

**discussion paper**

No 15

**Facilitating market  
integration of the upland  
poor into bamboo value  
chains:  
Upgrading strategies for  
producer groups**

**September 2006**

---

[www.markets4poor.org](http://www.markets4poor.org)

Copyright 2006 Asian Development Bank

All rights reserved. Published 2006.  
Printed in Viet Nam.

The views expressed in this book are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB) or its Board of Governors or the governments they represent.

ADB does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use.

Use of the term “country” does not imply any judgment by the authors or ADB as to the legal or other status of any territorial entity.

Contact: \_\_\_\_\_

ASIAN DEVELOPMENT BANK  
Viet Nam Resident Mission  
Unit 701-706, Sun Red River Building  
23 Phan Chu Trinh Str., Ha Noi, Viet Nam  
Tel: +(844) 933 1374  
Fax: +(844) 933 1373  
Website: [www.markets4poor.org](http://www.markets4poor.org)

## Acronyms and Abbreviations

ADB	Asian Development Bank
CECI	Centre Canadien D'étude et de Cooperation Internationale
FDI	foreign direct investment
FOB	free on board
GDP	gross domestic product
GRET	Le GRET au Vietnam
ICA	International Cooperative Alliance
IDE	International Development Enterprises
IFC	International Finance Corporation
INBAR	International Network for Bamboo and Rattan
LBP	laminated bamboo product
LBF	Laminated bamboo flooring
M4P	Making Markets Work Better for the Poor
MPDF	Mekong Private Sector Development Facility
OHK	Oxfam Hong Kong
PC	People's Committee
TBF	The Bamboo Factory

### NOTE

In this report, "\$" refers to US dollars and "D" to Vietnamese dong.

## **CONTENTS**

<b>Acronyms and Abbreviations .....</b>	<b>2</b>
<b>Background.....</b>	<b>5</b>
<i>Origins of the study.....</i>	<i>5</i>
<b>Overview of the Bamboo Sector .....</b>	<b>7</b>
<i>Luong bamboo.....</i>	<i>7</i>
<i>Linking high value market systems with upland communities.....</i>	<i>7</i>
<i>Luong bamboo: a dynamic, diversified business sector .....</i>	<i>8</i>
<i>Access to expanding, value-added market segments .....</i>	<i>8</i>
<i>Production by upland smallholder families .....</i>	<i>9</i>
<i>The need to increase competitiveness in value added market segments.....</i>	<i>10</i>
<b>Research Goals.....</b>	<b>11</b>
<b>Study Overview.....</b>	<b>12</b>
<i>Problem statement.....</i>	<i>12</i>
<i>Research approach.....</i>	<i>12</i>
<i>Research framework.....</i>	<i>12</i>
<i>A balanced set of upgrading strategies .....</i>	<i>13</i>
<i>A practical and a theoretical framework .....</i>	<i>13</i>
<i>Synergies among the research components.....</i>	<i>13</i>
<i>The addition of a third component.....</i>	<i>13</i>
Major Components of Study	
<b>Component I: Assessments of market opportunities for bamboo producers .....</b>	<b>14</b>
<i>Methodology .....</i>	<i>15</i>
<i>Findings .....</i>	<i>15</i>
<i>Business Opportunities .....</i>	<i>16</i>
<i>Pre-processed laminated flooring product.....</i>	<i>16</i>
<i>Pre-processed chopsticks .....</i>	<i>17</i>

Dried poles: An idea from IKEA.....	17
Pre-processing of chips from paper and pulp production by-products.....	18
Handicrafts processing from Luong bamboo.....	18
Bamboo chips processing for pulp production, and making use of bamboo branches, tops, and imperfect culms. ....	19
<i>Input markets</i> .....	19
<i>Conclusions and Recommendations</i> .....	21
<b>Component II: A pilot action research intervention for vertically integrating bamboo producers into the value chain of laminated bamboo products.....</b>	<b>22</b>
<i>Methodology</i> .....	23
<i>Findings</i> .....	23
<i>Conclusions and Recommendations</i> .....	26
<b>Component III: Governance Analysis, Trading Networks and Organizational Models.....</b>	<b>27</b>
<i>Working Hypotheses and Methodology</i> .....	28
Subcomponent I: Governance Analysis .....	28
Subcomponent II: Trading Networks .....	29
Subcomponent III: Organizational Models.....	29
<i>Findings</i> .....	29
Subcomponent I: Governance Analysis .....	29
Subcomponent II: Trading Networks as Informal Risk-Sharing Mechanisms .....	30
Subcomponent III: Organizational Models.....	34
<i>Conclusions and Recommendations</i> .....	35
<b>References .....</b>	<b>37</b>
<b>Summary of Recommendations .....</b>	<b>38</b>

## Background

Viet Nam's integration into the global economy continues to be a priority for the country's leaders, who see it as a means to achieve economic growth, political stability, and poverty reduction. This integration will continue to increase competitive pressures on local firms, transform the business environment and put pressure on the Government's reform commitments. The Government has moved ahead with efforts to promote competition and development of the private sector through legislative means, including the Law on Foreign Investment and the new Enterprise Law which will come into effect in mid-2006.<sup>1</sup>

Although Viet Nam is rapidly integrating into the global economy, analyses derived from public opinion surveys reveal that there is still insufficient integration of domestic companies into global value chains. Total factor productivity is growing very rapidly across the board, but growth is faster in foreign companies than in domestic ones, regardless of their ownership.

Global integration seems not to be significantly affecting the vast majority of Vietnamese businesses, raising an important question about the competitiveness of the Vietnamese economy as a whole.<sup>2</sup>

### Origins of the study

Effective participation of Vietnamese bamboo producers in global value chains presents a promising opportunity to reduce poverty and promote economic development in the province of Thanh Hoa. The bamboo sector has the potential to become one of Viet Nam's most competitive export businesses. As a readily renewable resource, bamboo is an environmentally friendly substitute for wood. Over the past few years, Viet Nam's exports of processed bamboo products have increased steadily from less than \$10 million in the early 1990s to \$78 million in 2001. Global companies that sell home furnishing and household accessories made from bamboo, such as IKEA, are looking to Viet Nam for long term supply of their products.

Demand from IKEA for bamboo flooring and the start up of The Bamboo Factory (TBF), a bamboo flooring manufacturer in Viet Nam, presents a significant opportunity to integrate low income farmers in five mountainous districts in Thanh Hoa province with international markets. IKEA has signed a contract with TBF for the supply of 750,000 square meters of flooring annually (worth about \$6.5 million) and is considering increasing this to 1–1.5 million square meters. TBF is a foreign-owned (French) company established in 2003 to manufacture high quality bamboo flooring. TBF has a pre-processing factory located in the bamboo growing area in Thanh Hoa province (specifically the districts of Thuong Xuan, Tho Xuan, Ngoc Lac, Ba Thuoc and Quan Hoa) which began production in late August of 2004. TBF is expected to need about one million bamboo culms per year at full production.

IKEA is not only agreeing to contractual arrangements for the long term supply of bamboo products with local suppliers, but they are also considering the creation of research and development facilities to develop new bamboo-based products, support improved varieties and growing techniques, and develop standards and a tracking system for bamboo along the lines of the current FSC (Forest Stewardship Council) model used for timber products. Bamboo is grown in

---

<sup>1</sup> Economist Intelligence Unit. 2003.

<sup>2</sup> Asian Development Bank, Department for International Development of the United Kingdom, Japan Bank for International Cooperation, Mekong Private Sector Development Facility of the International Finance Corporation, United Nations Development Programme, United States Agency for International Development, and World Bank. 2005. *Vietnam Development Report 2006*, Joint Donor Report to the Vietnam Consultative Group Meeting, Hanoi, 6-7 December 2005.

remote and mountainous areas of Thanh Hoa province where poverty incidence is high. With more than 45,000 cultivated hectares of bamboo, this province accounts for approximately 88% of the Luong variety of bamboo produced in Viet Nam<sup>3</sup>. As one of the most populated provinces in Viet Nam, Thanh Hoa is home to some 3 million people, of which approximately 85% remain dependent on agriculture as their main source of income.

Consequently, there are good opportunities to link poor producers with bamboo value chains that serve international markets. Most importantly, these opportunities can become a significant driver for poverty reduction; 95% of bamboo production in Viet Nam is highly disaggregated among thousands of smallholder producers, many of which are poor, belong to ethnic groups, and live in remote mountainous communities.

Currently, however, these producers are not readily capable of participating in these promising market opportunities. The highly fragmented nature of bamboo production in Viet Nam makes the required coordination of market players (to improve performance of the value chain) a significant challenge. Farmers are not prepared to increase output of the required quality of bamboo that international markets demand. And farmers are not aware of the market potential for semi-processed bamboo products, the profitability of increased participation in bamboo processing, and the benefits of establishing linkages with niche markets for processed products.

If Viet Nam is to fully harness the power of the global bamboo trade to drive sustainable poverty reduction via economic growth in Thanh Hoa, increases in market competitiveness must be achieved. Entry of Viet Nam into global markets leading to sustained income growth and poverty reduction requires an understanding of the dynamic factors that drives competitiveness within the bamboo value chain.

Increased localized competitiveness that leads to enhanced participation of the poor in global bamboo value chains calls for protecting particularly threatened nodes of the value chain and distributing gains evenly among the market system. It also will require facilitating systemic competitiveness and upgrading of specific nodes (with a focus on producers) in the value chain in order to generate greater returns and evenly spread the profits. Finally, a framing of the policy environment is needed to assist poor producers (bamboo growers) in Viet Nam participate effectively in the global economy.

The Viet Nam Government has undertaken significant efforts to stimulate improved bamboo production in the past. The most important was the 661 Program, in which incentives were employed to develop fast growing plant species such as bamboo. In addition, the 135 Program, which supports development in poor, remote and especially mountainous areas, has provisions for loans at subsidized rates for agro-forestry projects.

However, the success of these efforts seems to be limited. Since the Vietnamese Government follows a centrally planned, supply driven approach, most decisions for allocating resources are taken by district authorities and do not have a strong market orientation. Producers are not fully engaged in the effort and are not aware of their options to participate in profitable markets. In addition, strategies from Government programs rely heavily on subsidies and are constrained by the limited capacity of technical extension agents.

Aware of this situation, three organizations have agreed to facilitate a process of market integration to support sustainable and environmentally responsible bamboo production and to catalyse systemic improvements in the bamboo market that favor the poor. The Mekong Private

---

<sup>3</sup> Salter, Dan. 2000. *Overview of the Bamboo Industry in Thanh Hoa Province, Vietnam* (International Development Enterprises, July), prepared for Canadian International Development Agency (CIDA). However, according to Đề án Bảo tồn và Phát triển Lâm sản Ngoài gỗ 2006-2010, Bộ NN&PTNT, 2004, unofficial version (Proposal for Conservation and Development of Non-Timber Forest Products 2006-2010, Ministry of Agriculture and Rural Development, 2004), Thanh Hoa accounts for only 52% of total Viet Nam production with more 57,000 hectares of Luong all over the country.

Sector Development Facility (MPDF) and Le GRET au Vietnam (or GRET, a French NGO) have submitted a proposal to the International Finance Corporation (IFC) and IKEA to raise the standard of living of farmers by increasing their income from growing bamboo to supply TBF and possibly similar enterprises. These funds have been leveraged by an approximate contribution of \$10,000 from TBF. The intervention is expected to create a sustainable increase in the income of farmers in the project areas through: the development of bamboo cultivation and its supply chain; support for the development of a stable, sustainable supply of quality bamboo to TBF and to new niche markets; and protection and/or improvement of the environment in the area through responsible cultivation of bamboo. GRET has been the main project implementing agency. MPDF has been the main monitoring agent to ensure implementation of the entire process of market integration.

## Overview of the Bamboo Sector

### Luong bamboo

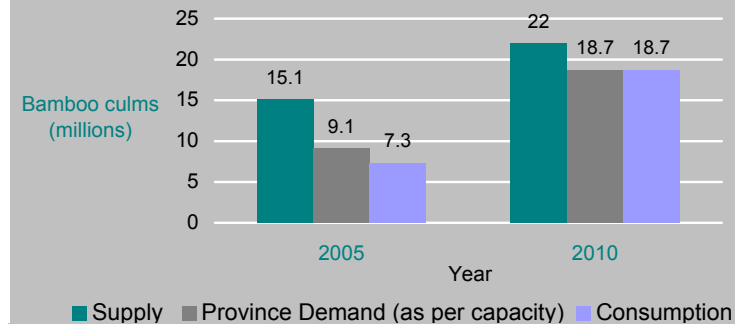
There are many types of bamboo growing in Thanh Hoa, each with its own characteristics and uses. However, by far the most common varieties of bamboo are Luong and Nua. These are estimated to collectively account for more than 90% of all the bamboo cultivated or grown naturally in the province.

Luong (*Dendrocalamus membranaceus* Munro) is the most valuable of the bamboo species traded in Thanh Hoa, both in terms of bulk volume, and the value of individual culms (culms). Unlike Nua bamboo, Luong is planted and can therefore be farmed, which makes it a potential agricultural vehicle for poverty reduction. The research in this report therefore focuses mainly on bamboo of the Luong type.

Luong bamboo is found naturally in just a few areas of Viet Nam; in addition to Thanh Hoa, small amounts can be found in Nghe An (where it is called “Met”), Hoa Binh, Son La, and Ha Tinh provinces. In some cases it is cultivated around houses and gardens, but primarily on plantations. The spread of Luong and its cultivation has been extensive due to its high value as a construction material, and the ease of which it can be grown from cuttings.

### Linking high value market systems with upland communities

**Figure 1: Projected supply, province demand and consumption for Luong bamboo in Thanh Hoa Province for 2005-2010**



Source: Thanh Hoa Provincial Forestry Development Office (2005); pers. comm.

According to the provincial forestry development office, the production of bamboo culms in Thanh Hoa is expected to reach 22 million culms per year by 2010, a 46% expansion compared to 2005 (Figure 1).

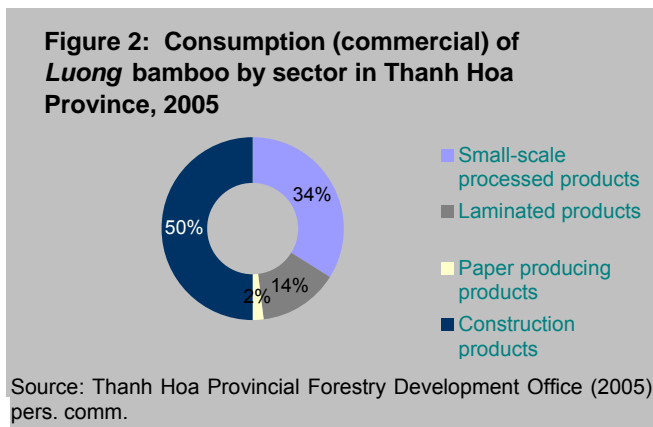
The production of Luong bamboo one of the fastest growing economic sectors in Thanh Hoa province. According to the provincial Office of Forestry Development, demand for Luong bamboo in Thanh Hoa is expected to grow at an annual rate of 8.6% during the next 3 years, faster than the expected growth of the national gross domestic product (GDP) for Viet Nam.

The capacity of local producers is adjusting rapidly in response to the expanding market.

## Luong bamboo: A dynamic, diversified business sector

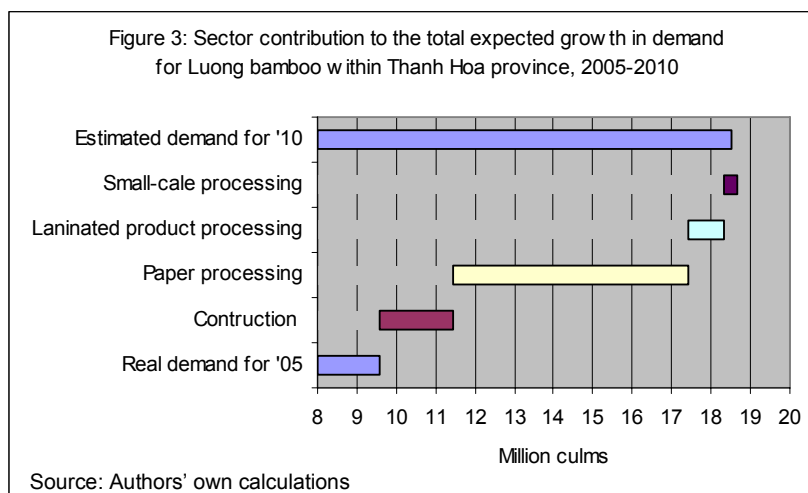
As demand for bamboo increases, the commercial uses of bamboo have become increasingly diverse and the sector more industrialized. While Luong culms have literally thousands of uses, by far the most important today (in volume terms) is for construction.<sup>4</sup> It has been estimated that bamboo used for construction purposes accounted for roughly 50% of the demand for Luong bamboo in 2004 (Figure 2). Small-scale industries were the second largest consumers of bamboo in 2004 with roughly 34% of total market sales.

The demand for, and uses of, Luong bamboo are changing as the market expands. The demand for bamboo for construction purposes is ceding space to the demand for processed and industrialized bamboo products.



The gradual diversification of the sector into more industrialized segments follows changes in the relative values of the various bamboo uses and products. For example, in Viet Nam, as people become wealthier they prefer using concrete for building houses rather than bamboo. At the same time, expanding international markets now reach consumers in developed countries who are willing to pay substantially more for bamboo products.

The trend toward industrialization of the bamboo sector in Viet Nam is expected to intensify over the coming years. The projected economic growth of the sector for the next 3 years will be mainly driven by increased demand within industrial market segments. Laminated bamboo products are expected to make up the most significant share of the sector's industrial growth. By 2010, growth in the market niches of laminated bamboo products, small-scale processed products, and bamboo pulp (for making paper) are expected to account for more than 7 million culms per year, representing almost 80% of the total sector expansion (Figure 3). The new paper plant in Thanh Hoa (with an annual capacity of 50,000 tons of pulp and 60,000 tons of paper) will be using between 100,000 and 140,000 tons of Luong bamboo by 2010.



### Access to expanding, value-added market segments

Expanding global value chains represent a promising opportunity for poverty reduction and economic development in the province of Thanh Hoa. Access to international markets also brings opportunities for market actors to develop more

<sup>4</sup> The construction sector in this study refers to use of bamboo for building houses, animal sheds, fences, and scaffolding.

valuable bamboo products.

Laminated bamboo can be used as a substitute for almost any wood product - shelves, panels, furniture, stairs, etc. Wood prices vary significantly, from exotic hardwoods to cheaper, faster growing softwoods. Laminated bamboo prices fall somewhere in the middle of the price range of wood products. Bamboo is attractive, and can be stained in the same way as woods when color variations are desired. It is also surprisingly hard, with hardness coefficients similar to those of oak and maple.

Great opportunities still exist in the market for bamboo laminated flooring. Bamboo is edging into a global flooring market worth some \$1.2 billion per year, of which approximately 50% is currently produced using oak, with the bulk of the remainder comprised of maple, cherry, and birch. The market share for bamboo will likely grow as consumer concern over durability increases. Laminated bamboo flooring can be sold for \$18 per square meter (FOB) in wholesale markets and for more than \$30 per square meter in European retail markets.

### **Production by upland smallholder families**

Bamboo cultivation of the Luong variety is undertaken predominantly in highland areas. Currently, the production in the north-western districts of Thanh Hoa accounts for more than 90% of the total production of bamboo culms in the province.

Luong is farmed, and should be considered as similar to other agricultural crops. Although there are two principal types of Luong plantations in Thanh Hoa—smallholder based systems and more extensive, mono-crop Luong plantations—most of the Luong bamboo production in Thanh Hoa is smallholder based. Cultivation is disaggregated among thousands of producers, many of whom are poor, belong to ethnic groups, and live in remote mountainous communities.

For the purposes of the project, five upland districts with about 75% of the production of Luong bamboo have been selected using specified criteria. They are home to some 125,000 households (approximately 690,000 people) of which, according to Ministry of Labour, Invalids and Social Affairs (MOLISA) criteria, 28% are classified as poor.

The cultivation of bamboo represents not only a product widely cultivated by upland households in the selected districts but also a significant source of income for these families.

According to the provincial Forestry Development Department, the dependency of upland families on bamboo cultivation is high, with income from bamboo representing almost 70% of annual household income (Table 1). Income from bamboo represents approximately 73% of the share of family income coming from commercially based agriculture.

**Table 1: Upland smallholders' income dependency from bamboo cultivation (2003)**

	Average household in Viet Nam	Bamboo growers in Thanh Hoa	Bamboo growers in the selected districts	Poor bamboo growers in the selected districts
Annual Income (\$)	2,227	524	434	343
Agricultural annual cash income (\$)		483	403	317
Income from bamboo (\$)		245	294	235
Bamboo income/ annual income (%)		47	68	69
Bamboo income / agricultural income (%)		51	73	74

Source: Office of Forestry Development (DARD) Thanh Hoa Province (2005).

### The need to increase competitiveness in value added market segments

Demand for premium<sup>5</sup> Luong bamboo (grades A, B and C in TBF terms) is increasing significantly in Thanh Hoa province. Luong is graded into different qualities depending primarily on length, but also on thickness, dryness, uniformity and straightness. Culms with a uniform cross section are worth more than culms that taper, for example. Similarly, thicker or straighter culms (thickness corresponds to length) are also worth more. Although different buyers use different grading systems, the discriminating characteristics remain the same (see Table 2). For the purposes of this study, it is important to note that Luong bamboo of premium quality is the type that businesses of laminated products will demand most (see Figure 4).

**Table 2: Grading systems used by different buyers**

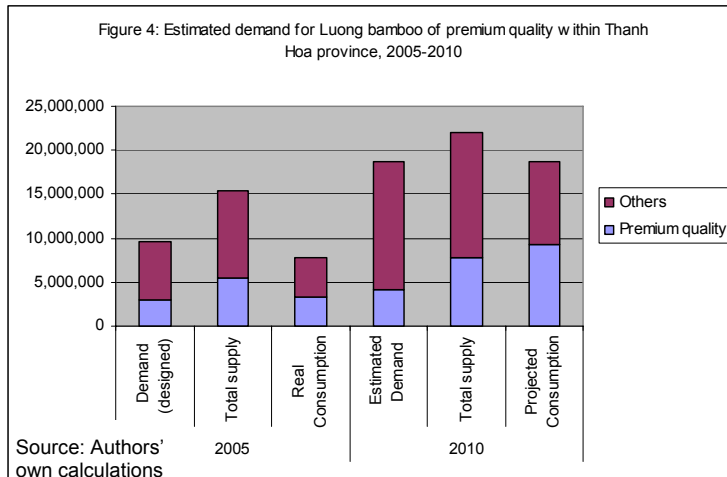
No.	Grade		Age	Circumference (at height of 2.5 m from the base)	Length
	TBF	Traders	(months)	(cm)	(m)
1	A	1	≥ 30	≥ 34	9,5-10
2	B	2	≥ 30	30 – 34	8,5-9,0
3	C	3	≥ 30	27- 30	7,5-8,0

Source: The Bamboo Factory (2005), Pers. comm.

TBF = The Bamboo Factory

The expansion in the supply of Luong bamboo culms in Thanh Hoa will come from two main sources: the expansion of the area under cultivation (i.e., number of hectares under cultivation); and expansion in the production of culms per hectare through agricultural intensification.

<sup>5</sup> Premium bamboo culms (grades A, B, and C in TBF's terms) for the laminated bamboo flooring industry should have the following characteristics: a circumference of more than 27centimeters (cm); a height of 2,500 millimeters (mm) from the base; and older than 30 months (2.5 years). Other characteristics are: trunks relatively straight; culms relatively fresh (less than 1 week of storage); and trunks with less than 5 % of surface damaged by insect holes, stains, mold, mushrooms, dried surface, or holes under the branches.



Intensified bamboo agriculture is expected to account for about 43% of the increase in bamboo supply. Agricultural output is expected to grow from an average of 314 culms per hectare in 2005 to an average of 361 culms per hectare in 2010. About 57% of the gains in the supply of bamboo culms, therefore, is expected to be achieved through an increase in the total cultivated area of bamboo.

It can be seen from Figure 4 that the supply of

Luong culms in 5 years time is still sufficient for covering the increasing demand of Luong among the industries within Thanh Hoa province. This is also true for premium quality Luong. However, great care should be taken to avoid the current practice of using the culms ineffectively with a high rate of waste, which may lead to shortages in Luong of premium quality. In particular, if the proposed paper plant starts operating as planned, this can lead to a severe shortage of raw materials in the province unless efficiency rates in culm utilization are increased.

Since importing bamboo of dependable quality from areas nearby Thanh Hoa can lead to significantly increased transportation costs, the data suggests that increases in productivity to bridge the projected gap in the supply of bamboo in the local market should be sought through productivity gains within the product-transformation nodes of the value chain.

Increases in value chain productivity and competitiveness within the Luong bamboo sector could be achieved through more efficient use of harvested bamboo in the process of product development and value enhancement. Value chain productivity can become an important driver for poverty alleviation in upland areas where Luong bamboo is grown.

## Research Goals

This study has been designed to attain three major goals. The first is to identify effective local (provincial) policy levers to stimulate poverty reduction and economic growth in rural Viet Nam by integrating the agriculture and rural small-scale industrial sectors into global trade systems (value chains). In particular, the project has looked at identifying local-level strategies for upgrading production and marketing of bamboo producers that will in turn inform a policy framework to assist poor bamboo producers in Viet Nam to participate effectively in the global economy.

Second, the study aims to identify optimal and viable institutional arrangements for facilitating local level upgrading strategies for small-scale bamboo producer groups. These institutional arrangements include the private sector becoming more engaged in the commercialization of bamboo products, and local Government agencies receiving mandates related to rural development, industrial promotion, and civil society that are inclusive of bamboo producer associations and mass organizations. In particular, the research will look at identifying factors affecting the bamboo market (including local level markets and the global value chain) that result in reduced poverty, enhanced implementation of industrial policy, and increased competitiveness of the bamboo value chain in Thanh Hoa.

Third, the study aims to identify a viable financial framework for scaling up local level upgrading strategies (for small-scale bamboo producer groups). Upgrading strategies for

effectively integrating producers into bamboo value chains will require significant investments. It is expected that some of these investments are likely to be made by local and the international private sector firms engaged in the commercialization of bamboo since systemic improvements should result in enhanced profits for lead agents in the value chain. However, some of these investments, especially the ones that are more inclusive of disadvantaged producers and/or favor product diversification, are likely to come from outside the market system. There is an imperative need, therefore, to identify alternative financing strategies that are cost effective and sustainable.

## Study Overview

### Problem statement

Can external market facilitation catalyze sustainable improvements in the bamboo value chain that favor the poor?

### Research approach

In order to address the problem statement and meet the objectives, the project researched the market for bamboo in five mountainous districts of Thanh Hoa province. The project focused particularly on bamboo producers within the market subsystem of semi-processed laminated bamboo products for flooring.

The research initiative aimed at generating substantial evidence to prove or disapprove the stated hypotheses. Originally, the research initiative contemplated two major components: (i) appraisals of market opportunities for bamboo producers, and (ii) a pilot action research intervention for vertically integrating bamboo producers into the laminated bamboo products value chain. However, a third field investigation was conducted between November and December 2005 in Ba Thuoc and Quan Hoa, two upland districts in Thanh Hoa province. The third research component analyzed trading networks, governance of producers' cooperatives, and organizational models. The addition of this third field investigation was motivated by the recognition that all the efforts made up to September 2005 to transfer the ownership of the bamboo pre-processing stage to smallholder producers' cooperatives in Thanh Hoa had resulted in limited success.

Although the three research components are interlinked, they are significantly different in nature and were designed to answer somewhat different questions.

### Research framework

The research approach provided a comprehensive framework to address the problem statement and meet the objectives. The existence of originally two, and later three research components that are complementary in nature has substantially enhanced the capacity of the study to generate valuable insights. Greater detail of the design of each component will be provided in each of the section summaries below. However, it may be useful here to briefly describe how the research components interrelate and complement each other.

The pilot intervention for integrating bamboo producers into the laminated bamboo products value chain has been based on examining particular case studies within the bamboo flooring chain. Within these case studies market actors have interacted with each other under commercial relationships.

### **A balanced set of upgrading strategies**

The approach examined both value chain and local-level upgrading strategies. The study utilized a combination of theoretical and practical frameworks for assessing these upgrading strategies. The combined practical and theoretical framework for analysis is described in the following sections. It should be noted that the approach purposely examined both strategies in tandem.

Value chain sourced upgrading will leverage development resources through financing competitiveness internal to the market system. Intra-value chain upgrading provides the possibility for policymakers to implement cost-effective strategies to increase systemic competitiveness of the value chain. However, the research shows that value chain-level upgrading strategies result in a push toward specialization of bamboo producers, resulting in a narrower set of functions within the value chain. Under this trend toward specialization, the buyer-retailer and exporting company create relationships that constrain bamboo producers—in order to improve profit margins and minimize the risks related to supply.

### **A practical and a theoretical framework**

The study also combined a static survey of potential market opportunities for bamboo producers with on-site trials of pre-processing and sales activities, and an assessment of the diversification potential for bamboo producers. The study also explored markets for bamboo producers that extend beyond the scope of laminated bamboo flooring products. The assessments of market opportunities also looked at analyzing the market for services and products that cater to small-scale processors.

### **Synergies among the research components**

The assessment of market opportunities for bamboo producers has been deeply interlinked with the pilot intervention for vertically integrating producers with the laminated bamboo flooring business. The information gathered on new markets has provided opportunities for bamboo producer groups to commercialize subproducts of semi-processed flooring products. Increased utilization of the bamboo culm has been shown to create incentives for producers to become vertically integrated into the laminated flooring value chain.

In addition, assessments of market opportunities for bamboo producers have shed light on the realities of competition within the laminated bamboo product market. Understanding competitiveness within the laminated flooring value chain has been critical to the promotion of upgrading strategies that recognize the changing business environment and the multiple options available to farmers. Finally, the market research component has revealed potential options for diversification, which can offset the potential negative effects of specialization resulting from some value chain strategies.

### **The addition of a third component**

As mentioned above, a third field investigation was conducted between November and December 2005 in Ba Thuoc and Quan Hoa, two upland districts in Thanh Hoa province. The incorporation of this field investigation was motivated by the recognition that the attempts made during the first six months of the study to transfer ownership of the bamboo pre-processing stage to smallholder producers' cooperatives in Thanh Hoa had resulted in limited success. Defying most expectations, cooperatives were not able to promote the upgrading of bamboo producers, nor acted as catalysts for systemic improvements in the bamboo chain that favored poor smallholders. Therefore, two additional working hypotheses were generated and incorporated into the research framework:

1. The management structure of the bamboo cooperatives is unable to respond effectively to the challenges and opportunities provided by the development of the bamboo value chain; and
2. Cooperatives are unable to compete with local traders in securing a reliable supply of bamboo culms.

In order to examine these working hypotheses, and to further investigate the reasons behind the cooperatives' failures, an in-depth field study was undertaken in November and December 2005. The study had three subcomponents that aimed to:

1. assess the efficiency of the management structure of the cooperatives, and the accountability of leaders toward members;
2. evaluate the ability of the cooperatives to procure high quality bamboo from members, and identify the barriers that prevent cooperatives from securing a reliable supply of bamboo culms; and
3. evaluate different organizational models (e.g. producers' cooperatives, traders' groups, and private cooperatives) in terms of their capacity to promote forms of collective action supportive of smallholder producers' integration into the bamboo value chain.

## Major Components of Study

### Component I: Assessments of market opportunities for bamboo producers

Assessments of market opportunities were carried out to identify options for enhanced market participation by bamboo growers in the selected project areas. Past research had already showed that the opportunities offered by intermediate level value addition within the flooring business appeared to be particularly promising for small entrants in the value chain. However, current practices in the pre-processing of bamboo flooring entail a high rate of waste and an under-utilization of the culms. Therefore, the study has sought to identify complementary business options that can lead to increased profitability through the additional processing of by-products from underutilized portions of the culm.

These market options were assessed against a set of criteria (see criteria for selection of market options below) and examined to understand the most influential market factors that would enable bamboo growers to effectively participate in the selected options. The opportunity assessments were focused on the following three market segments:

1. processed bamboo products of the variety *Dendrocalamus Membranaceus Munro* for use in industrial construction, home furnishing and handicrafts (e.g., bamboo sheets, laminated veneer and reinforced composite);
2. processed bamboo products of the variety *Dendrocalamus Membranaceus Munro* for uses that are complementary to bamboo flooring (the study looked at identifying additional incentives for subdividing the bamboo culms); and
3. bamboo derivatives from what is currently considered waste (for value maximization).

Of the options that were investigated, pre-processing of bamboo appears to be the most practical for farmers. The market assessments considered options that offer diversification potential for farmers in the selected districts of Thanh Hoa. The study identified constraints that

prevent producers from participating in the bamboo value chain and opportunities for producers to participate in the value chain. Analysis of these constraints and opportunities has helped researchers identify potential levers for facilitating market integration of the poor.

### **a. Methodology**

The assessments of market opportunities for bamboo producers considered two parts: one for increasing access to bamboo markets and one for enhancing integration strategies for bamboo growers into these markets. The study focused on identifying different market options and the potential impact of these options on profitability and the environment as well as on the social situation of farmers (i.e., gender issues were analyzed).

The basic criteria for selection of market opportunities considered (i) the potential for increasing incomes and generating employment for bamboo growers; (ii) the potential to reach a significant number of bamboo growers (i.e., a large number of families); (iii) low barriers to market entry for bamboo growers (i.e., capacity of bamboo growers to bear risk, short payout periods, low initial investment required, and reduced initial requirements for specific skills and knowledge); and (iv) the potential market demand and market growth prospects.

In addition, the criteria used for selecting and recommending specific value-adding options for bamboo growers considered (i) the capital investments needed for enabling value addition at the aggregate farmers level (within the range of \$2,500 to \$25,000 with initial investments at the lower part of the range); and (ii) value addition that is either based on the use of a significant portion of bamboo production or employs more than 200 farmers per unit (i.e., relatively higher labour intensity).

The study employed a combination of tools to collect data, including structured interviews, focus-group interviews, and key informant interviews. Individual interviews were carried out with producers, input retailers/wholesalers, local/district traders, wholesalers, and key informants. Focus group discussions were held with key informants such as district authorities and officials from related Government organizations. A final workshop was held to validate the findings with representatives of producers, input retailers/wholesalers, local/district traders, wholesalers, key informants, and processors.

### **b. Findings**

The bamboo sector in Thanh Hoa is dynamic. Demand for high quality bamboo materials is increasing fast. Pressures for increased profit margins, the lack of quality raw materials and increased opportunity costs resulting from low utilization of bamboo all pose challenges and opportunities to market participants and call for improved productivity within bamboo value chains.

Integrating market relationships among actors within value chains can be the most cost-effective way to increase productivity and reduce poverty. From this study, integrated planning for systematic adoption of input services and appropriate technology arise as viable intervention options. Intra-value chain provision of input services and dissemination of appropriate technology for producer groups already exists. However, according to our findings, these options have room for improvement. Long-term joint production planning, down-streaming value added services from buyers to producers, and promotion of good management structures among participants of the value chain are some of the immediate interventions that policy planners in the two provinces should explore. The type of services that could have a direct effect on productivity increases at a relatively low cost should be explored first—such as quality control, research and development, and financial services for the capital costs of processing equipment.

### c. Business Opportunities

#### *Pre-processed laminated flooring product*

In 2000, there were only nine laminated bamboo flooring companies all over Viet Nam<sup>6</sup>; they were located in Thanh Hoa, Hanoi, Hochiminh city, Hoa Binh, and Lang Son. All these companies were producing laminated flooring mainly for export. The number of flooring companies is now estimated to be growing in Viet Nam. In Thanh Hoa, there are currently two processors of finished flooring. Another processor in Hai Duong has established its own processing units in Thanh Hoa province. In Nghe An, there is no finisher of flooring product but a single chopstick producer is supplying the pre-processed materials (slats<sup>7</sup>) to the factory in Hai Duong province. Flooring processors are buying both Luong culms of premium quality (grades A, B, and C) and pre-processed poles/slats from traders and other chopstick producers.

Farmers could benefit from the expansion of the LBF sector, either by contributing labour as workers in processing enterprises, or by becoming directly involved in the processing business through their membership in processing shareholding groups. As such, farmers would receive dividends on an annual basis. A processing group member could make an additional net incremental income of \$68 a year.

However, IDE's action research has shown that small-scale pre-processors experience some barriers in participating into the pre-processing of slats for laminated flooring product. First, in the research areas there are not many buyers, if not to say only one buyer of slats (TBF). The level of product specialization is so high that not many pre-processors are interested in entering the business. Since the return on invested capital for producing slats can only be achieved through trading slats with a single market actor, the operation is conducive to contractual arrangements among the value chain players concerned in order to mitigate operational risk.

Second, entering higher value market segments also increases pressure to improve competitiveness among small-scale bamboo producers' groups. The stress placed on quality standards among the three different bamboo business options is not homogenous. Producing intermediate pre-processed bamboo products for laminated bamboo flooring requires bamboo of premium quality, with specific dimensions and precise age of the bamboo culms. On the other hand, the type of bamboo utilized for chopstick manufacturing may extend to culms of intermediate quality.

Third, the nature of pre-processing of bamboo for flooring products demands considerable logistic capacity. Without a careful planning of raw materials procurement and delivery, the business is likely to be unsustainable.

Fourth, discretionary grading of bamboo culms and bamboo products has increased the costs of business informality. Due to the existing pressures for profit margins and the opportunity for dishonest behavior by the procuring and/or selling party, discretionary grading of bamboo has negatively affected the participation of small-scale bamboo producers' groups in the market system. The price paid for bamboo products is directly related to its grade or quality. Substantial discrepancies between the buyer and seller parties in this regard have been observed in business transactions. There is an incentive for each party engaged in the negotiation to grade the product according to terms that will generate gains for their respective employers.

Finally, farmers' cooperative (Thiet Ong cooperative) and traders' groups (initiated by GRET) have faced substantial difficulties in organizing farmers to supply TBF. The established

---

<sup>6</sup> Salter, Dan. 2000. *Overview of the Bamboo Industry in Thanh Hoa Province, Vietnam* (IDE, July), prepared for CIDA.

<sup>7</sup> Slats are small, split pieces of bamboo 1,250 millimeters (mm) x 27mm x 6.4mm in dimension (according to TBF specifications).

local market players (collectors and traders) reacted to the emergence of direct commercial linkages between farmers' groups and TBF by increasing the purchase price for bamboo products offered to individual farmers. This practice has disrupted the playing field for farmers' cooperatives and traders' groups, and seems to explain to a great extent the difficulties cooperatives experienced in procuring bamboo of dependable quality from their members. The farmers' cooperative was unable to match the terms and conditions offered to farmers by local collectors, which often include advance cash payments as well as a competitive pricing (see Component III: Governance Analysis, Networks, and Organizational Matters for more detailed information about the local trading system and collective action).

### *Pre-processed chopsticks*

The chopstick industry has developed dramatically for the last 4 years in Thanh Hoa. The total production of dried chopsticks in 2005 within the province has been estimated to be 5,100 tons. It is expected to grow in the coming years. The processing steps include culm cross-cutting, splitting, chopstick shaping, drying, smoothing, sorting, end-sharpening, polishing, and packaging. On average, chopstick pre-processing enterprises bring together about 120 employees and have the capacity to produce 370 tons of fresh chopsticks a year, making an estimated 5% profit. The estimated investment capital for such an enterprise is \$2,000 for processing equipment and working capital, and \$1,300 for wages and purchase of bamboo raw materials.

Farmers can benefit by contributing labour as workers in these processing enterprises or by becoming a member of the processing shareholder group. As such, farmers receive dividends on an annual basis. A processing group member could make an additional net incremental income of \$98. This incremental income represents 32% of the total family income from bamboo (\$294). The product lines used during the production of pre-processed of fresh chopsticks are not overly specialized. The pre-processing skills required are not overly demanding and the quality of raw materials needed is not high.

Small-scale processors are experiencing some barriers to entry and effective participation in the chopstick value chain. First, most processors face the problem of increasing production costs, mainly from the cost of raw materials—bamboo supply—and transportation cost. Interviews from processors and bamboo traders indicated that the price of Luong raw materials has been increasing for the past few years, up about 30%. Given the high level of competition among pre-processors, the output price has remained almost the same for the last few years. And transportation costs have increased by almost 100% over the past 2 years.

The increased level of competitiveness of small-scale processors will lead to scarcity of bamboo raw materials for processing. Processors expressed concerns about potential supply shortages in the future. Although pre-processing of chopsticks is not intensive in terms of capital, business financing—especially working capital—is constraining small-scale processors. Chopstick processors claimed that accessing financing loans is difficult as these are provided based on collateral and not on the processors' cash flow forecasts. Finally, the low level of efficiency of product utilization is a cross-cutting problem faced by all chopstick pre-processors. Waste rates are as high as two thirds of the total culm. Reasons for this include the use of outdated processing technologies and the inability of processors to work out optimal business options to maximize the value of raw materials.

### *Dried poles: An idea from IKEA*

IKEA has offered services to help develop new products for small-scale producer groups. IKEA has shared with IDE some ideas for product development that have promise for improving the utilization of bamboo culms. The possibility of producing, utilizing, and effectively commercializing a major portion of the bamboo culm at the aggregate level will improve the capacity of pre-processors to procure bamboo culms from their member farmers. IKEA has suggested that farmer cooperatives could effectively produce and commercialize poles from a

lesser grade than the ones utilized by TBF with minimum sophistication and with a modest capital investment.

The production of dried poles is a new idea developed by IKEA, presenting a potentially suitable option for small-scale processing. The production would make use of the “left-over” parts of bamboo after the culm is cut into poles and/or split into slats. However, thus far no small-scale processors have been found that have appropriate technology to meet IKEA’s specific product requirements (poles of 1.8–2.2-meter length, and moisture level below 15%). In addition, some concerns were expressed by the small-scale processors regarding the traditional “big contract offers but with low prices” combined with “high quality demand” (based on experience with one of the world’s biggest retailers), which has decreased producers willingness to participate in the testing of pole drying. Eventually, one processor recently agreed to try, but this processor also pointed out the potential high level of investment capital that may be required, estimated at more than dong (D)1 billion, for building an appropriate drying room. Results of the trial will not be available before the end of the project.

#### *Pre-processing of chips from paper and pulp production by-products*

The demand for paper has grown dramatically over the past few years and Viet Nam is importing about 100,000 tons of pulp per year. Demand for paper consumption in Viet Nam is expected to continue to grow for the next 10–25 years. The paper consumption per capita in Viet Nam is as low as 10 kilograms (kg) per year, lower than the average of 32 kg per capita in Asia and 50–60 kg per capita in Europe. Raw materials for paper industries are mainly wood. In Thanh Hoa, the raw input is Nua bamboo (*Neohouzeana Dullosa.a.Camus*). However, paper plants are facing shortages of Nua (since Nua is not domesticated but is harvested where it grows naturally), and have started buying Luong.

The business of pre-processing of bamboo waste into chips already exists in Thanh Hoa. However, in most of the cases bamboo waste is either used for producing pulp at the processor’s workshops or sold at a cheaper price to paper pulp processors and paper plants in the province. Currently there is only one chop supplier in Thanh Hoa. For other pulp processors located in other provinces, making chips is a processing step that takes place at the processing site, with raw materials being transported from the source to the processing site. Pre-processing of chips closer to the source will reduce transportation costs for pulp processors. Market assessments reveal that pre-processing will help bring additional income to farmers and that small-scale processors have participated in the pre-processing of chopstick and slats for flooring products. A member of a chopstick processing group (of 120) can make a net incremental income of \$60 per year.

The high level of investment capital required is one of the major constraints that a small-scale processing group faces in entering the business. A group similar in size to the chopstick group would need approximately \$2,400 to start up a chop processing unit. Micro-leasing services for small-scale processors could represent a promising potential to address the risk of asset specificity and the limited number of buyers in the market.

#### *Handicrafts processing from Luong bamboo*

Handicrafts made from bamboo are mainly house ware or souvenirs, such as bamboo cups, ashtrays, bamboo boxes, and tea boxes. The average selling price per item is about D12,000. The raw material for producing these handicrafts is Luong bamboo of premium quality (more than 3 years old). Given the unique specifications of some of the products made, only some parts of the bamboo culm are used. Usually small and short culms with knots are needed. These products present a good opportunity to increase the use of the culm in relation to pre-processing for flooring and chopsticks products. Lathed-turned handicrafts require a very high level of skill. The main processing steps include culm cross-cutting, drying, lathing, trimming, surfacing, polishing, and varnishing or lacquering.

Though there is increasing demand for these products, with many buyers of finished products in international and domestic markets, there is also limited opportunity for farmers to participate in this market due to very high labor skills required.

There are currently two Luong processors making handicraft items in Thanh Hoa province. They are not buying pre-processed products but rather managing the entire process by themselves.

#### *Bamboo chips processing for pulp production, and making use of bamboo branches, tops, and imperfect culms*

Traditionally, there are some parts of the bamboo culms (whether they are Nua, or Luong, or Vau) that are not commercialized but are treated as “waste”, such as imperfect or very small culms, the top of the culm, as well as the branches. In general, these wastes are collected and used as firewood, or for building fences, or simply left at the plantation, creating a fire risk. Commercialization of these wastes, however, may result in greater competition for cooking fuel, and could prevent bamboo growers from participating in the commercialization process.

IDE has conducted a market survey and undertaken “pilot action research” on the potential for commercializing these bamboo “wastes” by turning them into chips for pulp processing. On average, each bamboo grower has about 1.54 hectares of bamboo, which yield about 4.8 tons of wastes annually.

Making use of bamboo wastes for production of chips for pulp processing is not a new business idea. Several buyers have been purchasing these wastes from the upland areas of Thanh Hoa province. For several reasons, including the fact that there are limited buyers in the market (pulp and paper processors still manage to secure sufficient supply), the business of collecting wastes has not been developed.

A trial conducted by IDE during the life of the project showed that bamboo growers can make an extra income of \$16–48 per year (taking into consideration the fact that they would use some waste for home uses such as for firewood/fences) through sales of “waste” to chip processors in the local market at a price of \$8–10/ton. The result, if realized, would have a great impact, since all bamboo growers in Thanh Hoa province could participate.

Additionally, it is expected that chip processors can make about \$300 per year if they procure the supply close to the source. This, however, presents a barrier for businessmen, since the investment capital required is relatively high for a single processing unit (\$2,400). The high investment capital problem can also be solved if pulp/paper processors provide chopping machines for lease.

It is worth noting, however, that if some of the pulp processing technology is decentralized closer to the source, the potential risk of deforestation should be considered.

#### **d. Input markets**

This session is the output of IDE’s research conducted for Oxfam Hong Kong in February and March 2006. The input markets analyzed for this study were the following: (i) financial services, investment and credit; (ii) agro equipment and machinery; (iii) processing equipment and machinery; (iv) processing chemical and supplies (consumables); (v) repair and maintenance services; (vi) transportation and storage, domestic and export (shipping, clearing etc.); (vii) market-/business-related services (marketing and business development service, market/business information); (viii) skills training; ix) product design, and research and development; (x) legal services and (xi) ILand.

With the notable exception of financial, credit and transportation services, inputs markets that cater to small-scale pre-processing enterprises of raw materials remain fairly underdeveloped. The actual levels of usage of input services were found to vary among the myriad types of market actors. The study found that the public sector and business associations dominated the external provision of service inputs for processors in the study areas. Provision of services by these actors is subsidized (not commercial) and carries negative consequences for competitiveness within the service provision market.

The profiles of processors in this study varied, ranging from household level handicraft enterprises to manufacturing companies exporting products to developed markets. Some constraints to further development of inputs market were found to be distortions in input markets, lack of awareness among prospective input users of the availability of services, and lack of understanding among prospective users of procedures for loan applications. In addition, the cost of hidden transport fees and corruption negatively affects critical input services such as transportation.

As mentioned above, input markets that cater to the five selected subsectors remain fairly underdeveloped. According to several country reviews, underdevelopment of input markets in areas such as legal and market information services is common throughout rural areas of Viet Nam.

The actual levels of usage of input services differ across the selected subsectors and across the range of market actors. Input services usage in this study was assessed through both reported usage by interviewed actors and perceived usage by interviewed actors (for the industry as a whole). Likewise, it is worth noting that the sample of interviewees was skewed toward small-scale processors, which may lead to a higher usage of specific services such as transportation and supply of processing chemicals.

Goods and materials input markets are more developed and dynamic than the service input markets. Input markets for goods and materials are relatively accessible to small-scale producer groups at the local level. The input markets with the highest level of penetration were transportation, supply of processing chemicals, and supply of processing equipment and machinery. The services with the lowest perceived usage among the sampled interviewees were product design, research and development, and legal services.

Input services were found to be provided both internally and externally. Services are externally provided from a range of sources, including independent private providers, government agencies, business associations, and other market actors within the same value chain. Input services found to be provided by producers themselves were skills training (on-the-job training), transportation (using trucks), and repair and maintenance services for machinery. Critical inputs that were found to be mostly provided by other market actors within the same value chain were transportation and product design. Services that were often found to be provided externally were the supply of processing chemicals, financial and credit services, and marketing services.

Overall, the study found that the main providers of service inputs in the study areas are government agencies and business associations such as the Small and Medium Enterprises Association, Vietnam Cooperative Alliance (VCA), and Bamboo and Rattan Weaving Association). While provision of services by these actors is subsidized (not commercial), there is partial cost recovery for these services. While government agencies and business associations reach down to the rural areas, most of the other external input providers are only located in the bigger cities.

The level of competitiveness among input providers seems to be low, especially for those belonging to government agencies and business associations. The number of providers found in the study areas was low. However, two service markets were found to have several market participants—transportation and financial services. Among providers in these service markets, the level of competition was found to be higher than for the other services. Despite the lack of competitiveness in service provision, most of the interviewees expressed strong satisfaction with

the quality and price of service provision. The gathered data suggest that customizing training services presents significant room for improvement. In addition, prices of input goods are perceived as rather expensive and increasing.

The level of development of critical inputs markets and the level of technology adoption among the five selected subsectors was found to be heterogeneous. Critical input markets, and the level of adoption of technology, were found to be more developed for the subsectors of laminated bamboo flooring subproduct processing and processing of bamboo pulp for paper products.

Input services such as product design and market/business information services for improving business quality are predominantly provided from buyers within the same value chain. This seems to stem from the interdependency between buyers in the value chain engaged in processing (especially those that deal with international markets).

Constraints to further development of critical inputs markets were identified. These constraints should be further analysed, as solutions to these barriers may represent strategic levers to increase income for poor bamboo producers. In broader terms, constraints were identified for both demand and supply of critical inputs.

First, the intervention of government institutions and associations in providing critical inputs distorts the market. For example, members of these associations perceived that market information services provided to them were of low quality. The lack of significant alternative providers and the centralized way of formulating these services result in lack of service provision competitiveness. Second, the lack of awareness among prospective customers regarding the availability of market information services seems to be constraining their demand.<sup>8</sup> Finally, the lack of understanding regarding procedures for loan applications among prospective customers is constraining demand within credit and financial markets. This is especially relevant for loans above D100 million.

On the supply side, identified constraints were numerous. Most input service providers claimed that demand was almost insignificant. Most actors were perceived as small-scale and dependent on buyers. Second, some providers of services claimed that remote areas lacked retailing networks, by which their product and services could be made available to end users. As a result, the coverage of their services was low. This was especially the case for providers of chemicals and other processing supplies.

Third, the cost of hidden fees and corruption is negatively affecting critical input services such as transportation. And finally, providers of technical training stated that the lack of qualified staff in remote areas prevented them from providing services of dependable quality.<sup>9</sup>

## **e. Conclusions and Recommendations**

As the bamboo sector expands in Viet Nam, small-scale processing enterprises are being created. Market assessments reveal that farmers will benefit from this growth by participating as shareholders in processing enterprises as well as enjoying employment opportunities. The study reveals that the emerging enterprises that are able to participate successfully are those that commercialize diverse product lines and manage to minimize waste from pre-processing. Policymakers should adopt proactive measures to accelerate the rate in which small-scale enterprises are adjusting to this new market environment. The experience suggests that these measures, if implemented correctly, could be inclusive of the poor.

---

<sup>8</sup> IDE interviews, 2006.

<sup>9</sup> Ibid.

The research team found that pre-processing of chopsticks, pre-processing of slats and chips (a preliminary pre-process products for pulp processing), and pre-processing for pulp and paper present some potential to generate profits for small-scale enterprises. These business activities were selected from a myriad of bamboo subsectors because they present the most direct route to profit-making opportunities for the poor. Demand for these products is growing fast. The level of capital investment required to set up these businesses should be feasible for bamboo growers and the poor. The estimated potential net income per farmer, as shareholders, in a given year ranges from \$62 to \$98 for each of these businesses. Should farmers participate in the three sectors, estimates indicate they could make up to \$224. Other options emerged during the course of the study that suggest further potential for income generation by farmers. These industries can contribute to more efficient use of bamboo processing by-products, including the base part of the culm (for charcoal) and bamboo sawdust (for making particle board). These industries also generate income from production of handicrafts for local and international markets. Analysis into how to further develop farmers' shareholding enterprises to take advantage of these opportunities suggests development practitioners should undertake measures focusing on three upgrading spheres: product upgrading, process upgrading, and functions upgrading. The upgrading should be targeted at small-scale, raw material processing enterprises.

Product upgrading refers to diversifying the product lines of raw-processing enterprises. Development practitioners should facilitate development of additional raw processing industries to increase the utilization efficiency of raw material. This can be done through product development and research into new markets. Policymakers and development practitioners should catalyze process upgrading of small-scale processing enterprises of raw material through exposing these enterprises to best business practices, transferring appropriate pre-processing technologies, and facilitating transferral of relevant skills such as handicraft weaving. Finally, policymakers should catalyze the process of the upgrading of functions of small-scale enterprises, from basic production to pre-processing of raw materials. This can be accomplished through facilitating availability of finance for procurement of pro-processing equipment and increasing access to products and services that cater to the pre-processing cycle.

## **Component II: A pilot action research intervention for vertically integrating bamboo producers into the value chain of laminated bamboo products**

The pilot research intervention aimed at validating two fundamental premises related to the problem statement:

1. that small-scale bamboo producer groups in the selected project areas would experience net economic gains by becoming vertically integrated into the value chain of laminated bamboo products; and
2. that vertical integration of producer groups into global value chains would create systemic efficiencies that will translate into incremental economic benefits for IKEA and TBF.

The process of vertical integration was examined via three major interventions that were intended to affect the existing structure of the value chain for laminated flooring products.

The first intervention was to decentralize processing of laminated bamboo products and subdivide bamboo culms closer to the source. The study aimed at testing this assumption because existing information suggested that subdividing bamboo culms closer to where they are grown would allow sourcing of the product more efficiently throughout the value chain.

The second intervention was to transfer ownership of pre-processing of laminated bamboo products and value-adding activities to producer groups. This intervention aimed at testing the assumption that if producer groups have ownership of value adding activities, they would improve their business options and become more empowered, thus reducing market dependency and vulnerability to external shocks. Bamboo producer groups would be able to optimize profitability by

subdividing the bamboo culms, transforming the product when applicable, and selling the different subproducts to different market actors.

The third intervention was to facilitate the process of upgrading of small-scale producer groups through provision of business services and initiation of collective action among bamboo farmers. This intervention aimed at testing potential improvements to externally provided business services such as business planning, process adaptation, skill enhancement, and quality control.

### **a. Methodology**

This section of the study employed a methodology that explored different value adding alternatives for farmers, analyzed the feasibility of producer groups participating in each of these alternatives, and tested the feasibility of these assumptions through actual pre-processing trials. To explore the different value adding alternatives for farmers, the project classified the farmers' products into the following categories: bamboo culms of dependable quality for laminated flooring products, bamboo culms suitable for other purposes than laminated flooring products, and bamboo derivative products.

For the levels of prices and demand at the time of the study, the processing of poles and slats for the LBF subsector appear to be the more valid options. Different value adding alternatives for producer groups have been assessed in order to test how the subdivision of bamboo culms (of dependable quality for laminated flooring products) into all the potential subproducts can lead to incremental gains. The subproducts analysed include bamboo poles of several grades and bamboo slats.

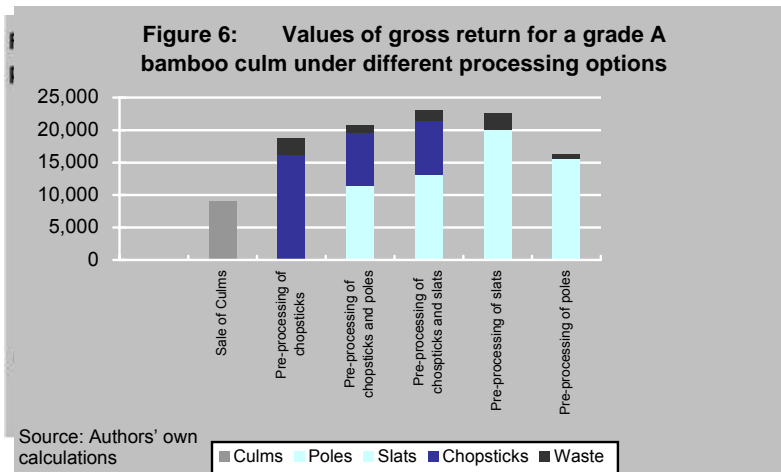
The feasibility studies assessed the attractiveness to farmers of becoming vertically integrated in each of these alternatives. The feasibility study also provided input to TBF and IKEA about the utility of providing services to producer groups and the viability of decentralized value adding activities as a business model. These assessments utilized market proxies for commercial conditions such as price, volume, quality requirements, and credit to estimate the potential economic return for each of the potential alternatives available to farmers. This information was combined with all the product development costs involved in pre-processing and value addition. Development costs included the capital cost for processing equipment, direct costs for labor inputs and materials, and other indirect costs such as management and administration. Several scenarios were explored through simple sensitivity analysis in order to assess the risk for the parties involved and the potential variability of intended results.

In order to validate the assumptions behind the feasibility studies, pilot units for processing and value adding activities were organized with producer groups. The pilot units provided a learning environment for improving the business model behind the vertical integration intervention.

Several case studies were analyzed. The different pilot interventions varied in terms of ownership, constituency, processing level, functions performed, and organizational maturity.

### **b. Findings**

Feasibility assessments of selected pre-processing options reveal that the combination of pre-processing activities for bamboo laminated flooring products and bamboo chopstick products can create substantial income increases for farmers. Figure 5 presents the annual income available to farmers from undertaking various types of bamboo processing. It is worth noting that the analysis for the various income options is related to the proportion of farmers' bamboo product of premium quality that can be utilized for pre-processing of laminated products (in blue). The figure below also includes the income available to farmers from bamboo produce that is not of premium quality (in grey).



If farmers groups were to pre-process poles (and slats) and chopsticks, the annual net additional income available to them would be in the order of \$162 (VND 2,543,000). This figure represents a 55% increase on the net annual income available to farmers from their current practice of trading bamboo culms individually (\$294). It is important to note, however, that these figures assume that the income

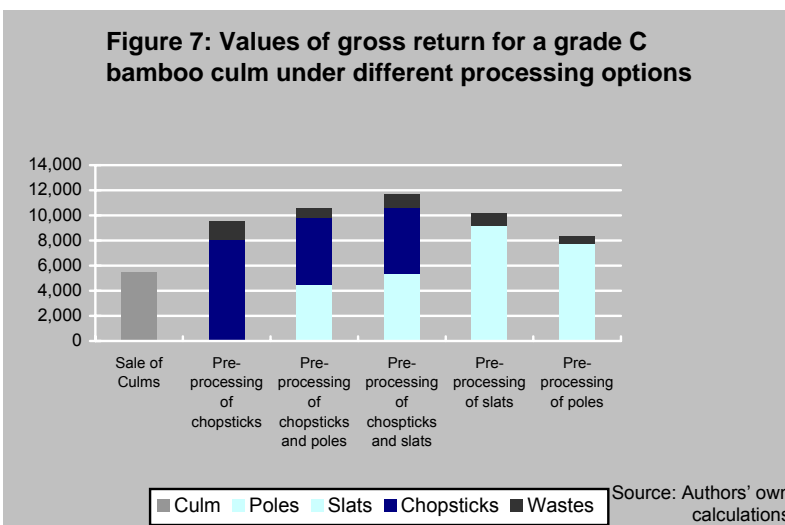
generated at the aggregate unit trickles down to the members of producer groups.

According to TBF and other pre-processors, the waste of the culms from processing of flooring products can be as high as 80% for a single culm. The high rate of waste constrains productivity and increases costs to the product. Each of the grades and parts of bamboo culms present potential multiple uses. The commercial application of the different grades and sections of bamboo culms correspond to different potential economic returns.

Feasibility assessments suggest that the return on the sale of bamboo products varies according to how bamboo culms are pre-processed. Analyses of gross economic return of mutually exclusive options were conducted for culms, waste, poles, slats and chopsticks. Gross economic return was used as the key parameter for comparison. The information presented does not consider any capital costs involved in product development. Based on current conditions, the analysis suggests that bamboo growers would benefit from subdividing the bamboo culms and commercializing subdivided products through different market channels ("multiple output linkages") when compared to individual farmers selling culms by the bulk on the open market.

Once the culm is processed, the gross economic return of a grade 1 bamboo culm (Figure 6) pre-processed and sold as slats is approximately D22,521, more than twice the gross return on the same culm if sold as a bulk commodity on the open market (D9,500). It is important to note that the gross return of a bamboo culm for producing slats and chopsticks is D23,029, the highest gross return among all the presented options. This suggests that TBF should either provide competitive

conditions to farmer processing groups in order to secure supply of this product, or farmer processing groups should seriously consider entering into the business of producing pre-processed chopsticks.



Gross return on bamboo culms varies depending on the grade of the culm. In the case of a Grade C culm (Figure 7), the gross return of the culm if pre-processed to make chopsticks and slats outweighs the gross return

of a culm of the same grade if turned into any other pre-processed option. However, the value of a processed grade C bamboo (D11,660) is significantly reduced when compared to the value of a grade A bamboo (D23,029). This finding indicates that a business portfolio that combines pre-processed chopsticks and slats represents the highest gross return for farmers for bamboo culms of lesser or medium quality. It is important to note that bamboo of lesser or medium quality represent the majority of bamboo culms utilized by farmers. Bamboo of the premium quality represents less than 30% of farmers' average annual production.

Highly profitable niches of the market for bamboo products are competitive, require capital and the capacity to secure quality raw material. The slat processing market niche, for example, can present barriers to the entry of small-scale bamboo producer groups. The number of customers that purchase slats is smaller than the number of buyers of bamboo poles or chopsticks. Furthermore, each buyer has its own technical specification. For example, TBF has specific requirements that imply that slats of certain dimensions can only be sold to them, since other flooring factories have different product specifications. The equipment required for supplying slats to TBF (or any other buyer) is therefore asset-specific, and cannot be used for accessing other marketing channels. Therefore, the level of specialization required for producing slats is the highest among the three business options. Since the return on invested capital for producing slats can only be achieved through trading with a single market actor, the operation is conducive to contractual arrangements among the value chain players concerned in order to mitigate operational risk.

The feasibility assessments indicate that the level of investment required differs substantially among the selected business options for transforming bamboo into pre-processed products. For example, the fixed capital investment for pre-processing of bamboo poles requires a level of investment of approximately \$1,100 (including warehouse, one cross-cutting machine and spare parts). Interestingly, the fixed level of capital investment needed for pre-processing of bamboo slats requires an upgrade that is worth \$2,600 (warehouse, one cross-cutting machine, one splitting machine and spare parts). This represents more than twice the level of investment needed for pre-processing of bamboo poles alone. Finally, the combined option of pre-processing poles and chopsticks, an operation currently in practice in the project areas, would require farmers groups to invest as much as \$1,800 (warehouse, one cross-cutting machine, two chopstick making machines, and spare parts). Indeed, the option of combining pre-processing poles and chopsticks requires about less than half the investment level required producing slats.

Most of the pre-processing products for global buyers have been recently introduced into the local market. As pre-processors establish and modify their operations, the price volatility of semi-processed products becomes substantial. This variation in the price of semi-processed products has a direct effect on the viability of small-scale businesses. For example, the experimentation by TBF with methods to increase productivity during the past months has led to substantial changes in their procurement policies, including the purchase price for pre-processed bamboo products. And the purchase price for pre-processed bamboo products is directly related to the profitability of pre-processing activities by the farmers.

Although the feasibility assessments carried out under this study suggest that decentralization of processing creates incremental gains for farmers, variations in the purchase prices paid by TBF for pre-processed bamboo poles and slats have a huge effect on net income for farmers. For example, a 5% decrease in the price paid by TBF to the small-scale bamboo producers' group for pre-processed poles causes a decrease in the available income for farmers of 80%. The same variation in the value of pre-processed slats would result in a decrease of just 20% on net available income to farmers. The data suggest that from an operational standpoint, the ability to add value by the small-scale bamboo producers' group may be particularly sensitive to the terms and conditions offered by TBF. These findings are particularly relevant as the price paid by TBF for poles has in fact changed by more than 10% over the past 6 months.

**Table 3: Sensitivity of net incremental incomes to price fluctuations for pre-processed products**

Purchase price variation (%)	Net annual incremental income (loss) from pre-processing of poles (\$)	Variation in farmer net incremental income (%)	Net annual incremental income (loss) from pre-processing of slats (\$)	Variation in farmer net incremental income (%)
+10	37	+131	94	+39
+ 5	27	+66	81	+20
Neutral	16	-	68	-
- 5	6	-66	54	-20
-10	-5	-131	41	-39

Source: Authors' own calculations

### c. Conclusions and Recommendations

Based on the results of the study, policymakers and development practitioners should catalyze intra-value chain upgrading by facilitating formal agreements between actors in the bamboo value chain. It has been demonstrated that facilitating these formal relationships initiates sustainable provision of mutually enhancing services, provides help to small-scale processors to mitigate the risk of asset specificity, and can lead to an integrated quality management system for semi-processed bamboo products.

Policymakers should facilitate mechanisms for the flow of market information related to the potential economic return to pre-processors from utilizing different parts and grades of bamboo culms. The availability of market information has been shown to put increased pressure on market participants to improve cost-efficiency and productivity.

Semi-processing of several bamboo products reduces the waste, increases the effective use of the culm, and mitigates risks of price fluctuations and volatility of specific business lines. Pre-processing of bamboo allows farmers to commercialize different qualities of bamboo culms as well as different sections of the culm (through different channels), in an effort to maximize return. Semi-processing of bamboo close to harvesting sites creates cost-efficiencies for the value chain through transportation savings and economies of scale.

Small-scale producer groups that are able to diversify their product lines have minimized the volatility of profits of particular market niches. During the implementation of this study, small-scale producer groups were able to switch from production of poles to chopstick production according to changing market conditions.

Participation of local actors in competitive value chains enhances their productivity through improved technical capacity and economies of scale.

Research for developing new products, exposure to best international practices and technical assistance are some of the measures that should be explored first. Policymakers should encourage producers to systematically include development of multiple bamboo products in order to maximize return on investment. Pre-processing of multiple bamboo products improves diversification of risk for farmers involved in bamboo production.

The expanding global market for bamboo flooring brings new opportunities for local upland communities. However, it also poses challenges for these emerging market players. Small-scale processors are not ready to enter the most specialized markets due to their small scale, the current price volatility, and the need for specific processing equipment.

From the feasibility assessments of multiple pre-processing options, slat processing presents the most profitable business opportunity for primary small-scale processors.

### **Component III: Governance Analysis, Trading Networks, and Organizational Models**

This section of the report presents the results of a field investigation conducted between November and December 2005 in Ba Thuoc and Quan Hoa, two upland districts in Thanh Hoa province. The field investigation was motivated by the recognition that all the attempts made to date to transfer the ownership of the bamboo pre-processing stage to smallholders producers' cooperatives in Thanh Hoa have resulted in limited success. Defying most expectations, cooperatives have not been able to promote the upgrading of bamboo producers, nor have they acted as catalysts for systemic improvements in the bamboo chain that favor poor smallholders. The structure of the local-level bamboo production and trading systems seems totally unaltered notwithstanding far-reaching transformations in the value chain, a soaring demand for bamboo products and substantial external support received by the cooperatives.

While cooperatives appear extremely weak at this stage, other organizational forms found in the area have proved more successful in promoting integration within the bamboo value chain. Traders' groups and private cooperative<sup>10</sup> have been able to undertake the work of pre-processing of bamboo products, profitably entering higher-value segments of the value chain. However, none of these organizations includes smallholders among its members: participation is generally restricted to private entrepreneurs or closed groups of local traders and better-off producers. It is therefore not clear if, and to what extent, poor smallholders can benefit from the success of these different organizational forms.

The main objectives of the study were formulated as follows:

1. To investigate the reasons behind the weak performance of producers' cooperatives; and
2. To assess the merits and demerits of producers' cooperatives against the other organizational forms found in Thanh Hoa.

The final aim of the study is to translate the insights gained from the field into pilot actions and policy recommendations capable of promoting poor smallholders' integration into the bamboo value chain through improved models of collective action.

---

<sup>10</sup> The term "private cooperatives" refers to private enterprises officially registered as cooperatives in order to obtain preferential fiscal treatment and gain access to financial incentives and institutional support. Apart from the legal form, these enterprises have little in common with the organizational and governance structure of "genuine" cooperatives. They are usually private (individual) enterprises, in which membership is extended to family members in order to reach the membership threshold required by law. Although family members can in some cases contribute part of the start-up capital, they usually have no right to vote and exert no influence on the management and operations of the private cooperative.

## a. Working Hypotheses and Methodology

Previous IDE reports from the field hypothesize some major causes behind the difficulties faced by producers' cooperatives in Thanh Hoa. The suggestions found in previous reports are summarized in the following working hypotheses:

1. The governance structure of the cooperatives is unable to react effectively to the challenges and opportunities provided by the development of the bamboo value chain. Cooperative boards are scarcely accountable to smallholder members (principal-agent problems<sup>11</sup>; have few incentives to venture into the pre-processing business (incentive problems); are subject to strong external influences from local governments and supporting organizations; and are highly inefficient in terms of management and organizational costs.
2. Cooperatives are unable to compete with local traders in securing a reliable supply of bamboo culms. Local traders base their operations on a more timely and cost-efficient trading, collection, and transportation network system.

The methodology adopted for the study was designed to reject or substantiate the working hypotheses. Furthermore, the analysis addressed two more issues:

3. The interactions between the internal governance structure of the organizations and the external environment (local governments, traditional local trading systems, and the bamboo value chain). The analysis tried to understand the ways in which internal governance weaknesses extend to the external environment, ultimately hindering cooperatives' ability to integrate with the value chain.
4. The functioning of formal and informal risk-sharing mechanisms operating at the local level. The lack of alternative risk-sharing mechanisms might be one of the causes behind the inability of cooperatives to secure a reliable supply of bamboo culms from members.

The study is articulated in three subcomponents:

### *Subcomponent I: Governance Analysis*

The main aim of the governance analysis was to assess the decision-making process of producers' cooperatives, the degree of boards' accountability toward members, and their level of independence from external organizations. Interactions between producers' cooperatives, local governments, and value chain actors (local traders, pre-processing companies) were also mapped. Subjective evaluations of power and influence were collected through individual interviews with the main stakeholders, board members, producer members, local governments, local traders, and supporting agencies. A relative power index and a joint power index were then calculated for each main stakeholder with regard to a set of six issues.<sup>12</sup> Results from the analysis were integrated with qualitative data collected through focus groups. The analysis was also attempted for traders'

---

<sup>11</sup> Principal-agent problems emerge when a principal (in this case, the cooperative leaders) who is supposed to perform some functions in the interest of an agent (the cooperative members) fails to do so. Principal-agent problems usually imply that the incentives of the principal are not aligned to those of the agent.

<sup>12</sup> The six issues were (i) input prices, (ii) marketing and production choices, (iii) output prices, (iv) leaders' selection, (v) financing and investment decisions, and (vi) profit redistribution. They represent the main activities of the cooperatives with regard to intra-organizational affairs and market operations. Details on the methodology and the full results of the analysis are available from Ivan Cucco: [ivan.cucco@student.uts.edu.au](mailto:ivan.cucco@student.uts.edu.au)

groups. In this case, the limited time frame has prevented the team from collecting the number of observations required for performing the quantitative analysis. Data gained from interviews with members and leaders of the traders' groups were used for the qualitative evaluation of the organizational models (subcomponent III).

### *Subcomponent II: Trading Networks*

In order to identify the problems preventing cooperatives from securing a reliable supply of bamboo culms from members, the trading networks of smallholder bamboo producers were investigated through face-to-face interviews. The capacity of the cooperative to act as providers of valuable marketing and production information was assessed through the analysis of member households' level of trust and communication networks. Finally, the risk-sharing mechanisms provided by cooperatives to their members were compared to the existing informal risk-sharing arrangements offered by local traders.

### *Subcomponent III: Organizational Models*

Two different organizational forms found in Thanh Hoa (producers' cooperatives and traders' groups) were qualitatively assessed on their capacity to generate advantages for smallholder producers. Data for the evaluation were collected through focus groups and individual interviews with the main stakeholders: cooperative members, cooperative boards, local traders, supporting organizations, and local governments.

## **b. Findings**

### *Subcomponent I: Governance Analysis*

Producers' cooperatives in Thanh Hoa are highly centralized organizations, with decision-making powers largely resting in the hands of leaders and board members. The managerial organs exert an almost exclusive control on intra-organizational arrangements, as well as on the cooperatives' market operations. Power appears to be fairly distributed within the cooperative managerial organs, rather than being entirely concentrated in the hands of the leader. Furthermore, cooperative managers act in close connection with the supporting organization.

While smallholder producers are formally supposed to be the real owners and beneficiaries of the cooperatives, the analysis shows that they are largely excluded from the decision-making process. Particularly when marketing choices are involved, members are not likely to be consulted by the cooperative boards. The evident implication is that production and marketing choices taken by the cooperative could not always reflect the real interests of members. Moreover, in a situation in which market risk is high, the lack of members' direct involvement in production decisions might result in a mismatch between the risks taken by the cooperative and the level of risk smallholder producers are willing or able to bear. The disconnection between managerial boards and members is one of the main causes behind the lack of members' motivation and their decreasing support for the cooperatives. Interviews and focus groups confirmed that the lack of members' commitment towards the cooperatives is a major source of concern for managers and members alike.

Cooperatives are subject to strong external influences in both intra-organizational issues (selection of the leaders, profit redistribution, financing and investments, prices paid for buying bamboo from members), and market affairs (production choices and techniques, marketing channels). In the case of internal issues, the local governments and the supporting organizations concur to determine crucial choices for the cooperatives. In particular, the supporting agency seems to influence decisions pertaining to financing and investments, while local governments exert a strong pressure on the selection of leaders.

The role of local governments seems inspired by a *local state developmental approach*. The local government sees cooperatives as a "transmission belt" for national or local-level

agricultural policies, rather than as independent market actors fostering the interest of their members in a market-oriented logic. In order to secure cooperatives' compliance to state-determined development priorities, the local government intervenes heavily in leaders' selection. However, the scope of direct administrative control on cooperatives appears limited. Leaders proposed by the state are usually former state officials without previous business experience. Interviews have revealed that managers lack adequate business and organizational skills, and that for their own admission they feel unqualified to deal with the complex market environment characterizing the bamboo value chain. Through the interference of the local government, a managerial culture inherited from the collective era is implanted in the decisional core of the cooperatives, hampering their potential and limiting their capacity to integrate with the value chain. It should therefore not come as a surprise that—being strongly dependent upon an unskilled leadership—cooperatives are unable to conquer a favorable position in a highly competitive market environment.

In the case of marketing issues, the supporting organizations together with value chain actors (local traders and pre-processors) affect decisions regarding production choices and techniques, and influence the selection of marketing channels. The influence of the supporting organization is balanced by a high degree of consultation between cooperative boards and the organization. Market actors' influence is instead strongly unidirectional: while market actors (local traders, pre-processing companies) are able to influence the cooperative, the cooperative is largely unable to alter or influence price and market dynamics in favor of its members. With regard to their relationship with other players in the value chain, cooperatives appear to behave as extremely isolated actors. The complete lack of coordination between the cooperatives and the pre-processing companies is a particularly alarming result. The ability to jointly implement ex-ante quality standards and to define reciprocal contractual obligations should in fact be the key element of a successful and long-lasting coordination system. However, coordination cannot be achieved if cooperatives take their marketing decisions without frequent consultations with potential buyers (the pre-processing companies).

The weakness of the governance structure and its detachment from the market have eventually resulted in cooperatives not being able to keep up to project expectations in two major regards. On the one hand, cooperatives have not managed to build stable and effective relationships with other actors in the value chain. Since cooperatives are largely excluded from value chain dynamics, they have failed to promote the upgrading of smallholder producers through their entering into the pre-processing state. On the other hand, cooperatives are still largely confined to a price-taking role in a market dominated by local traders and pre-processing companies. The bargaining power of smallholder producers has not been increased by their membership in the cooperatives.

### *Subcomponent II: Trading Networks as Informal Risk-Sharing Mechanisms*

The local-level bamboo trading system in Thanh Hoa is totally dependent on trust-based exchange relationships between individual producers and local traders. Trading relationships based upon long-term credit agreements are the building blocks of a system that relies on dense social networks, a common perception of the market, and a set of informal rules to which traders and producers voluntarily adhere.

In order to understand the reasons behind the continued practice of selling bamboo individually to local traders rather than through the cooperative, producers were asked to rank the relative relevance of eight factors in determining their trading choices. The existence of a credit relationship was mentioned by the majority of the interviewees as the main factor behind the selection of trading partners. Closely related to credit is the second most relevant point: the timeliness of the payment system offered by local traders. Since credit provided by traders to producers takes the form of anticipated payments on future bamboo sales, the two points are deeply interconnected. Credit emerges therefore as the main binding element in the resilient relationship between traders and producers.

The next two factors point to the higher efficiency of the traders' collection system. Producers give a relatively high ranking (3) to the availability of a collection point close to their bamboo producing area, and (4) to the capacity of traders to buy bamboo at the farm gate. The willingness to buy bamboo of different quality appears to be relatively irrelevant in the choice of trading partners. Finally, personal relationships (the existence of a long-term trading agreement and family relationships between traders and producers) are the less important elements in the choice of trading partners.

Evidence gathered during the fieldwork proves that individual trading patterns have not been significantly altered in the last 5 years. Notwithstanding their membership in the cooperatives, producers still prefer to sell unsorted bamboo culms to a limited number of traders (on average between two and three). None of the interviewed producers had in fact changed trading partners in the last 5 years. The rigidity of the bamboo trading network has been confirmed by local traders, who mostly appear to depend upon a fixed pool of bamboo suppliers. Local traders are unwilling or unable to cross other traders' network boundaries in order to establish new supply relationships with producers outside their pool. Traders seem therefore to have already reached the limits of their supply capacity, and are unable to further increase the scale of their operations.

The fact that traders already operate on their supply frontiers influences their way of looking at new market opportunities. Traders are actively searching for new marketing channels for their bamboo, within and outside the province. However, their main aim is not the increase of scale, but the creation of reliable relationships and the diversification of demand. Being unable to increase their bamboo supply, when new valid marketing opportunities arise traders tend to drop their less reliable buyers and to substitute them with more trustworthy ones. In this regard, successful traders appear particularly interested in establishing formal contractual agreements with private companies, as this allows them to operate in the more secure setting offered by formal coordination systems. Diversification of demand within the pool of buyers also seems an important factor for local traders. Traders are in fact buying undifferentiated bamboo culms from producers, and they act as the main sorting stage in the local bamboo trading chain. The availability of a differentiated pool of buyers allows trader to lower their searching costs when confronted with bamboo loads of varying quality, and to increase their chances of profit maximization through the possibility of determining the optimal allocation of bamboo according to the prices offered by different buyers for different quality culms.

With regard to the provision of services, the analysis of household communication networks shows that the main providers of marketing information and technical advice to producers' households are state actors. Households get their information predominantly from local extension staff, or from local level government agencies. Service and information providers are usually based away from the village, often in the district town. The frequency of contact is therefore extremely limited, on average three or four times per year. Rather than pointing to the efficiency of the state-led service provision system, this results highlights the lack of private services providers in the area. Significantly, leaders of the cooperatives have never been named as providers of valuable technical advice or market information to member households. This seems to reinforce the conclusion that cooperative leaders are perceived as unskilled, and are scarcely trusted by members in their capacity to guide producers' cooperatives in the competitive context of the bamboo value chain.

Traders are also largely excluded from the household communication networks; their role as service providers is therefore confined to the provision of credit. The analysis of trust relationships in Thanh Hoa has confirmed that agreements between producers and traders are self-enforcing. Contrary to the common assumption that bamboo producers are locked into an exploitative system dominated by local traders, the interviewed producers have expressed a strong trust in their trading partners, and have generally asserted their satisfaction with the current agreements. Trust is generally reciprocated by traders.

**The main problem that emerges from the analysis of the trading system is not exploitation, but systemic inefficiency and the inability to cope with an increasing level of covariant risk:**

**Systemic inefficiencies.** The linkage between trading and credit is mainly motivated by risk-sharing considerations; it can be modelled as a quasi-credit system aimed at providing informal insurance against market fluctuations to both traders and households. From the point of view of traders, the main market risk is linked to the need of securing a reliable supply of bamboo culms in a situation of increasing demand and locked supply. Local traders have to face an increasing competition to secure access to bamboo, particularly to high quality bamboo. If traders are actively looking for entering long-term contractual agreements (formal or informal) with pre-processing companies, they have to demonstrate that they are able to provide a constant supply of bamboo culms of consistent quality. In this context, traders are willing to do their best to buy their bamboo supplies forward. In the absence of organized forward markets and given the high degree of informality characterizing the local-level bamboo trading system, the only option available to achieve a constant and predictable flow of bamboo is by linking up credit and marketing relations. Traders therefore offer loans to producers against the security of future bamboo supply. At the same time, credit offered by traders against future bamboo sales provides producers' households with an ex-post mechanism for coping with income shocks. The implicit premium paid by traders and producers for entering into the quasi-credit agreement appears to be increasing.

The reduction of on-the-spot price variability and the possibility to access the informal credit system are bought by producers at the cost of diminished potential gains. In a situation in which opportunities for higher gains are emerging in the bamboo value chain, the informal insurance premium paid by producers is increasing. The increase is positively correlated to the opportunity cost of relying on the traditional trading system instead of looking for better options in the bamboo value chain.

From the point of view of traders, the implicit premium paid for securing a reliable supply of bamboo culms is the need to lock a substantial capital in the informal credit system. By doing so, traders renounce to the possibility of using their capital in more productive ways. The opportunity cost of locked capital is increasing as well, since the value chain would offer the possibility to mobilize available capitals in more efficient ways (for example, investing in pre-processing facilities).

**Inability of the current system to cope with covariant risk.** While an accurate analysis of household vulnerability has not been performed, the known features of the bamboo system point to the conclusion that variations in income from bamboo can severely impact on the livelihood of smallholder households in Thanh Hoa; this is particularly true for poor households. The situation is further complicated by the fact that, in the case of bamboo, risk appears to be highly covariant.

In terms of yields, it has already been noted how the main determinant of bamboo quality and yields is the quality of land. Land is however highly fragmented, and usually households produce bamboo in not-adjointing plots. While skills in the harvesting and tending of bamboo can produce idiosyncratic variations in bamboo yields, wider variations in seasonal yields are more likely to derive from environmental shocks (pests, low rainfall, etc.) that would equally affect all households within a large area.

The same is true for shocks originating in the circulation sphere. While bamboo is produced locally, demand and prices are set in regional and global marketing and production networks. Variations in prices and demand therefore affect to the same extent all actors in the local chain, traders, and producers alike. The high incidence of bamboo incomes as a portion of total income and the high exposure to covariant risk imply that the management of risk has a high priority for households and traders.

The specific situation of the upland districts in Thanh Hoa and the technical characteristics of the bamboo value chain limit the options available for coping with risk through ex-ante mechanisms. Opportunities to diversify income sources (off-farm jobs, diversification of production) appear to be extremely limited, as bamboo alone contributes to 68–69% of total household incomes<sup>13</sup>. At the same time, the technical requirements of the bamboo value chain limit the possibility to use storage as a mean to cope with price fluctuations. Since bamboo quality degrades rapidly after collection, delayed harvesting is the only available mean of storing the seasonal production if prices offered at any specific time on the market are low. Delayed harvesting seems however to be a feasible option only for better-off households. An investigation of the harvesting frequency has showed how smallholder producers on average harvest their bamboo more than 15 times per year. The high frequency of harvesting also suggests the low incidence of saving among smallholder households. Harvesting frequency is motivated by producers through the need of covering recurring household expenses.

The existence of informal reciprocal support networks based on the exchange of small sums of money between households cannot be excluded in Thanh Hoa. However, the credit system in which traders are involved is mainly used to address nonrecurrent expenses. Producers have in fact declared that they tend to ask for credit from traders (in the form of upfront payments on future sales) for large and unexpected expenses. The main reasons for requesting credit from traders are the payment of school fees, buying inputs, unexpected social obligations (festivals, marriage of a relative, etc.), and illness.

The informal risk-sharing system based on quasi-credit arrangements does not appear to be able to cope with the increasing incidence of covariant risk. A severe shock originating from the global market sphere would affect traders and producers alike. When credit would be mostly needed by poor households, local traders would be facing themselves a moment of financial difficulties. Since credit is mainly used to secure future supplies of bamboo, it can be imagined that traders would allocate their scarce resources (available capital) to maximize their bamboo supply. Credit would probably flow toward better-off households with bigger landholdings; conversely, poor smallholders would be cut off from the informal credit system.

The increasing incidence of covariant risk and the absence of appropriate risk-sharing mechanisms emerge as the most important features of the trading system in Thanh Hoa. Together with providing access to increased income opportunities, future interventions should consider promoting forms of collective action that formalize risk-sharing arrangements and involve external institutions able to provide forms of protection against covariant shocks.

**Cooperatives have been unable to replace traders as reliable providers of risk-sharing mechanisms.** In one case, the cooperative offered one of its members a lump sum to repay his debt to a trader. The offer also included the provision of credit to be used as working capital for the next season. Had the producer accepted, he would have been free to sell his bamboo to the cooperative after repaying his outstanding debit to the trader. The producer, however, declined the offer, since he was not sure he could rely on the cooperative in the future in case he needed access to new credit.

This case demonstrates that credit swapping is potentially available as an option to bamboo producers. This might help explain why producers do not consider the existence of a previous trading relationship as an important reason in itself. Producers have in fact the possibility of ending their previous relationship with a trader if they are able to find a better offer. The emphasis is instead on the existence of the credit relationship, which is the main determinant of their market choices.

---

<sup>13</sup> IDE midterm report.

The case of the failed credit swapping highlights the importance of trust as a binding element in the trading system. Traders are perceived as more reliable than the cooperative in their role of credit and informal insurance providers. Evidently, the bundle of services offered by the cooperative cannot compete with that offered by traders, whose reliability has been assessed through repeated interactions over several years. If cooperatives do not take significant actions to change this perception and to present themselves as reliable providers of risk-sharing arrangements, it is unlikely that they will be able to secure a reliable supply of bamboo from their members.

### *Subcomponent III: Organizational Models*

Each form of collective action implemented to date has targeted separate groups. Producers' cooperatives have been based on the inclusion of a large number of smallholder bamboo producers. Traders' groups, much smaller in size, generally include local traders and better-off bamboo producers. The results achieved by the two models are strongly divergent. Producers' cooperatives are more inclusive towards the poor, and have promoted the diffusion of skills and knowledge at the local level through training. However, they are not generating profits and they have not succeeded in achieving smallholders' participation in higher value segments of the value chain. Conversely, traders' groups appear to be more profitable and sustainable; they have been able to undertake pre-processing of bamboo products, effectively entering high-value segments of the value chain. It is however not clear if, and to what extent, poor bamboo producers can benefit from the success of traders' groups.

The different degrees of success attained by the two forms of collective action can be explained through a variety of factors:

1. **Skills of the organizations' leaders:** In the case of the traders' groups, members are often local traders with well-developed supply networks and a good knowledge of the bamboo market. Furthermore, some of the members had previously attempted the pre-processing of chopsticks. They have contributed significant business skills and valuable marketing contacts to the organization. Conversely, the leadership of producers' cooperatives seems to lack the skills required to operate in the competitive context of the bamboo value chain. Local governments exert a strong influence on the selection of cooperative leaders; this results in leaders often being chosen according to political considerations rather than following a market-oriented logic. Cooperative leaders usually come from a public sector background; they cannot count on already established supply and marketing networks, and their knowledge of the bamboo market is extremely limited.
2. **Governance structure:** Given the smaller dimensions and the homogeneity of members, the governance structure of the traders' groups has a more informal nature. The decision-making process is flexible, entails lower organizational costs, and appears to be more responsive to market conditions. Producers' cooperatives are instead based on a highly formalized governance structure based on the "one member, one vote" principle. In this sense, the producers' cooperatives more clearly implement the principles of cooperation set by the International Cooperative Alliance to ensure that members interested are clearly represented by the organization. However, the real distribution of decision-making power inside the organization seems to be highly concentrated in the hand of the leaders and the managerial boards. In the case of producers' cooperatives, the higher organizational costs do not appear to be balanced by an effective participation of members in the decision-making process.
3. **Different degree of members' commitment:** Traders' group members appear to be bound by long-standing relationships of trust. Members have directly

contributed capital, and are more motivated to support the organization. On the other hand, producers' cooperatives' members show a lower degree of commitment. Lack of commitment derives from two main factors: first of all, the low managerial skills of the cooperative leaders imply that members have a low degree of trust in the organization. Second, the cooperative has not been able to replace local traders as a provider of valuable services to smallholder producers (credit, risk-sharing arrangements).

Even if they have achieved a varying level of success, none of the organizational forms found in Thanh Hoa has been able to catalyze systemic improvement shared by the poor. The main conclusion of the study is that the profitable integration of the poor in the value chain can only be achieved through new forms of collective action that include both traders and smallholder producers. The two models implemented to date have targeted the two groups separately, and have therefore failed in promoting a real cooperation in the local level of the bamboo chain. The separation of traders and producers ignores the existence of strong complementarities between the two groups that could instead be used as the base for their effective cooperation. Producers and traders are bound by deep trust relationships, which could be formalized and transformed into a valuable asset.

The failure to build an effective system of cooperation between traders and producers misses a valuable opportunity to:

1. Unlock scarce capital immobilized in the informal credit system; capital could more profitably be employed to start pre-processing activities at the local level;
2. Unlock the idle social capital embedded in the trust relationship between traders and producers, which would allow building effective risk-sharing and quality control systems based on low transaction costs (these in turn could become valuable assets for profitably participating in the value chain); and
3. Pool scarce local resources so that traders can contribute valuable skills and extensive marketing contacts while producer groups can provide access to a well-coordinated and reliable supply of bamboo (and can count on a higher level of political support, since they are perceived by local governments as a preferential development model).

Future forms of collective action should try to build partnerships between traders and producers, overcoming the artificial divisions between the two groups. New forms of collective actions leveraging the existing trust relationships between the two groups could prove more successful in combining profitability with inclusion of the poor.

## Conclusions and Recommendations

The analysis has substantiated the first working hypothesis, and rejected the second. Producers' cooperatives are highly centralized organizations, in which members have little influence on the decision-making process. Cooperative managers appear to be more responsive to external actors (local government and supporting organizations) than to members themselves. In particular, the strong influence of local governments on the choice of leaders creates a misalignment of incentives between the management and members. Leaders are in fact selected based on political considerations rather than according to their managerial skills; the selection of cooperative managers among the ranks of the state administration creates strong interlinkages between the cooperative boards and the local government sphere. Leaders and local governments share a common managerial culture, according to which the main function of cooperatives is the provision of inputs and extension to members, rather than the development of market linkages and the increase of market-oriented services available to members. The strong path-dependence embedded in the relationship between managers and local governments results in cooperatives

being seen as a transmission belt for local governments' development policies rather than as independent market actors. The misalignment of incentives between managers and members, coupled with the inadequacy of leaders to cope with a complex market environment, are at the base of the decreasing commitment of members toward an organization that they feel is unable to represent their interests and operate for their advantage. If producers' cooperatives are to work, ways should be devised to ensure a real degree of leaders' accountability toward members.

Findings from the field have instead called for an extension and reformulation of the second working hypotheses. The inability of cooperatives to procure bamboo from members cannot convincingly be explained through the higher efficiency of the traders' collection system. Rather, it derives from the inability of the cooperatives to provide a valuable "bundle of services" to their members. Traders in fact offer to their trading partners an informal risk-sharing mechanism through the provision of credit against future sales of bamboo. Conversely, cooperatives have not been able to replace traders as reliable providers of risk-sharing mechanisms to poor producers. In order to understand the reasons behind cooperatives' difficulties, elements like risk-sharing mechanisms, informal insurance systems, credit, and vulnerability should be included in the analysis.

Future actions aimed at promoting poor smallholders integration with the value chain should explore new models of collective action capable of achieving an effective cooperation between different local groups. Improved models of collective action could be based upon the creation of shareholding pre-processing enterprises jointly owned by local traders and bamboo producers' organizations (cooperatives and/or groups). The creation of shareholding enterprises is to be preferred to the entry of traders in existing producers' organizations, as this second option would add further complexity to the organizations' governance structure and increase the frequency of internal conflicts.

Shareholding enterprises offer a flexible mechanism to align the incentives of traders and producers, promoting a sustainable cooperation based on the strong complementarities between the two groups. Shareholding enterprises can promote the pooling of scarce local resources (skills, capital, marketing contacts), facilitating the profitable integration of small-scale producers groups with the bamboo value chain. At the same time, shareholding enterprises offer a means to unlock the idle social capital embedded in the deep relationships of mutual trust between local traders and producers. On the one hand, the formalization of existing trust relationships can help mobilize capitals currently locked in the informal credit system. On the other hand, formalization will favor the implementation of more effective risk-sharing mechanisms capable of reducing smallholders' vulnerability.

Pre-processing companies and local governments could provide services and indirect facilitations aimed at creating a supportive environment for shareholding enterprises jointly owned by local traders and producers' organizations.

## References

1. International Development Enterprises. 2006. Vietnam Value Chain Study: Insights of input markets and technological development for producers of bamboo products in selected locations of Nghe An and Thanh Hoa Provinces. Prepared for Oxfam Hong Kong. March.
2. Government of Viet Nam. 2004. Decree No. 134/2004 Encouraging the Development of Rural Industry.
3. Office of Forestry, Thanh Hoa Province. 2005. Báo cáo tình hình phát triển lâm sản ngoài gỗ.
4. \_\_\_\_\_. 2005. Chuyên đề đánh giá tác động của chính sách và cơ chế quản lý đến phát triển cây luồng tại Thanh Hóa.
5. \_\_\_\_\_. 2005. Chuyên đề thực trạng phát triển cây luồng Thanh Hoá năm 2005
6. \_\_\_\_\_. 2005. Chuyên đề đánh giá tác động của chính sách và cơ chế quản lý đến phát triển cây luồng tại Thanh Hóa.
7. Malesky, Edmund. 2004. *Entrepreneurs on the Periphery: A Study of Private Sector Development Beyond the High Performing Cities and Provinces of Vietnam* (Private Sector Development Facility No. 18). November.
8. People's Committee of Thanh Hoa Province..2006. *Thanh Hoa Statistical Yearbook, 2005*.
9. \_\_\_\_\_. 2005. Strategy for Forestry Development, Thanh Hoa Province, 2001–2010.
10. \_\_\_\_\_. 2003. Báo cáo sơ kết 03 năm thực hiện chương trình mục tiêu xóa đói giảm nghèo và việc làm (2001–2003) .
11. \_\_\_\_\_. 2002. Phân vùng nguyên liệu cho các nhà máy giấy trong tỉnh.
12. \_\_\_\_\_. 2005. Quyết định của UBND tỉnh Thanh Hoa về việc: Công bố số liệu hiện trạng rừng và đất lâm nghiệp năm 2004 tỉnh Thanh Hóa.
13. Salter, Dan. 2000. Overview of the Bamboo Industry in Thanh Hoa Province, Vietnam. International Development Enterprises. Prepared for Canadian International Development Agency (CIDA). July.
14. Tỉnh ủy Thanh Hóa. 2005. Nghị quyết của ban chấp hành Đảng bộ tỉnh về phát triển doanh nghiệp giai đoạn 2005–2010” ban hành theo số 10 – NQ/TU ngày 21/03/2005. \_\_\_\_\_.
15. Thanh Hoa Department of Agriculture and Rural Development, 2006, Chuyên đề đánh giá tác động của các chính sách liên quan đến phát triển ngành chế biến lâm sản
16. \_\_\_\_\_. 2005. Báo cáo về Tình hình thực hiện chính sách hỗ trợ phát triển kinh tế nông nghiệp nông thôn từ 2001 đến nay. Viện Công nghệ Giấy và Xenlulo. 2000. Báo cáo nghiên cứu tiền khả thi nhà máy bột và giấy Thanh Hoá 6.000 tấn/năm.
17. \_\_\_\_\_. 2004. Báo cáo đánh giá dự án Vie/00/003.
18. Vietnam Forest Ranger. 2003. Các văn bản pháp qui lâm nghiệp.
19. The Vietnam Government. 2004. Decree No. 134/2004, Encouraging the Development of Rural Industry.
20. The World Bank. 2005. *Vietnam Development Report 2004*.
21. [www.vietnamnews.vn](http://www.vietnamnews.vn)
22. [www.inbar.net](http://www.inbar.net)

## Summary of Recommendations

	Policy Lever	Specific Measure	Expected Benefit
<b>I. Industry Dynamics (Value chains)</b>	1. (Continue to) promote foreign direct investment in the local bamboo industry and exports to international markets	(i) Increase exposure of local organizations to best processing and production practices  (ii) Promote the bamboo sector in Viet Nam as an investment opportunity for foreign companies	<ul style="list-style-type: none"> <li>• Enable access of local organizations to global markets</li> <li>• Transfer competitiveness to local organizations</li> <li>• Bring increased pressures for greater efficiency and productivity</li> <li>• Bring increased capital investment into the sector</li> </ul>
	2. Level the playing field for small-scale entrants	(iii) Mechanisms for information flow, transparency and formality with regard to opportunities, uses of bamboo, and grading  (iv) Mechanisms for insurance/capacity to bear contingencies of producers	<ul style="list-style-type: none"> <li>• Reduce information asymmetry for producers</li> <li>• Reduce corruption and costs associated with informality and market distortions for all actors in the chain</li> <li>• Release working capital from farmers and traders for productive investments</li> </ul>
	3. Facilitate integrating arrangements between producers and other members of the value chain	(v) Formal arrangements between processors and buyers for developing specialized business niches.  (vi) Upgrading of producer groups, product lines, functions and processes, including adoption of appropriate technology, increased utilization of processing inputs and shared quality management mechanisms	<ul style="list-style-type: none"> <li>• Reduce the risk of asset specificity for producers associated with adopting specialized product lines</li> <li>• Increase productivity of processors through higher rate of utilization of raw material</li> <li>• Spill over increased capacity for local organizations to develop adjacent local business lines</li> </ul>
	4. Develop markets for goods and services that cater to value chain players and small-scale enterprises	(vii) Adapt and engineer appropriate product and services for small-scale processors through product research and development  (viii) Develop supply networks to increase availability and distribution of productive inputs at the local level.  (ix) Facilitate market-based leasing contracts to finance upgrading of specialized processing lines	<ul style="list-style-type: none"> <li>• Improve the enabling operating environment for emerging processing organizations.</li> <li>• Increase productivity of small-scale processors through upgrading of product lines and technical processes</li> </ul>
<b>II. Internal operating factors for small-scale processors (clusters)</b>	1. Increase adoption of appropriate processing technologies and use of productive inputs	(i) Stimulate demand and adoption of productive inputs such as chemicals among processors through communication, technical training and promotion	<ul style="list-style-type: none"> <li>• Increase productivity of small-scale processors through improved productive methods and improved quality of output</li> </ul>

	2. Diversify business product lines and increase efficiency rate of utilization of raw material	<p>(ii) Provide technical processing assistance to producer groups to try improved processing methods and adopt new product lines</p> <p>(iii) Undertake research into new industries that reduce waste and increase technical efficiencies</p>	<ul style="list-style-type: none"> <li>• Increase the rate of utilization of the bamboo culm among processors</li> <li>• Mitigate the risk for processors of concentration stemming from participating in specialized product lines</li> </ul>
	3. Integrate producers into the value chain as suppliers of raw materials, shareholders, and employees	<p>(iv) Develop synergies between traders and cooperatives through shareholding in jointly operated pre-processing enterprises.</p> <p>(v) Upgrade members to the pre-processing stage; support traders entry into the managerial board of shareholding pre-processing companies</p> <p>(vi) Promote partnership with private enterprises to implement ex-ante quality control systems and provide better services; promote synergies with local governments and external actors to address covariant risk</p> <p>(vii) Develop mechanisms for joint production plans, quality control, agricultural intensification, and forest certification between producer groups and primary processing groups</p>	<ul style="list-style-type: none"> <li>• Increase nonfarm sources of income for poor farmers</li> <li>• New marketing channels opened up by traders; cooperatives are seen as more reliable market actors</li> <li>• Members improve their knowledge of value chain dynamics, and are able to make better marketing and production choices according to their interest; stronger participation in an initiative perceived as potentially successful</li> <li>• Unlock quasi-credit capital from existing grower and trader arrangements</li> <li>• Increase productivity through intensified cultivation and harvesting</li> <li>• Secure long- term supply for specialized business lines</li> <li>• Local level upgrading; improvement in locally available market-oriented services</li> </ul>
	4 Promote organizational structures of processors —inclusive of producers— that are responsive to market conditions and accountable to producers	<p>(viii) Improve organizational functions, tasks, and governance of pre-processing groups including:</p> <ol style="list-style-type: none"> <li>a. Decision-making and representation mechanisms inclusive of farmer shareholders</li> <li>b. Management staff capable of participating in complex market systems</li> <li>c. Existence of value-added services for farmers such as insurance and credit</li> <li>d. Accountability to farmer shareholders</li> </ol> <p>(ix) Formalization of the specific risk-management mechanisms through internal insurance funds; reduction of covariant risk through diversification and the intervention of external actors (for example micro-insurance)</p>	<ul style="list-style-type: none"> <li>• Increase nonfarm sources of income for poor farmers</li> <li>• The existing trust relationships are internalized by the shareholding enterprise; higher trust in the business skills of the managerial board enlarged to traders; increased commitment</li> <li>• Unlocking of latent social capital; trust internalized by the shareholding processing enterprises, which helps implementation of low-cost coordination and monitoring systems</li> </ul>