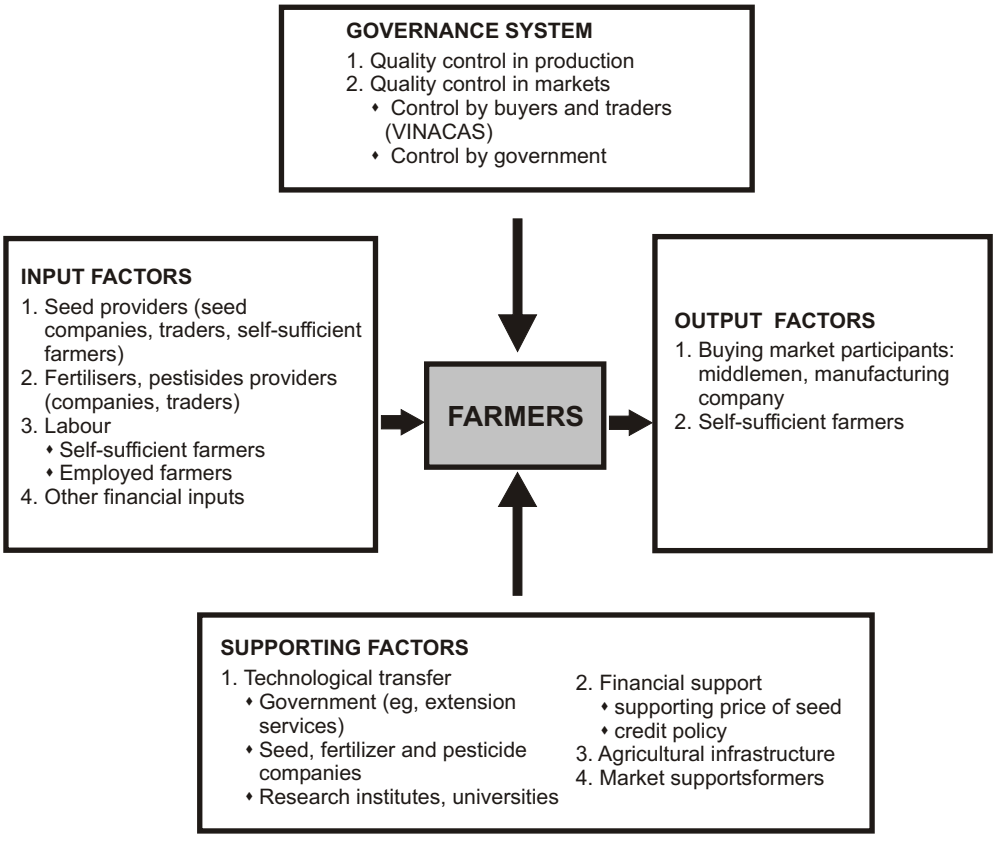

Figure 2. Institutional environment of the cashew nut sub-sector industry

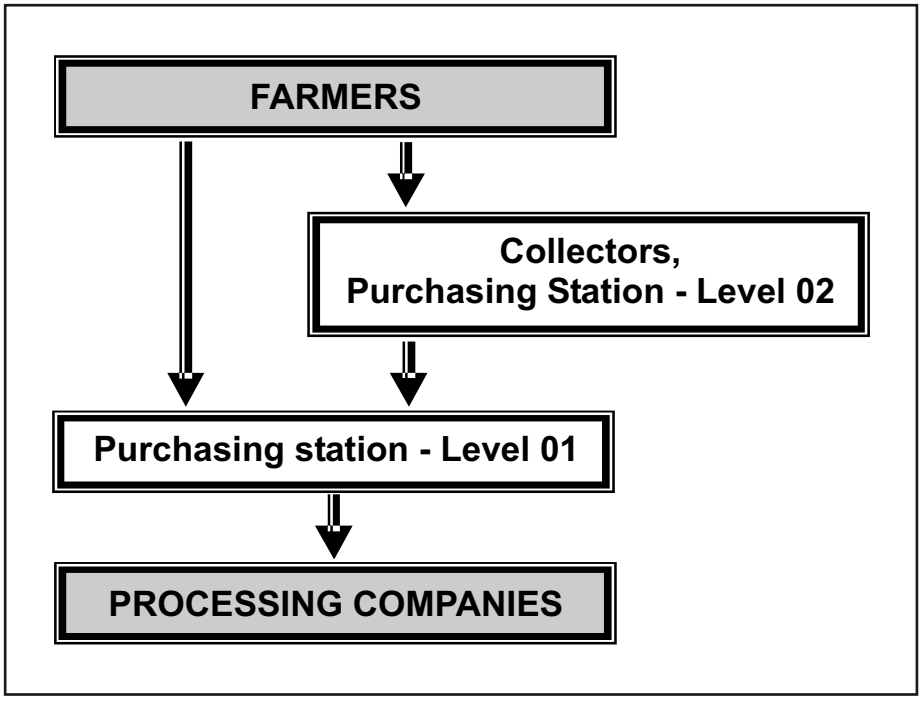

Figure 3. The cashew market chain in Vietnam

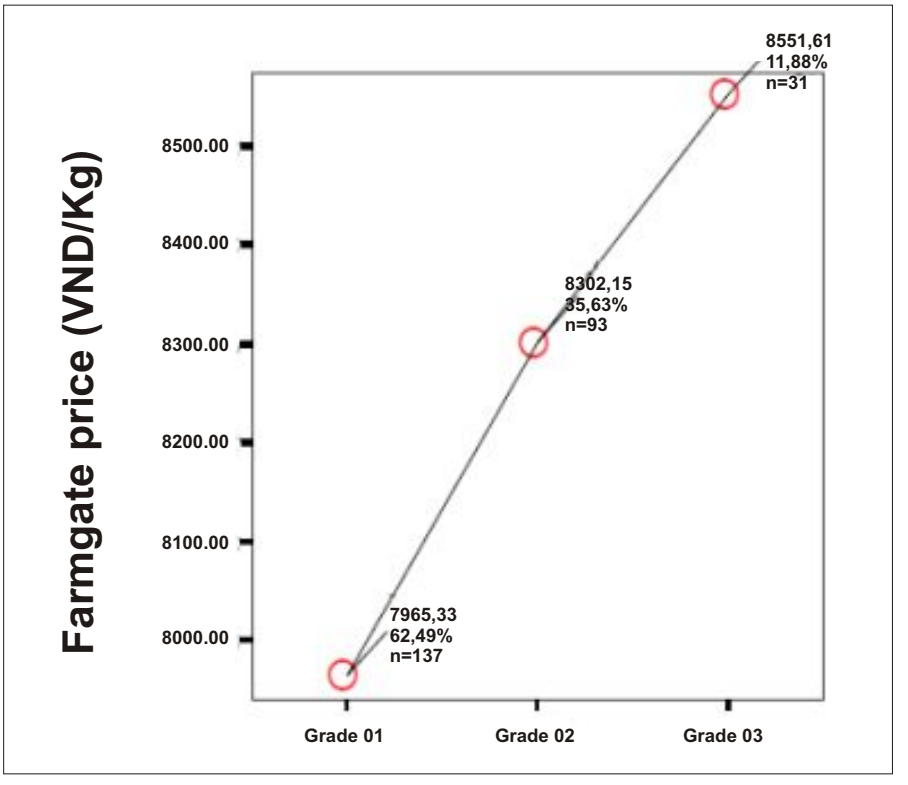

Figure 4. Education level of household seller vs. farm-gate price

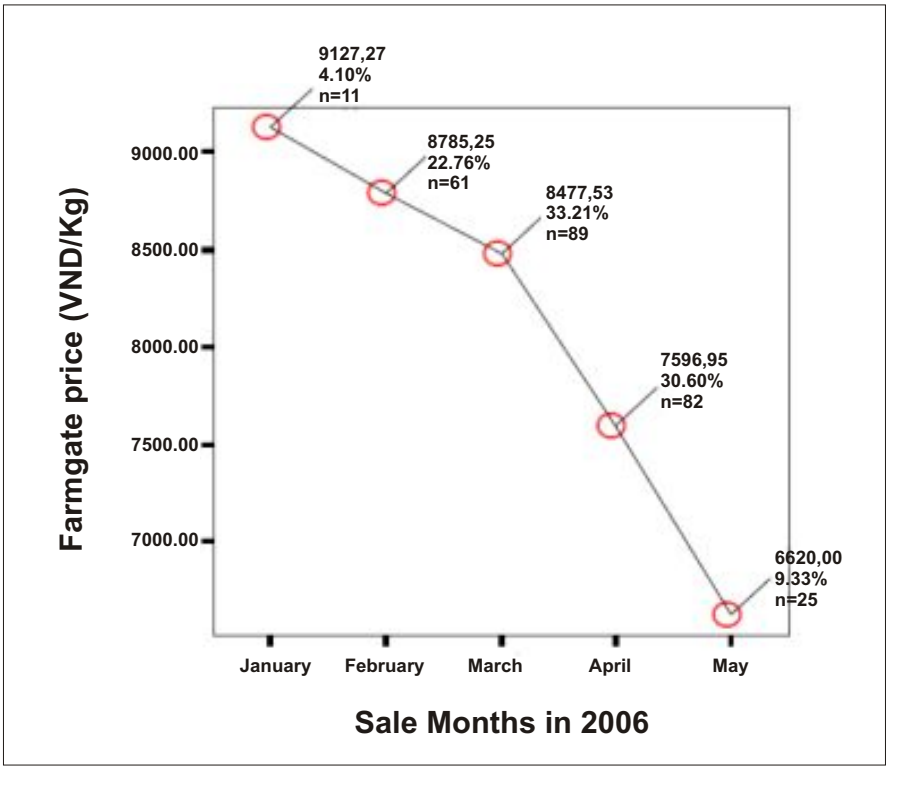

Figure 5. Month of harvest vs. farm-gate price

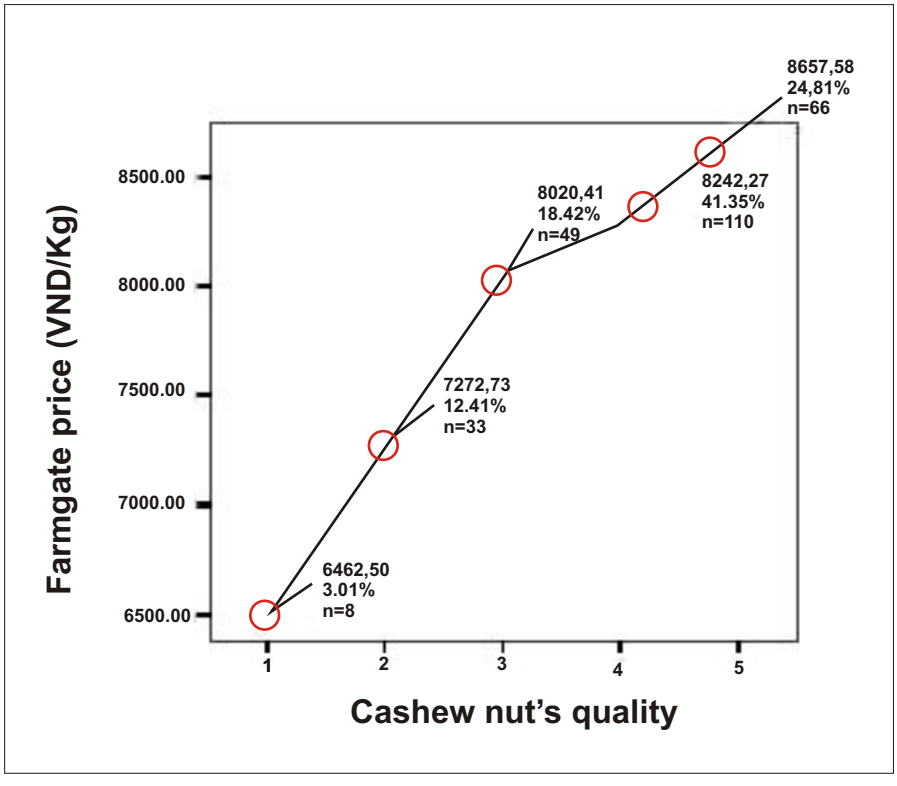

Figure 6. Quality of product vs. farm-gate price

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