

# Rubber investments and market linkages in Lao PDR: approaches for sustainability

Charlotte Hicks, International Union for Conservation of Nature (IUCN) Lao PDR  
Dr Saykham Voladeth, National Economic Research Institute (NERI) of Lao PDR  
Weiyi Shi, Independent Consultant  
Zhong Guifeng, GMS Study Center, Yunnan University  
Sun Lei, GMS Study Center, Yunnan University  
Pham Quang Tu, Consultancy on Development (CODE)  
Marc Kalina, IUCN Asia Regional Office

**February 2009**



The Sustainable Mekong Research Network

DRAFT DOCUMENT PLEASE DO NOT CITE



## Contents

Acknowledgements.....	iii
Acronyms and Abbreviations.....	iv
Summary.....	1
1. INTRODUCTION.....	1
1.1 Background.....	6
1.2 Research Objectives and Methods.....	7
1.3 Structure.....	8
2. METHODOLOGIES.....	10
2.1 In LAO PDR.....	10
2.2 In China.....	12
2.3 In Vietnam.....	12
3. Lao PDR's Rubber Sector.....	14
3.1 Global Investment and Market Trends.....	14
3.2 Investment Trends in the Lao Rubber Sector.....	21
3.3 Policies, Laws and Regulations.....	25
3.4 Key Actors in the Lao Rubber Sector.....	28
3.5 Investment approval process in Lao PDR.....	35
3.6 Market Linkages.....	40
3.7 Analysis and Conclusion.....	43
4. CHINA 'S ROLE IN THE RUBBER SECTOR.....	46
4.1 Overview of China's Rubber Sector.....	46
4.2 Chinese Rubber Investments Abroad.....	49
4.3 Chinese Investments in the Lao Rubber Sector.....	53
4.4 Enabling policy measures .....	53
4.5 Key Stakeholders.....	60
4.6 Investment Approval and Decision-Making.....	61
4.7 Financing.....	64
4.8 Models of Investment: Concessions vs. Contract Farming.....	64
4.9 Monitoring, Evaluation and Environmental Impact .....	71
4.10 Labour.....	74
4.11 Market Chains, Trends, and Risks.....	74
4.12 Opportunities, Challenges, and Incentive-Based Approaches.....	77

5. VIETNAM'S ROLE IN THE LAO RUBBER SECTOR.....	78
5.1 An Overview of Rubber Development in Vietnam.....	80
5.2 Vietnamese Investments in Rubber Plantations Abroad.....	88
5.3 Motivations and Priorities of Vietnamese Investors.....	91
5.4 Modes of Operation.....	93
5.5 Financing and Resources.....	96
5.6 Challenges and Opportunities.....	96
5.7 Conclusion.....	100
6. DISCUSSION: CHALLENGES FOR SUSTAINABLE AND EQUITABLE RUBBER DEVELOPMENT .....	102
7. APPROACHES FOR SUSTAINABLE RUBBER PRODUCTION AND INVESTMENTS.....	104
7.1 Corporate Social Responsibility in Lao PDR .....	105
7.2 Best Practice in the Rubber Industry.....	109
8. CONCLUSIONS AND RECOMMENDATIONS .....	125
REFERENCES.....	132
APPENDICES.....	131

## Contents of Tables and Figures

Figure 1: Global Demand for Rubber until 2020.....	15
Figure 2: Rubber Consumption by Countries, 2006.....	15
Figure 3: Estimated Demand for Natural Rubber until 2020 (in million tons).....	17
Table 1: Global natural rubber supply until 2020 (in million tons).....	18
Figure 4: Demand-Supply Gap for Natural Rubber in Global Market until 2020.....	19
Figure 5: Natural rubber price from 1995 to 2007.....	20
Table 2: Current and projected areas of rubber, 2006 and 2010.....	22
Figure 6: Demand, production and import of natural rubber in China until 2020 (million tons).....	41
Figure 7: China's Natural Rubber Consumption: Domestic Production vs. Import (million tons).....	49
Table 3: Formal Chinese Rubber Companies in Northern Lao PDR.....	54
Figure 8: Rubber Planting in Luang Namtha and Bokeo Villagers' vs. Company-Led.....	56
Table 4: Target and Potential for Planting Rubber in Lao PDR.....	57
Figure 9: Stakeholder Relationships .....	60
Box 1: Contract Farming in Luang Namtha vs. Bokeo.....	67
Table 5: Intercropping in Rubber Plantations in Bokeo.....	68
Table 6: Tire Production vs. Natural Rubber Consumption in China: 2001- 2006.....	75
Figure 10: MRB FOB Noon Prices for SMR20 (US Cents/Kg).....	76
Figure 11: Area of planted rubber in the north of Vietnam (1960-1975).....	81
Figure 12: Natural rubber harvested in the north of Vietnam (1960-1975).....	82
Table 7: Area of rubber in Vietnam (1976 - 1985).....	82
Figure 10: Area of planted rubber in Vietnam (1985-2007).....	83
Figure 12: Harvested rubber and exported value (1986-2007).....	83
Figure 13: Area of planted rubber according to ownership.....	85
Table 8: Ten largest importers of Vietnamese rubber sector and their imported volume (Unit: 1,000 ton).....	86



## ACKNOWLEDGEMENTS

This collaborative research report has been prepared by a research team including: Dr Saykham Voladet of the National Economic Research Institute (NERI), Lao PDR, with support from Ms Phutthasone Simavong and Ms Oulaphone Pheungsavane; Ms Weiyi Shi; an independent consultant; Mr. Guifeng Zhong and Mr. Lei Sun of the Greater Mekong Subregion Study Center of Yunnan University; Mr. Pham Quang Tu and Mr. Le Quang Trung of Consultancy on Development, Vietnam; Mr. Nguyen Cao Cuong, Foreign Investment Enterprises Magazine, Vietnam; Mr. Marc Kalina, Asia Region Business and Biodiversity Programme, IUCN; and Ms Charlotte Hicks, IUCN Lao PDR. The project was assisted by the overall supervision and coordination of Mme Latsamay Sylavong (Country Representative, IUCN Lao PDR), Dr Leeber Leebouapao (Deputy Director, NERI), Dr Khampay Manivong (Deputy Director General, NAFRI) and Dr. Xing Lu, Director of the GMS Study Center, Yunnan University.

The report is based on desk-based research and literature reviews, as well as wide-ranging interviews with key stakeholders in Lao PDR, China and Vietnam. The research team would like to acknowledge the cooperation and assistance of all those who participated in surveys in Vientiane Municipality, Luang Namtha Province, Champassak Province and Bokeo Province in Lao PDR, Yunnan Province in China, and Dak Lak, Gia Lai and Binh Duong Provinces, and Ho Chi Minh City in Vietnam. In addition, the team would like to thank the provincial line agencies who made these surveys possible, as well as VECO in Bokeo Province. We also extend our thanks to Dr. Qu Jianwen, Vice-Dean of the Yunnan University School of International Studies, and Ms. Gao Lihong, Director for the Xishuangbanna Science and Technology Bureau, for their invaluable assistance in organizing and supporting research in China and our researchers' visit to Xishuangbanna, Yunnan Province.

In addition, we would like to express our thanks to key Lao government agencies and institutes who provided guidance and assistance in preparing this report, including the Department of Investment (MPI), NAFRI, ERI and NERI. Valuable advice and comments were also provided by: Mr. Mahinda Goonasekara (IUCN Sri Lanka) on forest certification in Sri Lanka; and Dr. Horst Weyerhaeuser (NAFRI), Dr. Laxman Joshi (ICRAF), Mr. Stephen Midgely (Salwood Asia Pacific) and Mr. Thibault Ledecq (WWF Greater Mekong) on agroforestry and certification options in the region. We would also like to thank Mr. Phaivanh Phiapapaeth and Mr. Xiong Tsechalicha of IUCN Lao PDR for their assistance and support.

Finally, this report could not have been produced without the generous support of the Stockholm Environment Institute, through the Sustainable Mekong Research Network (Sumernet).

While acknowledging the contribution of the partner organizations in this project, any errors or omissions in this report are the responsibility of the authors.





## Acronyms and abbreviations

ADB	Asian Development Bank
APB	Agricultural Promotion Bank
ANRPC	Association Of Natural Rubber Producing Countries
ASEAN	The Association of Southeast Asian Nations
CDM	Clean Development Mechanism
CPMI	Committee for Promotion and Management of Investment (Lao PDR)
CRIA	China Rubber Industry Association
CSR	Corporate Social Responsibility
DAFEO	District Agriculture and Forestry Extension Office (Lao PDR)
DAKRUCO	Dak Lak Rubber Corporation
DDFI	Department of Domestic and Foreign Investment (Lao PDR)
DPRA	Development project responsible agency
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EU	European Union
FSC	Forest Stewardship Council
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GEI	Global Environment Institute
GMS	Greater Mekong Subregion
GoL	Government of Lao PDR
GoY	Government of Yunnan
GSF	Guangdong State Farms
GSO	General Statistics Office (Vietnam)
Ha	Hectare
HAGL	Hoang Anh Gia Lai Group
HSF	Hainan State Farms
ICRAF	World Agroforestry Centre
IEE	Initial Environmental Examination
IRB	India Rubber Board
IRSG	International Rubber Study Group
IUCN	International Union for Conservation of Nature
IUCN ARO	IUCN Asia Regional Office
Lao PDR	Lao People's Democratic Republic
LNCCI	Lao National Chamber of Commerce and Industry
MAF	Ministry of Agriculture and Forestry (Lao PDR)
MIC	Ministry of Industry and Commerce (Lao PDR)
MOF	Ministry of Finance (Lao PDR)
MPI	Ministry of Planning and Investment (Lao PDR)
NAFES	National Agriculture and Forestry Extension Service (Lao PDR)
NAFRI	National Agriculture and Forestry Research Institute (Lao PDR)
NDRC	National Development and Reform Commission (China)
NERI	National Economic Research Institute (Lao PDR)

NGO	Non-governmental organization
	Northern Laos Industrial Economic Development and Cooperation Planning
NLIEDCPPG	Preparation Group
NLMA	National Land Management Authority (Lao PDR)
NTFP	Non-Timber Forest Product
ORRAF	Office of the Rubber Replanting Aid Fund (Thailand)
PAFO	Provincial Agriculture and Forestry Office (Lao PDR)
PCR	Passenger Car Radial Tire
PDoC	Provincial Department of Commerce (Lao PDR)
PDPI	Provincial Department of Planning and Investment (Lao PDR)
PLMA	Provincial Land Management Authority (Lao PDR)
PRSF	Poppy Replacement Special Fund
RGS	Rubber Growers' Society
SAN	Sustainable Agriculture Network
SFA	State Forestry Administration (China)
SMR20	Standard Malaysian Rubber Grade 20
SVR	Standard Vietnamese Rubber
Sumernet	Sustainable Mekong Research Network
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value Added Tax
VRG	Vietnam Rubber Group
WBCSD	World Business Council for Sustainable Development
WREA	Water Resources and Environment Administration (Lao PDR)
WTO	World Trade Organization
YADA	Yunnan Alternative Development Association
YSF	Yunnan State Farms

## SUMMARY

Lao PDR is currently experiencing a sudden, rapid and largely uncontrolled expansion of rubber cultivation. It is clear that growth in China's demand for rubber is influencing the Chinese investment in rubber planting in northern Lao PDR and is very likely influencing the Vietnamese proposals for rubber plantation expansion in southern Lao. Some industry experts predict that the estimated 28,000 hectares of rubber plantations in Lao at present will grow to some 300,000 hectares by 2020.

This study is the result of collaborative research undertaken by the International Union for Conservation of Nature (IUCN) Lao PDR Office with partners in Lao PDR, China and Vietnam, with support from the Sustainable Mekong Research Network (Sumernet). The overall goal of Sumernet is to *enhance the governance of natural resources and to catalyze the transition to sustainability in the Mekong region*. In 2008, Sumernet supported a series of interlinked research projects, including this study into rubber development in the Greater Mekong Sub-region (GMS) with a focus on the recent, rapid increase in rubber cultivation in Lao PDR. This study aims to enhance the current understanding of the scale, scope and linkages of investments in rubber in Lao PDR, as well as to explore approaches that could potentially inform the more sustainable development of rubber.

Utilizing a combination of desk-based research and field work carried out in northern and southern Lao PDR, China and Vietnam, this study examines the investment trends, market linkages and business models that are driving the development of rubber in Lao PDR, focusing on the ties between the Lao rubber sector and those of its neighbours. This study also explores the understanding and practice of corporate social and environmental responsibility in the lower Mekong region, particularly in Lao PDR, and discusses approaches to enhance the sustainability and poverty reduction potential of rubber cultivation.

This study shows that the Lao rubber sector is intricately linked to the rubber sectors of China and Vietnam, with financing, technology and marketing, as well as demand for the final product, being supplied by these countries. This gives Chinese and Vietnamese investors important influence over the trajectory of rubber development in Lao PDR. The study also finds that the investment and business models utilized in the Lao rubber sector, although differing in their emphasis on

concessions versus contract farming in the north and south of the country respectively, face a number of similar challenges in ensuring that rubber development leads to positive and sustainable outcomes for the people of Lao PDR. Unless challenges related to ensuring adequate benefit-sharing, labour supply, food security and environmental protection are addressed, the benefits of rubber cultivation in Lao PDR may not outweigh the negative impacts.

There are a number of approaches being applied in countries around the Asia-Pacific region and the world that attempt to maximize the positive outcomes of rubber production. These include market-based and private sector approaches, such as CSR activities in the rubber industry and forest certification, as well as government and civil society-led initiatives to guide and support rubber development.

Examination of the available literature, as well as discussions with a range of stakeholders involved in rubber cultivation and production in Lao PDR, China and Vietnam, shows that there are options open to government, companies and farmers in Lao PDR to help ensure a more sustainable development of the country's rubber sector. This study supports recent moves in Lao PDR to suspend further rubber development until key questions about its economic, social and environmental impacts can be answered:

- How much rubber does Lao PDR want, where is suitable to grow it, and how will the country provide the labour to manage and harvest it? Equally important, what policy process is needed to determine scale and location of plantations in a sustainable and equitable fashion?
- What models or approaches for rubber cultivation and production would support the country's sustainable development goals? As well as understanding the trade-off between rubber plantations and other crops or land-uses, there are important trade-offs to consider in the levels of profitability, risk and environmental protection offered by different rubber cultivation methods.

- How can rubber investments be effectively regulated and monitored in a transnational context to ensure that sustainable development goals are being met?

Our recommendations to the Lao authorities, investors, farmers and researchers also include:

- Address gaps in the policy and regulatory framework: A number of steps can be taken to improve the policy and regulatory framework governing the development of rubber and other cash crops in Lao PDR. These include undertaking land-use planning at the national, provincial and local levels, as well as finalizing the land allocation process. Existing laws and regulations need to be fully implemented and to be effectively communicated to investors and developers, particularly those associated with environmental protection. The capacity of WREA needs to be strengthened in this regard, and EIA requirements must be enforced. In addition, the GoL and/or provincial governments should consider the formulation of additional laws or regulations to ensure that the development of processing facilities for rubber meets adequate standards.
- Protect control over land resources and access to benefits: The concession model favored for plantation development in southern Lao PDR should be reconsidered. As well as promoting non-environmentally friendly logging practices and monoculture plantations, villagers lose ownership and access to agricultural and forest land resources. The contract farming models as practiced in Lao PDR should also be improved to ensure a more equal sharing of risks and benefits between farmers and companies. Another option is introducing a land taxation system, where land tax per hectare increases with increasing land ownership. Very large parcels of land would therefore attract more tax, providing an incentive to promote smallholder farming over large concessions.
- Enhance transnational ties and information-sharing: Linkages between the relevant government agencies, as well as trade, industry and farming associations, of Lao PDR and China, and Lao PDR and Vietnam, should be encouraged. There is a need for improved exchanges in order to better understand the scope of linkages between the countries' respective rubber sectors, and to help to manage inconsistencies in the implementation of

laws, regulations and guidelines. Cooperation with other rubber producing countries may also help to address issues that threaten the stability of the rubber market and process, such as the level of supply.

- Improve support for rubber smallholders: Compared to other rubber-producing countries, Lao PDR lacks institutions to support the sustainable development of rubber, such as rubber growers' associations or rubber institutes. Given the still relatively small scale of the Lao rubber sector, this study does not propose that resource-intensive support mechanisms or institutions be established. However, an inter-agency body could be considered to develop strategies and plans for the sector and to help provide the information and guidance needed for effective smallholder rubber cultivation. It is in the interest of the Lao authorities to build on the first steps taken by NAFES and NAFRI to provide smallholders with technical, market and practical information about rubber and other livelihood options. The formation of farmers' associations at the local level should also be encouraged.
- Consider agroforestry options: More detailed analysis of alternative models of rubber cultivation and approaches to encourage sustainability should be carried out. This study reviews several options, such as rubber agroforestry, but further study of their applicability in Lao PDR is required. We recommend further testing of intercropping of agricultural and tree crops with rubber specifically. It is also important to study of the environmental, socio-economic, marketing and institutional factors relevant to utilizing such a model in Lao PDR.
- Establish investor protection and improve investment climate: A precarious investment climate contributes to unsustainable practices. When investors are unsure about the long-term security of their projects, their priorities are to make quick gains and they are less motivated to invest in the sustainable development of rubber.
- Encourage CSR among local and foreign investors: CSR is an important complement to government and civil society efforts to promote sustainable development. In order to facilitate the spread of effective CSR in Lao PDR,

this study recommends that relevant government, company and civil society actors should encourage a multi-stakeholder approach towards CSR promotion and implementation. Greater stakeholder participation can help to make social and environmental needs and issues more accessible to the private sector. Companies also benefit because communities which are given a voice in the decision-making process feel that they have a larger stake in the well-being of that company's activities. There is also a need for active capacity building and networking amongst CSR actors and stakeholders, including among the regulatory institutions that monitor trade, investment and corporate behavior in Lao PDR. Learning exchanges between Lao PDR and its neighbors could play a key role in building awareness of the role of and the regulatory capacity for CSR.

- Encourage competition and peer and public monitoring: The Lao authorities may opt to encourage competition among investors based on their adherence to sustainable practices. Businesses that perform poorly will be penalized, with the penalty channeled to rewarding those that do well. The presence of peer and public monitoring in addition to governmental oversight is necessary to safeguard against the possibility of corruption and cronyism and also supplement the inadequate monitoring capacity currently available to the Lao authorities.
- Link PRSF subsidies to investors' environmental performance: The existing mechanisms for monitoring Chinese companies receiving subsidies through the Poppy Replacement Special Fund may be expanded to also include sustainable practices as a criterion. From an economic perspective, profit-maximizing enterprises will not rationally adopt sustainable practices at increased cost to the business. While one-time subsidies are often used to lower risks for investors, permanent subsidies may be necessary to motivate businesses to account for environmental impacts.

## **1. INTRODUCTION**

### **1.1 Background**

Lao PDR is currently experiencing a sudden, rapid and largely uncontrolled expansion of rubber cultivation, driven by growing demand in neighboring countries such as China and Vietnam. Some industry experts predict that the estimated 28 000 ha of rubber plantations in Lao PDR at present will grow to 300,000 hectares by 2020 (Douangsavanh et al, 2008). A significant portion of the new rubber plantations and processing facilities being developed in Lao PDR are being financed by investors from China and Vietnam, with inputs ranging from large privately and state-owned corporations to smaller, more informal investors. The trends evident in Lao's rubber sector are in keeping with overall trends in the country's agriculture and natural resource sector. As noted by the Sub-working Group on Northern Uplands Sustainable Development (SWGUp) in a recently commissioned study, Lao PDR is exposed to influential external economic trends and actors, and its resources are in demand: "There is a strong momentum towards supplying land and agriculture produce to its neighbours" (SWGUp, 2008). Agricultural practices in Lao PDR are becoming increasingly commercialized and market-oriented, as well as increasingly linked to external markets and financial flows.

Relative to its neighbours, Lao PDR is a latecomer to rubber. Its first plantations were not established until the mid-1990s. Champassak was the first province in the south to adopt rubber, with 50 ha planted by a state company in 1995 (Manivong and Cramb, 2007). In the northern province of Luang Namtha, the Hmong village Ban Hadnyao and a small group of repatriated American War refugees began planting rubber around 1994. Until the mid-2000s, rubber development remained modest in northern Lao PDR. It consisted mainly of smallholders and development by individual investors hailing from the immediate borderlands of China and Lao LDR. Beginning in 2004, however, northern Lao PDR saw a rapid influx of Chinese rubber companies, most of which are supported by Chinese government subsidies and enter into contract farming schemes with local farmers. Rubber plantations have also expanded rapidly in recent years in southern Lao PDR, where the model has tended towards large concessions awarded to Vietnamese companies and joint ventures, rather than contract farming.



While rubber cultivation is expanding rapidly in Lao PDR, governance, including institutional arrangements, planning, policy, regulation and the information that supports this, is not keeping pace. Recent research efforts, as well as events such as the “Vientiane Smallholder Rubber Workshop” in June 2006 and the National Agriculture and Forestry Research Institute (NAFRI) “Rubber Stakeholder Meeting” held in December 2006, have highlighted many concerns about the economic, social and environmental impacts of rubber development, including rapid, unplanned and uncontrolled landscape change, and a lack of information, transparency, and accountability in the sector. Within government circles, these concerns have also prompted a slow-down on rubber, such as Luang Namtha Province’s decision in late-2008 to suspend further rubber development (*Vientiane Times*, 11 November 2008).

Lao PDR is not the first country to experience a rapid “boom” in rubber development, and there are a number of lessons to draw on when examining the trajectory and potential impacts of rubber development. This study will utilize existing available information about the development of rubber in Lao PDR and other countries, as well as primary data gathered through field research in Lao PDR, China and Vietnam, to examine the scale, scope and linkages of investments in the Lao rubber sector, and to explore options for enhancing the sustainability of these investments.

## **1.2 Research Objectives and Methods**

This study aims to enhance the current understanding of the scale, scope and linkages of investments in rubber in Lao PDR, as well as explore approaches that could contribute to the more sustainable development of rubber. The study will:

1. Examine the scale, scope and linkages of rubber investments in Lao PDR, with a focus on linkages to the important markets of China and Vietnam.
2. Investigate the motivations, priorities, resources, mode of operation, relationships and concerns of Chinese and Vietnamese investors and other important actors in the Lao rubber sector.
3. Analyze challenges and opportunities posed by growing Chinese and Vietnamese investments in the Lao rubber sector.

4. Explore incentive-based approaches and other options that may encourage investments that minimize negative economic, social and environmental impacts of widespread rubber cultivation;
5. Provide policy recommendations for the Government of Lao (GoL), as well as other influential stakeholders in the business, academic and civil society sectors, regarding how to ensure that rubber development in Lao PDR maximizes positive outcomes while minimizes negative social, economic and environmental impacts.

Through the collaborative research undertaken to produce this study, we aim to raise awareness of the key investment and market trends that are informing rubber development Lao PDR, and which may influence the future sustainability of those investments.

To answer these questions, this study utilized a combination of desk-based and field research, carried out between September and December 2008, in Lao PDR, China and Vietnam. Desk studies explored the following key themes: investment trends, market linkages, investment models, corporate social responsibility, and approaches to enhance the sustainability of rubber cultivation.

Field research, through semi-structured interviews, was carried in Bokeo and Luang Namtha Provinces in northern Lao PDR, Champassak Province in southern Lao PDR, Yunnan Province in China, and Dak Lak, Gia Lai and Binh Duong Provinces, and Ho Chi Minh City, in Vietnam. These interviews sought information from representatives of relevant government agencies, companies, investors and smallholders about the motivations, priorities, resources, mode of operation, relationships and concerns influencing investments in the Lao rubber sector.

### **1.3 Structure**

This study, in addition to a discussion of the methodologies used to conduct the research, can be broken into four main sections.

The first section will provide an overview of the Lao rubber sector, detailing the scale, scope and mode of investments. It will examine the trade and investment linkages to the important markets of China and Vietnam, as well as the policy

environment, motivations, priorities and relationships that enable these investments, and the opportunities and challenges implicit for Lao communities and the Lao economy.

The second section discusses Chinese rubber development in China and overseas, exploring cross-border linkages, regulatory environments, and key constituents, and identifying the opportunities and challenges that Chinese investments present to the Lao rubber sector.

The third section provides a similar overview of the development of rubber in Vietnam and expanding Vietnamese investments in rubber overseas. This is then followed by a discussion of the findings, with reference to the challenges in ensuring the sustainable and equitable development of rubber in Lao PDR.

The final section of the study explores a number of approaches or models being developed and utilized in Lao and other countries to promote more environmentally, socially and economically sustainable methods of rubber cultivation and production. This includes analysis of the development, understandings and practice of corporate social responsibility in Lao PDR and other Mekong countries, as well as a range of private-sector, government and civil society approaches specifically targeted at improving rubber cultivation and production.

The study concludes with a series of recommendations aimed at ensuring a more sustainable trajectory for the “rubber boom” in Lao PDR.

## **2. METHODOLOGIES**

This research utilized a combination of desk-based and field research, conducted over a period of four months between September and December 2008. Desk studies explored the key themes of the research: investment trends, market linkages, investment models, corporate social and environmental responsibility in the lower Mekong region, and approaches to enhance the sustainability and poverty reduction potential of rubber cultivation. The methods utilized in the different components of the study are described in detail below.

Every effort has been made to present the information on each country and the market linkages between them in a consistent way with a similar structure, allowing for differences in how data is collected, managed and viewed in the various countries included in this study. Please also note that minor discrepancies in data still exist in this report depending on the source of the information. In addition, although there are commonalities, the situations of rubber cultivation and production are also highly diverse depending on the specific investor and the socioeconomic characteristics of the host province, district, or village. This report should be considered a first step in formulating systematic understandings of the influence of foreign investments and differing investment models on the development of the Lao rubber sector.

### **2.1 In Lao PDR**

The Lao components of this study used a combination of desk-based and field research. Desk-based research and secondary data including previous research, relevant policies, laws and regulations, government strategies and plans and statistical information were used to examine the development and current status of investments in the Lao rubber sector. Literature on approaches being used and developed in Lao PDR and other countries to maximize the positive effects of rubber cultivation while reducing negative environmental, social and economic impacts was also examined.

This included a desk study of understandings and practice of corporate social responsibility (CSR) in Lao and other lower Mekong countries. There is limited existing literature and material regarding CSR in the lower Mekong region, and the

time available for this study unfortunately did not allow us to carry out a survey of companies operating in Lao PDR. In the future, a survey of CSR understandings and practices among companies and other relevant stakeholders in Lao PDR would provide a useful baseline.

Field research was carried out in October, November and December 2008 to provide further, primary data on the motivations, priorities, resources, modes of operation, relationships; market trends and concerns of investors and farmers in the Lao rubber sector. This research, using semi-structured interviews of key government, commercial and farming representatives, was conducted in Vientiane municipality, the northern Lao provinces of Luang Namtha and Bokeo, and in the southern province of Champassak, locations notable for their extensive ties to the Chinese and Vietnamese rubber sectors. The research team in Luang Namtha and Champassak Provinces met with three key rubber investment companies, three agricultural import-export companies and three rubber-growing households. The interview guidelines for the Vientiane, Luang Namtha and Champassak components are provided in Annex 1.

In Vientiane, the research team met with representatives from the National Agriculture and Forestry Research Institute (NAFRI), the Lao National Chamber of Commerce and Industry (LNCCI), and the Agricultural Promotion Bank (APB), as well as officials from: the Department of Investment Promotion, of the Ministry of Planning and Investment (MPI); the Export Department of the Ministry of Industry and Commerce (MCI); and the Department of Planning and Cooperation of the Ministry of Agriculture and Forestry (MAF). In Bokeo, Luang Namtha and Champassak, interviews were conducted with the provincial departments for agriculture and forestry, industry and trade, and planning and investment. The research team also met with representatives of rubber investment companies, households involved in rubber cultivation<sup>1</sup>, agricultural import-export companies, the provincial APB, and development organizations. The detailed list of informants is omitted at the request of interviewees. Due to limited time and resources, research focused on formal investment linkages and did not dedicate substantial

---

<sup>1</sup> Although only three provinces were chosen for field research, relevant information on other provinces is nevertheless incorporated and analyzed based on secondary research as well as researchers' prior field experiences. In Bokeo, representatives from three villages in Houayxai District (Ban Pong, Phouvanh Tai, and Nam Sanok), all engaged with Chinese rubber investors, were interviewed.

efforts to investigating unorganized, informal rubber ventures among border residents.

## **2.2 In China**

The Chinese component of the study used both desk-based research and semi-structured field interviews of key informants. Desk-based research yielded most of the information on regulatory environments, policies, and sector overviews. Field interviews took place in October 2008 in Kunming and Mengla of Yunnan Province, and were supplemented by brief fieldwork in Bokeo Province in northern Lao PDR. Additional information and views were also obtained during the “Rubber in the GMS” study tour for Lao researchers and officials, carried out in October 2008 (see Annex 4 for further detail). Interview guidelines, written for Chinese governmental entities and private businesses respectively, are provided in Annex 2. The interviews are formulated to gauge actors’ varying roles and perspectives (as administrator, regulatory body, financier, investor, contractor, trader, or some combination of the above) on the study’s key questions. However, due to the strategic and sometimes sensitive nature of the topic, responses are partial, and much of the analysis is also based on information collected informally and secondary data collection.

In China, key governmental informants included Yunnan Department of Commerce, Yunnan Department of Agriculture, Xishuangbanna Bureau of Commerce, Xishuangbanna Bureau of Agriculture, and Jinghong Municipal Bureau of Agriculture. A focus group discussion was held in Mengla with key Chinese businesses representatives investing in Lao PDR to gather their perspectives and concerns. The team also interviewed leaders of trade associations including Yunnan Association of Alternative Development and Xishuangbanna Association of Import-Export businesses.

## **2.3 In Vietnam**

Similarly, the Vietnamese component of the study used both desk-based and field research carried out in Dak Lak, Gia Lai and Binh Duong Provinces and Ho Chi Minh City in Vietnam (supplemented by the experiences of the researchers during limited field research in Vientiane and southern Lao PDR in 2007) to observe the

on-the-ground operations of Vietnamese rubber companies and investors. The Vietnamese research team collected secondary data and interviewed business leaders and experts in a number of major Vietnamese companies involved in rubber investment in Lao PDR. The team interviewed, formally and informally, 12 representatives of companies, business groups and government agencies to collect data on the motivations, priorities, resources, mode of operation, relationships, market trends and concerns for Vietnamese investors in the Lao rubber sector. The guidelines for interviews are at Annex 3.

The companies interviewed include Viet-Lao Rubber Joint Stock Co. Ltd., Dak Lak Rubber Corporation, Phu Rieng Rubber Co., Hoang Anh - Quang Minh Co. and other related organizations. Several business groups also contributed data, including the Vietnam Rubber Group, Hoa Phat Group and Hoang Anh Gia Lai Group. Representatives of Vietnam's Ministry of Planning and Investment, the Ministry of Agriculture and Rural Development, and the Dak Lak and Gia Lai Provincial Departments of Agriculture and Rural Development were also interviewed. As in China, it is difficult to identify and interview representatives of the Vietnamese informal sector, so this survey focused on the key companies and government agencies involved in the interlinked Lao-Vietnam rubber sector.

### **3. LAO PDR'S RUBBER SECTOR**

This section assesses the domestic, regional and global market and investment trends relevant to the rapid development of rubber in Lao PDR, and aims to provide a better understanding of the priorities, modes of operation, resources and relationships important to investors in the Lao rubber sector. This section will examine:

- Global investment and market trends in the rubber sector;
- Investment trends in Lao PDR, including promotion policies, relevant laws and regulations, key actors and investment statistics;
- The linkages of the Lao rubber sector to the global market;
- Opportunities and threats for the development of the Lao rubber sector.

#### **3.1 Global Investment and Market Trends**

##### *3.1.1 Global for demand for rubber*

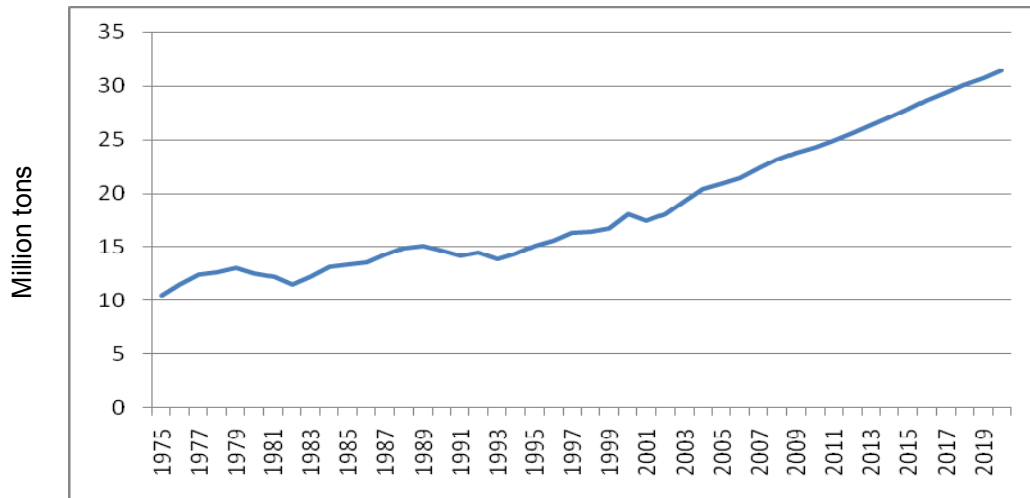
Strong global economic growth in recent years, especially in the rapidly developing economies of China and India, has increased demand for rubber significantly. The global demand for rubber (both synthetic and natural) has been consistently on the rise, increasing from 16.8 million tons in 1999 to 21.3 million tons in 2006 (Tavarolit, 2006). According to the Secretariat of the International Rubber Study Group (IRSG, 2007)<sup>2</sup>, global rubber demand will reach 22.2 million tons by 2015 and 31.5 million tons by 2020 (growing at an average rate of 3.3% per year).

---

<sup>2</sup> The IRSG is an intergovernmental organization established in 1944. As well as bringing together the world's rubber producing and consuming countries, the IRSG organizes a number of forums for discussing matters affecting rubber demand and supply. A forum was held in Singapore in June 2007 and provided detailed information on rubber production and consumption and predictions of trends until 2020.



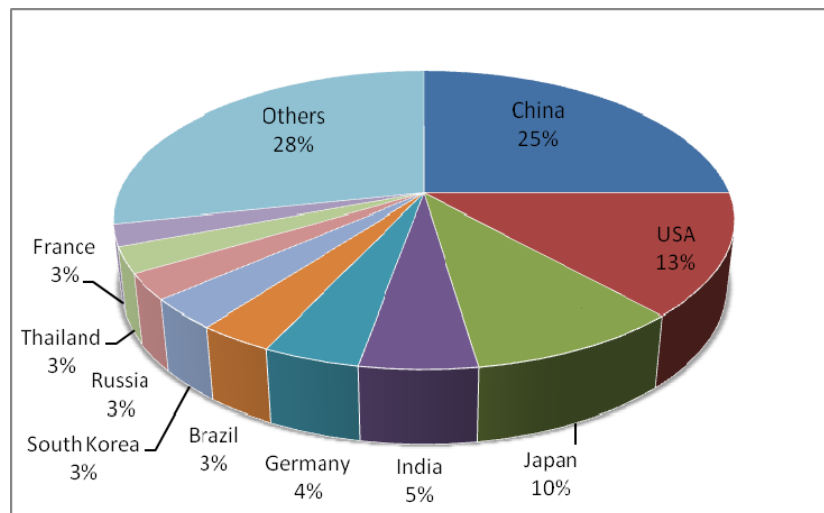
**Figure 1: Global Demand for Rubber until 2020**



Source: IRSG, 2007

China, the United States, Japan, India and Germany are the main rubber consumers, accounting for 56.8% percent of global consumption. Figure 2 below provides more details on global rubber consumption by country.

**Figure 2: Rubber Consumption by Countries, 2006**



Source: IRSG, 2007

China is the world's top rubber consumer, accounting for a quarter of global consumption in 2006. Further, it is expected that China's consumption of rubber will increase over the next decade to reach 30% by 2020, due to its higher economic growth rate and the growth of its vehicle industry (IRSG, 2007). The United States

and Japan follow, consuming 13% and 10% of global rubber supplies respectively in 2006.

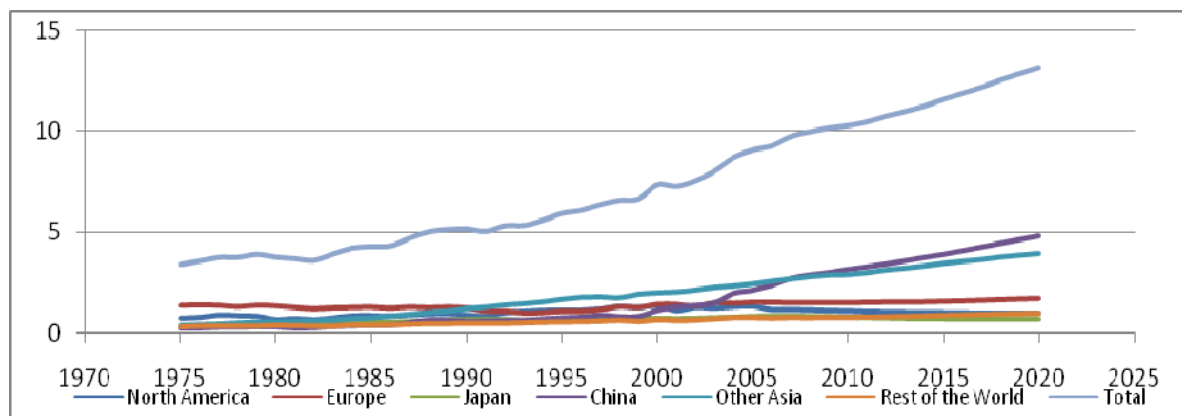
More than half (57.4%) of the world's rubber consumption is of synthetic rubber, with the remaining 42.6% of consumption supplied by natural rubber (about 9 million tons in 2006). China, Japan, South Korea and Taiwan are together the world's main consumers of natural rubber, with China alone consuming around 2.4 million tons, or 26.6% of the global total, of natural rubber in 2006 (IRSG, 2007). Most commentators expect that world demand for natural rubber will increase, citing the following factors:

- Global economic growth. The World Bank has forecast that the global economy will grow by 2.1% during the period from 2006 to 2015, which is higher than during the period 2001-2006 (Tavarolit, 2006). Global economic growth is expected to stimulate global consumption, this increasing global rubber demand. Although the price of rubber has fallen in 2008, it remains to be seen how the recent financial and economic crises will affect longer term demand for rubber.
- Increasing oil and energy prices. The increase in the price of oil is expected to raise the costs of producing synthetic rubber, making it less competitive with natural rubber. Synthetic rubber consuming countries like the United States, Germany, the United Kingdom, and France are expected to increasingly choose natural rubber (Tavarolit, 2006).
- Economic growth in China. As mentioned above, China is the world's number one consumer of natural rubber, consuming more than a quarter of global production in 2006. The country has maintained an average annual economic growth rate of about 10% over the last decade. By 2020, China is expected to consume around 30% of global rubber supplies. The country's automotive industry, for example, grows by about 20% each year. It is predicted that China will increase its vehicle fleet from the current level of 10 million to 200 million by 2020, as household incomes rise and over 20,000 kilometers of new roads are built (Douangsavanh et al, 2008).

- Global environmental concerns: natural rubber is often identified as a more environmental friendly product in comparison with synthetic rubber. Growing environmental awareness is expected to change consumer behavior, particularly in developed countries that use mainly synthetic rubber, leading to increased demand for natural rubber (Douangsavanh et al, 2008).

According to the IRSG (2007), the share of natural rubber in global consumption has gradually increased from 39% in 1999 to 43.3% in 2005, and then down to 43% in 2006. To sustain a 43% share of natural rubber, the total consumption of natural rubber is estimated to reach 13.6 million tons by 2020 (IRSG, 2007). Figure 3 below estimates global consumption of natural rubber until 2020:

**Figure 3: Estimated Demand for Natural Rubber until 2020 (in million tons)**



Source: IRSG, 2007

China is expected to be the world's top consumer of natural rubber, requiring around 4.8 million tons by 2020 (36.6% of global consumption). It is followed by the European Union (EU) and the United States, expected to consume 1.7 and 1 million tons respectively (13.1 and 7.4% of total natural rubber consumption, respectively).

### 3.1.2 Natural rubber supply

According to IRSG (2007), the Asian region is the world's most important producer of natural rubber, providing more than 97% of the global supply in 2006. The main producing countries are Thailand, Indonesia, Malaysia and China (Table 1 provides details of natural rubber production by country). Natural rubber production is expected to consistently increase from 8.7 million tons in 2005 to about 10 million tons in 2010 and further 12.6 million tons in 2020.

Indonesia is projected to be the world's foremost natural rubber producer, followed by Thailand. For example, Thailand intends to increase farmer incomes in its north-eastern and northern provinces through an additional 160,000 ha of rubber cultivation. Vietnam also plans to increase its rubber plantation area to 700,000 ha by 2020, of which smallholdings and the private sector would account for 50% of the total plantation area. Interestingly, China is predicted to produce only 0.8 million tons of natural rubber by 2020. Given the country's expected demand for 4.8 million tons by 2020, China is expanding investments in neighboring countries in Southeast Asia and will become a major importer of rubber (Douangsavanh et al, 2008).

**Table 2: Global natural rubber supply until 2020 (in million tons)**

<b>Countries</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Thailand	2.3	2.9	3.2	3.5	3.7
Indonesia	1.5	2.3	2.9	3.5	4.1
Malaysia	0.9	1.1	1.2	1	1
India	0.6	0.7	0.9	1	1.1
China	0.4	0.5	0.6	0.7	0.8
Vietnam	0.3	0.5	0.6	0.9	1
Sri Lanka	0.08	0.1	0.1	0.1	0.1
Philippines	0.06	0.08	0.1	0.1	0.2
Cambodia	0.04	0.04	0.06	0.1	0.1
Myanmar	0.03	0.05	0.08	0.1	0.1
Africa	0.04	0.04	0.05	0.05	0.07
Latin America	0.02	0.2	0.2	0.3	0.3
<b>Total</b>	<b>6.3</b>	<b>8.7</b>	<b>10</b>	<b>11.4</b>	<b>12.6</b>

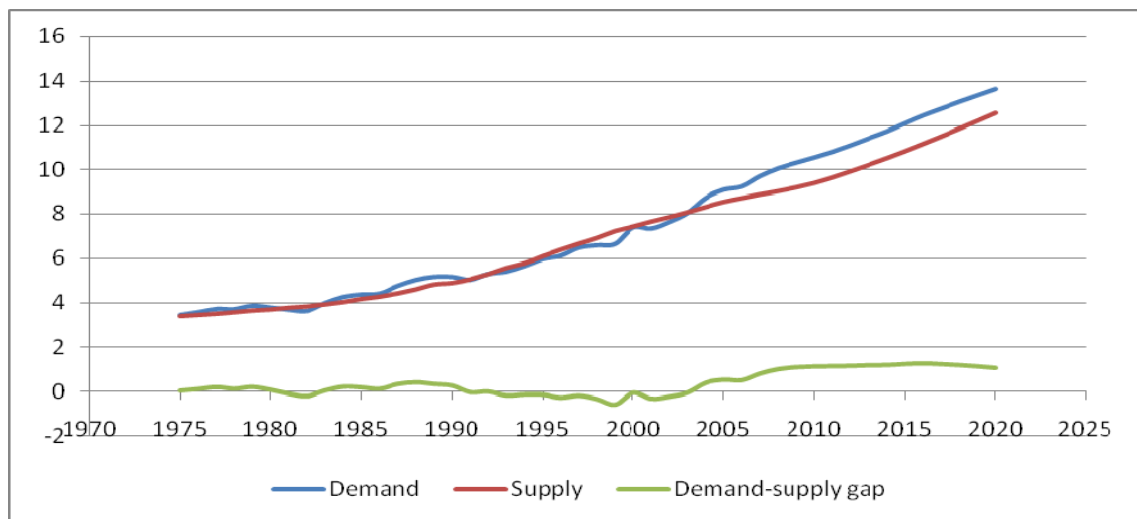
*Source: IRSG, 2007*

### *3.1.3 Demand and supply gap of natural rubber*

A significant gap between demand and supply of natural rubber has existed since 2004. IRSG (2007) estimates that this gap will grow from 0.4 million tons in 2004 to 1.1 million tons in 2010 (see Figure 4 below for more information on trends until 2020). However, these estimates exclude natural rubber production in new producer countries such as Lao PDR. Should Lao PDR achieve the expected 300,000 ha under rubber cultivation by 2020, with an average production of 1.3 tons per ha, it could potentially supply 0.4 million tons by 2020. In this case, the supply gap in 2020 would be about 0.70 million tons. The gap in demand and

supply of natural rubber will most likely be met through the substitution of synthetic rubber.

**Figure 4: Demand-Supply Gap for Natural Rubber in Global Market until 2020**



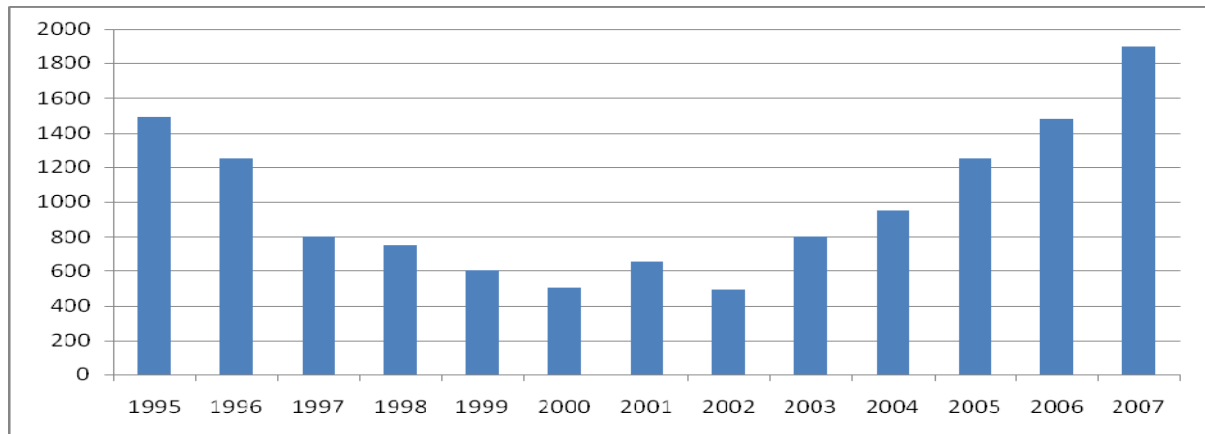
Source: IRSG, 2007

### 3.1.4 Global price trends for natural rubber

As with prices for other agricultural and industrial commodities, the price of rubber fluctuates. During the period of the Asian economic crisis from 1995 to 2000, the average market price for natural rubber decreased from US\$1,490 per ton in 1995 to about US\$490 per ton in 2002, an average annual decline of 13.3% during the period. However, with the strengthening global economy, the price for natural rubber has improved since 2002, reaching US\$1,900 per ton by 2007, representing a significant average annual growth rate of 57.7% over this five year period; 2007 saw the highest rubber prices in 12 years (see Figure 5 below).

However, the price for natural rubber declined rapidly again in the second half of 2008, when financial and economic crises in the United States, United Kingdom and Europe began to affect the global economy. In Thailand, the natural rubber price has decreased rapidly from over US\$3 per kilogram in June 2008 to US\$1 per kilogram in December 2008, a reduction of almost 70% over a six-month period (*Bangkok Post*, 11 December 2008). A similar drop in prices occurred between 1995 and 2002.

**Figure 5: Natural rubber price from 1995 to 2007**



*Source: Douangsavanh et al, 2008*

The price fluctuations shown above indicate that the price of natural rubber is volatile and is highly dependent on conditions in the global economy. The tendency for rubber prices to experience rapid and significant reductions can result in negative impacts on the livelihoods of producers dependent on rubber for export. Further, the majority of the world's rubber is produced by smallholder farmers, who are relatively vulnerable to large fluctuations in the price of natural rubber.

However, the International Rubber Consortium (IRC) sees the current drop in the rubber price as a short term phenomena. The IRC (2006) expects that the price of natural rubber will continue to increase over the coming decade due to:

- Continuing global economic growth. This would lead to increasing real GDP per capita, as well as increasing global production and consumption, particularly for the personal vehicle industry. The IRC expects that the growing demand for vehicles in Asian countries, especially in China and India, will offset declining demand in the United States and Europe.
- Continuing increase in energy and oil prices. As mentioned above, this trend makes the cost of synthetic rubber higher, leading to increasing demand and prices for natural rubber.

The IRC (2006) also notes that the expected increasing trend in the natural rubber price depends on a number of assumptions and conditions. Major natural rubber producing countries must cooperate and implement a supply management scheme, and should also attempt to stimulate domestic demand in order to increase their

bargaining power with consuming countries. Further, the IRC suggests that cooperation among producing and consuming countries should regulate the market and provide fair prices for both, in order to stabilize the market price.

### **3.2 Investment Trends in the Lao Rubber Sector**

Lao PDR is currently experiencing a rapid expansion of rubber cultivation. The growing demand for natural rubber in the global market, particularly in regional manufacturing centers such as China and India, is identified as a driving force for this expansion. As discussed above, the global demand for all types of rubber will reach approximately 31.5 million tons per year by 2020. Demand for natural rubber is expected to increase constantly from 8.7 million tons in 2005 to 11.4 million tons in 2015 and 13.6 million tons in 2020. The demand and increase in process for natural rubber strongly affects investments in the rubber plantation sector, including investments in Lao PDR. The following section will examine investments in the Lao rubber sector, including the current and predicted status of rubber plantations, relevant policies and laws, and key actors.

#### *3.2.1 Overview of rubber production in Lao PDR*

The history of rubber production in Lao PDR is relatively short, and the industry only began to expand over the last decade. According to Douangsavanh et al (2008), Lao PDR lacked any significant rubber plantations until 1995, when around 50 ha were established in Ban Chiengchaleusuk of Champassak province. Between 1994 and 1996 rubber was planted in Luang Namtha Province in the Hmong communities of Ban Hadnyao, where a total of 342 ha of smallholder plantations were established. The case of Hadnyao has been well studied. In the first tapping, villagers in the community made approximately 4 million Lao Kip on average as net household income (Fujita, 2007). This income increased in the second and third years due to increasing production and the rising latex price. The success story of Hadnyao spread quickly, and as the price of dried latex increased from 3,000 Lao Kip per kilogram to 7,000 Lao Kip in 2004, this community became a national sensation<sup>3</sup>. This not only provoked more farmers to plant rubber, but also stirred the interest of policy makers keen to achieve the multiple goals of stabilizing

---

<sup>3</sup> Commentators note that the relative success of rubber in Ban Hadnyao took time and may be due to particular circumstances, such as the institutional support provided by its farmer associations.

shifting cultivation, eradicating opium production in upland areas and alleviating rural poverty.

Until recently, the GoL has not developed any clear position at the national level on the promotion of rubber. This is due to a number of reasons, including concerns about social and environmental impacts. However, the provinces of Lao PDR have been quicker to embrace rubber, particularly Luang Namtha in the north of the country. At the Fifth Party Congress of Luang Namtha Province, rubber plantations were presented as a way to eliminate “slash and burn” cultivation, to replace opium cultivation and to reduce poverty. The province established a number of policies and programmes to promote rubber development, which are discussed in greater detail in section 3.3 below. About 8,770 ha of rubber have already been planted in Luang Namtha Province, with plans to expand its production area to 20,000 ha by 2010<sup>4</sup> (Douangsavanh et al, 2008).

However, due to a lack of effective monitoring, up-to-date statistics on rubber plantations in Lao PDR are not available. According to 2006 estimates, over 28,000 ha of rubber has already been planted in 15 provinces of Lao PDR, and this figure is expected to increase rapidly over the next few years (Douangsavanh et al, 2008; see Table 2 below).

**Table 2: Current and projected areas of rubber, 2006 and 2010**

<b>Province</b>	<b>Current planted area (ha)</b>	<b>Predicted planted area by 2010 (ha)</b>
Phongsaly	13	14,000
Luang Namtha	8,770	20,000
Bokeo	701	15,000
Oudomxay	4,530	20,000
Xayabury	66	50,000
Luang Prabang	2,467	20,000
Vientiane Province	100	10,000
Vientiane Capital	474	-
Borikhamxay	1,026	-
Khammuane	1,447	-
Savannakhet	243	-
Saravan	1,418	19,840
Champassak	6,719	13,000
Sekong	100	10,000
Attapeu	500	10,000
<b>Total</b>	<b>28,574</b>	<b>183,840</b>

*Source: Douangsavanh et al (2008)*

<sup>4</sup> Plans for expansion are presumably on hold, given the November 2008 announcement that Luang Namtha is suspending further rubber development until the economic, social and environmental impacts are made clearer (*Vientiane Times*, 11 November 2008).



As shown in Table 2, Lao PDR's rubber plantation area is expected to increase dramatically to 183,840 ha by 2010. By 2020, this expected to increase again to at least 300,000 ha. Luang Namtha and Champassak provinces had a head-start, beginning to plant rubber in the 1990s. In 2006, these two provinces had around 8,770 ha and 6,719 ha, respectively. However, these figures are rapidly being rendered out-of-date. According to findings from our field survey, over 21,000 ha of rubber have already been planted in Luang Namtha, and one group of Vietnamese companies has already planted about 43,000 ha in southern Lao PDR. According to a draft development plan for northern Lao PDR (NLIEDCPPG, 2008) prepared by a team of Chinese and Lao experts and officials, around 200,000 ha will be planted in the nine northern provinces alone. This leads us to speculate that, if current trends continue, rubber plantations in Lao PDR will exceed 300,000 ha by 2020.

Currently, production of latex is limited to about 732 ha of mature rubber trees in Luang Namtha, Champassak, Borikhamxay and Khammuane provinces and Vientiane Municipality, which have started tapping. According to a study conducted by NAFRI, the average productivity of rubber in Lao PDR is about 1.36 tons per ha, which is relatively low in comparison with Thailand (1.54 tons per ha) (Douangsavanh et al, 2008). Based on these figures, Lao PDR could be expected to export more than 0.4 million tons of rubber in 2020 to the major markets of China, Japan, Germany and the United States, mediated by Chinese and Vietnamese companies. Market linkages will be further explored in the following sections.

### *3.2.2 Rubber production models*

The prevalent models for cultivating rubber in Lao PDR are outlined below, although these are not always strictly implemented and can occur in a variety of combinations<sup>5</sup>. These are:

- Smallholder rubber production. Individual farmers use their own capital to grow rubber as an enterprise in their farming systems. They are responsible for all of activities associated with the selection of varieties, the production of

---

<sup>5</sup> The investment models, and fluidity between them, as used by Chinese and Vietnamese companies on the ground in the north and south of Lao PDR are also discussed in greater detail in sections 4 and 5 of this report.

seedlings, grafting, selecting areas to plant, land preparation, planting and maintenance, tapping latex, drying and sale of the latex to intermediaries. This smallholder production model is prevalent in northern Lao PDR, and accounts for approximately 80% of the total rubber production area in Luang Namtha Province (Shi, 2008). In the case of Luang Namtha, the majority of farmers receive information and technology transfer through informal channels, such as friends or relatives, particularly from contacts living across the border in China.

- Farmer associations. This model is not very common in Lao PDR, but can be found in some villages in Luang Namtha, such as in Ban Hadnyao. The farmers are organized in groups, land is allocated to individual farmers who are members of the association, and labour is shared. Each farmer signs an agreement with the association, which if ignored, means that their area of trees is handed over to other farmers for cultivation. The most important feature is collective price fixing, where the association decides who its farmers sell to and at what price (Douangsavanh et al, 2008).
- Contract farming models. Contract farming provides a way for investors to access land and labour without issuing concessions. The “2+3” model is the most heavily promoted rubber farming approach in Lao PDR, where the investor supplies capital, technology and a secure market, while the farmer provides land and labour. In this model, the investment companies reach an agreement/contract directly with individual farmers or with farmer associations, who are required to plant rubber under the supervision of specialists provided by the companies. When the trees begin to produce latex, yields are in theory shared at a ratio generally of 70% for the farmer and 30% for the company. In practice, in current agreements most farmers receive less than 70% of the profits. Contract farming provides greater ownership and security for farmers, hence its promotion by the GoL. However, studies in Luang Namtha and other provinces have shown that the model is not always successful or stable, and is often converted into a “1+4” approach. This approach gives companies more control over production as well as a higher share of the profits<sup>6</sup>.

---

<sup>6</sup> Please see section 4 of this report on China’s role in the Lao rubber sector for a more detailed discussion of the varied contract farming models applied in Lao PDR.

- Land concession model. In this production model, the investment company has a relatively high level of autonomy in managing the cultivation and production of rubber. The company is allocated land, and hires labour to help establish, operate and harvest from the plantation. It is fully responsible for capital, techniques, planting material, sourcing labour and marketing its products. Villagers lose access to land during the period of the concession and are instead hired as wage laborers. This production model is prevalent in southern Lao PDR, although further handing out of concessions is technically suspended.

While Chinese companies operate mainly in the northern part of the country, Vietnamese investors dominate in southern Lao PDR. In general, there is also a clear difference in investment models between the north and the south. Smallholder production by individual farmers, farmer associations and the “2+3” model dominates in the north, while the larger, more industrialized concession model is prevalent in the south.

### **3.3 Policies, Laws and Regulations**

Increasing demand for natural rubber has driven the expansion of investments in the rubber plantation sector globally. For Lao PDR, a country with relatively abundant land resources, this represents a significant opportunity to attract foreign investment, and to contribute to the reduction of poverty and improvement of living standards. On the other hand, the rapid development of rubber plantations also leads to concerns regarding social and environmental impacts, particularly those related to watershed protection, cultural change and livelihood security in rural areas.

The GoL has not instituted specific national level policies or programmes for the promotion of rubber. However, plantations are identified as a sub-set of agricultural production, and the GoL aims to promote sustainable development in this sector. The key policies and laws relevant to both the regulation and promotion of investment and the protection of the environment in the plantation sector are:

- *The Investment Promotion Law (2001)*. This law identifies rubber plantations as a sub-set of agricultural production. Plantations are widely promoted

utilizing numerous incentive measures, such as reduced income and business taxes and a longer tax holiday in comparison with investments in other sectors. Investment in the Lao agricultural sector is open to all domestic and foreign investors, and investors are able to lease land for longer time periods and at a cheaper price. The export of agricultural products is tax-free, while the import of agricultural machinery and equipment is subject to a low tax rate. The *Investment Promotion Law* also targets investment in rural and mountainous areas where infrastructure is underdeveloped, offering lower tax rates and an even longer tax holiday. In “Zone 1”, plantation investors receive a profit tax exemption for up to seven years after harvesting begins, and a reduced rate thereafter. In the case of rubber plantations, where rubber harvesting generally begins seven or eight years after planting, the profit tax exemption can therefore last up to 14 or 15 years.

- *Taxation policies.* Lao PDR’s taxation policies encourage agriculture production, including rubber plantation, by reducing and abolishing tax in for exporting and importing agriculture products and equipment. The import of agriculture production equipment is subject to a tax of only 1% tax of the total value of the equipment. The export of agriculture products is tax-free.
- *Land policies and laws.* Article 3 of the *Land Law* (2003) defines land as national property in accordance with the Constitution. This empowers the state (i.e. the National Land Management Authority, NLMA) to manage land and to allow individuals, households and organizations to utilize land. Article 7 prohibits the arbitrary occupation of land: those who want to use land have to ask for permission from the NLMA. According to the *Land Law*, concessions equal to or less than 3 ha can be processed at the district level, those equal to or less that 100 ha at the provincial level, and those equal to or less than 10,000 ha can be processed at the central level. Concessions exceeding 10,000 ha require approval from the National Assembly. Individuals or organizations are able to lease land for a maximum of 30 years (this is renewable). The law is favorable for investments in plantations such as rubber and provides access to land for all foreign and domestic investors.

- *The Environmental Protection Law (1999)*. This law requires an environmental impact assessment to be carried out for any investment project, including rubber plantations. The Law empowers the Water Resources and Environment Administration (WREA) to conduct EIAs, to issue environmental certificates, and to monitor and evaluate the environmental effects of any investment project. WREA is also able to suggest to other agencies concerned measures to mitigate impacts or even to halt investment projects temporarily or permanently, should the project have significant negative effects on environment and human health. This is in accordance with the *Investment Promotion Law*.
- *The Forestry Law (1996, 2007)*. The Lao PDR *Forestry Law* strongly prohibits the clearing of “primary forest” and “secondary forest” for agricultural production, especially for large-scale production. According to the Law, large scale plantations are only allowed on “degraded forest areas” and on “non-forest areas”. The Water and Water Resource Management Law (1996) also prohibits clearing watershed areas for plantation purposes (Articles 14 and 31). The Law was revised in 2007.
- *The Agriculture Law (1998)*. This law requires that plantation projects are only allocated “degraded” and “non-forest” areas. In addition, the Law promotes the use of environmentally friendly techniques and technologies, including bio-fertilizers and bio-insecticides (Article 12). The Law limits and prohibits the use of chemical fertilizers and insecticides that have negative impacts on the environment including soil quality, water quality, biodiversity and human health. The *Management of Fertilizers Regulation (1503/MAF 2000)* and the *Regulation on the Use of Insecticides (1578/MAF 2000)* also prohibit the use of products which have significant negative impacts on the environment and human health. They determine quality standards and list chemical fertilizers and insecticides which are allowed to be produced, imported and used within the country (please see Annex 5 for lists of allowed and prohibited chemical fertilizers and insecticides).

Although Lao PDR lacks specific promotion policies in the rubber sector, there is evidence that incentives are being provided at the provincial level. For example, in the case of Luang Namtha, the provincial authority saw an opportunity in the

“rubber boom” to reduce poverty and stabilize shifting cultivation (Shi, 2008). In the early days of the boom, the Luang Namtha authorities provided technical assistance and allocated specific funding to provide low interest credit<sup>7</sup> of 1-3 million Lao Kip in total, in order to assist household to purchase seedlings and other supplies, such as barbed wire for fencing (Douangsavanh et al, 2008). In December 2003, the Luang Namtha government made the first attempt at engineering and regulating investments in rubber on broad scale, enacting *Regulation No. 34 on General Model of Investment in Rubber Plantation Sector*. According to this regulation, investors may invest in the sector through either concessions or contract farming. Luang Namtha has since strongly promoted the “2+3” contract farming model, and since October 2005 the three northern provinces of Luang Namtha, Bokeo and Oudomxay have stopped issuing land concessions (Shi, 2008).

The attitude of the provinces towards the planning and regulation of rubber continues to shift. More recently, Luang Namtha enacted *Regulation No. 7 on Land Allocation*, which provides that households without paddy will be allocated 1 ha of land and given rubber seedlings by the provincial government. However, this regulation has yet to be implemented, and will be farther complicated by an even more recent decree by the Luang Namtha government calling for a suspension of all rubber plantations (*Vientiane Times*, 11 November 2008).

### **3.4 Key Actors in the Lao Rubber Sector**

There are many stakeholders involved in the development of rubber plantations in Lao PDR, including government agencies, domestic and international companies, and individual farmers and traders.

#### *3.4.1 Government and public agencies*

The Lao government agencies at the national and provincial level involved in policy-making making and regulation of the rubber sector are:

- The Ministry of Planning and Investment (MPI). MPI is a key government institution in the development of rubber in Lao PDR at both the national and

---

<sup>7</sup> Loans at the fixed rate of 2% p.a. for 15 years; from 1995 onwards, the fund was administered by the Agriculture Promotion Bank (APB) at the fix interest rate of 7% for 15 years.

provincial levels. The Ministry is the lead agency for the promotion of investment and is responsible for coordinating the investment approval process. After an investment proposal has been submitted to MPI, the Ministry will distribute it to all concerned agencies. MPI organizes monthly meetings to discuss investment projects, where other relevant government agencies can make comments (the investment approvals process is discussed in greater detail in section 3.5 below and in Annexes 6 and 7). The Ministry has some responsibility for planning investments in the plantation and other sectors. Since 2004, for example, MPI has been drafting a socio-economic development plan for northern Lao PDR, in cooperation with Chinese experts and with financial support from the Government of China<sup>8</sup>. MPI also has budget allocation functions (along with the Ministry of Finance, MOF). While MOF determines the overall budget amount, MPI allocates it to certain projects and activities. Up until now, however, there is no MPI financial package to support rubber development, and capital for rubber has been sourced from foreign direct investment (FDI) and domestic capital.

- The Ministry of Agriculture and Forestry (MAF). MAF plays an important role in guiding the development of the Lao rubber sector: it is the main GoL agency responsible for the management of natural resources, including agricultural land allocation and management, forestry and forest conservation, and protected areas. MAF participates actively in processing and approving plantation projects in cooperation with MPI and other agencies. MAF is the main agency responsible for the sustainable development and management of the plantation sector, and is mandated draft and implement relevant policies, laws and regulations related to agriculture and forestry. MAF also issues one-year (renewable) agribusiness certificates, which allow companies to invest in the Lao agricultural sector. These are an important regulatory tool, allowing MAF to ensure that companies abide by relevant laws and regulations. As with other ministries, each province and district has an agriculture and forestry office (PAFO and

---

<sup>8</sup> The draft plan is currently awaiting approval from the National Assembly. The plan includes rubber plantations as a key instrument in promoting economic growth and poverty reduction in northern Lao PDR and aims to plant 200,000 ha (NLIEDCPPG, 2008). Approval of this plan will result in the more systematic promotion of rubber development in the north of Lao PDR.

DAFO)<sup>9</sup>. MAF is mandated to allocate forest and agricultural land but, due to limited technical capacity and financial support, land allocation has been slow to move forward<sup>10</sup>. With the exception of the twenty National Protection Areas (covering a total area of 5.4 million ha), MAF is not yet able to allocate, manage and protect the numerous forest areas which should be protected in accordance with the *Forestry Law*. This contributes to the difficulties and risks involved in approving plantation projects: projects may still be approved in areas of high forest value. In addition, MAF provides technical assistance to farmers and agricultural companies. NAFRI, for example, produces technical guidelines for distribution to all provinces, and has organized technical workshops on rubber cultivation in several provinces. However, the distribution of technical information related to rubber cultivation and production is still insufficient, with indications that the majority of farmers receive technical information primarily through informal channels and companies.

- The Water Resources and Environment Agency (WREA). WREA has the same status as a ministry and is attached to the Prime Minister's Office. WREA also maintains a "coordination network" at the provincial level and in key ministries such as MAF, MIC and the Ministry of Public Works. WREA is not involved in investment promotion, but has a mandate to ensure environmental protection and sustainable development. It is responsible for conducting, approving and monitoring environmental impact assessments (EIAs) and issuing environmental certificates. WREA plays an important part in the investment approval process as, according to Lao law, each investment project must pass an EIA process and obtain an environmental certificate. However, according to a study conducted by the National Economic Research Institute (NERI) in 2007, the capacity of WREA still needs to be improved. Only a few staff are engaged in the EIA process and they lack qualifications and experience in this field. This lack of capacity is

---

<sup>9</sup> While MAF is responsible for large-scale plantation projects in cooperation with other relevant agencies at the national level, the local level offices are responsible for smaller projects having investment capital of less than US\$3 million and production areas of less than 100 ha.

<sup>10</sup> GoL has been attempting to finalize land allocation for a number of years, but due to limited financial and human resources, this task is not yet complete. NLMA has been mandated with the development of a Master Plan for land allocation and use, a draft of which was submitted to the National Assembly for consideration in late 2008 (according to discussions with an NLMA representative).



even more pronounced at the provincial level, where in some cases, there is only one officer responsible for EIAs.

- The Ministry of Industry and Commerce (MIC). MIC is responsible for facilitating trade and the movement of commodities, which is relevant to rubber production. In 2004, the Ministry enacted *Instruction 962 on Implementing Decree 37/PM on the Establishment of One-Stop Service at Border Points*. All trade-related agencies are obliged to set up offices at border gates, in order to facilitate trade. At the same time, export and import licenses were abolished. However, rubber is not included on the list of products exempt from tax. The export of rubber to China, for example, is still subject to a 2% export tax<sup>11</sup>. Another function of MIC is regulating the market and providing market information to both producers and consumers. However, based on our discussions with the Ministry and its provincial departments in Luang Namtha and Champassak, the Ministry has not provided any information related to the rubber market to date.
- The National Land Manage Authority (NLMA). The NLMA was established in 2006, and has the same status as a ministry although is it directly attached to the Prime Minister's Office. The Authority is mandated to draft laws and regulations on land management, and in cooperation with other relevant agencies to investigate, register and develop land use management plans and strategies. The NLMA also cooperates with other agencies to consider and issue land-use certificates, and is obligated to monitor, control and evaluate land-use within the country. The NLMA has a network of offices at the provincial and district level but, due to its recent establishment, it still lacks human and technical resources. Therefore, other relevant agencies (such as MAF) still take the lead in land allocation and concessions.
- The Agricultural Promotion Bank. The APB was established in 1993 as a state-owned policy bank and has since been considered as Lao PDR's "development bank", focusing on the agricultural sector. The APB is the main actor in rural finance, accounting for 50% of total lending. The bank

---

<sup>11</sup> According to the Provincial Department for Commerce and Industry, Luang Namtha Province. However, the Lao-China border agreement allows residents within a 20 km radius from the border to engage in tax-free trade for up to 3,000 yuan per trade.

operates country wide, and around 120,000 households (or about 15% of the Lao population) have access to the bank. Among these, 40,000 have access to its microfinance initiative. APB loans have a subsidized interest rate of 12% per year for maximum of a three year term. In the 1990s, the APB managed funds issued by the Luang Namtha Government for low-interest loans for rubber development, but presently the bank has no specific funds or policies for rubber. Discussions with the bank in Vientiane Capital and in Luang Namtha and Champassak provinces showed that the APB is not considering any specific lending policy for rubber. It sees rubber plantations as a high risk investment, due to the long wait for maturity and the uncertainty surrounding rubber prices

### *3.4.2 Investors in the Lao rubber sector*

There are numerous investor groups involved in the development of rubber plantations in Lao PDR. This section will discuss investors according to two main groups: domestic investors, including smallholder producers and domestic companies; and international investors, including Chinese and Vietnamese companies.

#### *3.4.2.1 Domestic investors*

Smallholder rubber producers: Smallholder rubber producers are understood as households planting rubber without being registered as an organization or company. Most of the households involved in rubber cultivation in Lao PDR have been introduced to rubber and received market and technical information through informal channels. These include relatives, friends or traders who live across the border (in China). They use their own investment capital and are responsible fully for their production, such as selecting and preparing land, grafting, managing, tapping, marketing, and so on. According to our field research in Luang Namtha and Champassak, most independent farmers use their own household labour for rubber cultivation and production. However, some households with larger plantation areas also make use of their relatives from other province such as Xiengkhuang and Huaphan. Independent smallholder farmers are a very significant portion of the agricultural and rubber sectors in the North. According to Shi (2008), they account for around 80% of the total rubber plantation areas in Luang Namtha Province.

Discussions with six households planting rubber in Luang Namtha and Champassak highlighted that this group lacks a clear market perspective, strategy or access to related information. They believe that rubber planting companies and traders will buy their latex for export to neighboring countries (i.e. China and Vietnam).

Upland areas for cultivation were relatively easy to obtain at the beginning of the “rubber boom” in Lao PDR. At this time, the *Land Law* was not strongly implemented in the countryside, and traditional land allocation processes were dominant in most areas. In this case, land belonged to the community; and individuals were allowed to occupy the land and to use for their own needs. Traditional land regulations thus provided the conditions for independent farmers to occupy upland areas for planting rubber at the beginning of the “rubber boom”. Most of the households planted rubber on their upland rice fields after harvest.

According to a study conducted by NAFRI in Oudomxay and Luang Prabang, households plant on average 1.6 ha of plantation. This average plantation area is relatively large compared with those in Xishuangbanna, in China’s Yunnan Province, where household plant about 0.1-0.5 ha of rubber (Fujita, 2007). However, the Lao average is relatively small in comparison with other Asian countries such as Thailand and Malaysia, where smallholder rubber producers own on average 2 to 5 ha per household (Fujita, 2007)).

Domestic companies: Domestic investment companies are actors in rubber production in Lao PDR, but there is a lack of reliable information regarding the number of companies involved or the size of their plantation area. According to our findings from research in Luang Namtha and Champassak, Lao domestic companies generally invest in rubber plantations through both concessions and contract farming models, and most of the companies involved are agricultural import-export companies that are able to see the market demand for rubber. The most important of these companies are DAFI, Siphansalika and Xaysana.

Two domestic investment companies were interviewed during field research: Lao Export-Import Development Company and Xaysana Company. The Lao Export-Import Company was established in the 1990s and mainly exports agricultural

products to Vietnam and China. Through its previous experiences, the company identified a demand for rubber in both these countries, especially in China. In 1994, the company undertook an experiment by promoting rubber to villagers in Namdieng Village, Luang Namtha Province, resulting in about 10 ha planted. Since 2001, the company has been exporting rubber to China. Lao Export-Import Development Company utilizes different contract farming models, including 2+3, 2+2 and 1+4, depending on conditions in different villages. At present, the company has 748 ha in Luang Namtha and plans to expand its production area.

The other domestic company interviewed was Xaysana Company, a private company operating in Champassak Province and utilizing its own capital. The company is involved in many business activities, including construction and exporting agricultural products to Vietnam and Thailand. Since 2006, Xaysana has invested in rubber plantations on a concession model. The company currently has a 60 ha concession issued by the Champassak provincial authorities and employs around 10 laborers. Xaysana plans to expand its production area to 100 ha by 2015. It aims to sell its latex to large rubber companies operating in the same area, as well as exporting it to Vietnam and Thailand by itself.

In general, Lao domestic investors have no direct market linkages with rubber consuming industries, such as the vehicle industry. The investors mainly rely on large international companies operating in similar locations for exporting their latex. So far, Lao domestic investors see international companies which have direct linkages rubber consuming industry as their market.

#### *3.4.2.2 International investors*

There are two main groups of international investors in the Lao rubber sector: Chinese and Vietnamese investors. The operations, resources and priorities will be discussed in much greater detail in sections 4 and 5 of this report.

##### Chinese companies

Chinese companies dominate investments in the rubber plantations of northern Lao PDR. However, there are no reliable figures for exactly how many Chinese rubber companies operate in Lao PDR. According to the Luang Namtha PAFO, around 15

Chinese rubber companies have established offices in the province, although they operate in many provinces in the north. The majority of these companies are private companies with support from the Chinese Government through opium replacement subsidies. Almost all are headquartered in Xishuangbanna but have expanded operations into Lao PDR because of limited land resources at home, strong Chinese demand for rubber and access to subsidies. Although the companies use different modes of operation, large companies prefer concessions. The rubber produced is destined for China's automotive industry.

During our field research in Luang Namtha, we interviewed several Chinese companies active in the province: Yunnan Rubber Company Limited; Sino-Lao Rubber; and Chia Xuang. Yunnan Rubber Co. Ltd. is based in Kunming, Yunnan Province and is one of the biggest suppliers of rubber to China's vehicle manufacturers. With support from the Chinese Government, the company expanded its operations to Lao PDR in 2002. It now operates mainly through concessions in four northern provinces: Luang Namtha, Oudomxay, Bokeo and Luang Prabang. It also has sub-contracts in place with numerous smaller Chinese companies in these areas.

Sino-Lao Rubber is a large Chinese company with investments in the same four northern Lao provinces. It also started investing in Lao PDR in 2002 with support through the Chinese Poppy Replacement Special Fund (PRSF). The company has concessions for: 10,000 ha in Luang Namtha (as well as an office and a processing facility); 5,000 ha in Oudomxay; and about 7,000 ha in Luang Prabang<sup>12</sup>. The company plans to process latex in Luang Namtha for export to China.

Chia Xuang is a private company with support from the Chinese Government, active in Lao PDR since 2005. It operates mainly in Luang Namtha Province through 2+3 contract farming. The company currently has contracts with more than 1,000 households in Nalea District, Luang Namtha. Its plantations cover 2,000 ha including a 20 ha garden for growing seedlings and demonstrating techniques. Chia Xuang has also taken more than 200 Lao villagers on trips to Xishuangbanna to learn from rubber farmers there.

---

<sup>12</sup> The Luang Prabang operation is a joint venture with Tong Ly Company.

## Vietnamese companies

According to the Champassak PAFO, there are more than 10 Vietnamese rubber companies established in the province, as well as operating in many other provinces in southern Lao PDR. Most Vietnamese companies involved in the Lao rubber sector are state-owned enterprises (SOEs) and members of the Vietnam Rubber Association (VRA). They export rubber to many countries, including Japan, China, Germany, France and the United States. Due to increasing demand for natural rubber and limited land in Vietnam, VRA promotes the expansion of production areas into neighboring countries, especially Lao PDR and Cambodia. According to Mr. Le Chi, Director General of Xu Yao Chieng Company, VRA plans to grow rubber on 100,000 ha in Lao PDR and 100,000 ha in Cambodia. The Association has signed an agreement to this end with the GoL, and many VRA members have already started to invest in rubber. At present, the total plantation area of Vietnamese companies is estimated to be over 43,000 ha, mainly in the five southern provinces of Champassak, Saravan, Attapeu, Sekong and Savannakhet.

During the field survey, we interviewed three Vietnamese companies: Viet-Lao Rubber Joint Stock Company; Viet-Lao Joint Venture Xu Yao Chieng; and Dak Lak Rubber Company. The Viet-Lao Rubber Joint Stock Company is actually a joint stock company founded by seven rubber companies<sup>13</sup>. The group has established its Lao headquarters in Phonesavene Village, Pakse District, Champassak Province, and operates in four southern provinces. The company has been issued a 20,000 ha concession for 30 years. Up to now, it has invested over US\$32 million and has already planted around 9,700 ha, on which more than 1,700 people are employed (150 from Vietnam). Most employees are daily wage laborers.

Viet-Lao Xu Yao Chieng is a branch of Xu Yao Chieng Company, a Vietnamese SOE headquartered in Binh Duong, Vietnam. The company is a member of VRA, which has direct links to Toyota in Japan. In Lao PDR, Viet-Lao Xu Yao Chieng cooperates with another two Vietnamese companies, Bin Chieng Import-Export Company and Dao Tieng Viet Lao Company. The company's Lao offices are based in Bachieng district, Champassak, and it operates in five southern provinces. It has

---

<sup>13</sup> These are: Vietnam Rubber Group; Dau Tieng; Binh Long; Tay Ninh; Ba Ria; Phu Rieng; and Vung Tau Rubber Company.

already planted over 3,000 ha and plans to expand production to 10,000 ha by 2010 and to 20,000 ha by 2020, mainly by concession.

Dak Lak Rubber Company is another SOE, and has been involved in rubber processing and export for many years. The company currently owns about 15,000 ha and a rubber processing plant in Vietnam and has a rubber processing factory in Vietnam. The plant has a capacity of 10,000 tons of rubber a year. Since 2003, the company has been expanding into southern Lao PDR. It has planted about 8,737 ha in Saravan, Champassak, Sekong and Attapeu provinces, mainly through concessions. Further, the company is considering establishing a processing facility in southern Lao PDR for initial processing before export to Vietnam and then to Japan and other countries.

### **3.5 Investment approval process in Lao PDR**

This section will outline the processes that investors must undergo to obtain approval for projects in Lao PDR. Sections 4 and 5 of this report also contain information regarding approvals processes from the perspective of Chinese and Vietnamese investors respectively.

The approval process for investments in Lao PDR is divided into two different phases: the investigation or exploration phase, and the investment phase. In the first phase, the company signs an investigation or exploration contract with government. The company is allowed to investigate and to formulate a concrete investment project proposal for submission to MPI. After receiving the investment proposal, MPI distributes it to relevant government agencies and organizes an inter-agency meeting. Concerning agencies are invited to the meeting to provide comments on the investment proposal. MPI records and summarizes the discussion, and then submits both the proposal and summary to the appropriate level for further consideration. If approved, the company signs an investment agreement with the government and can officially start the investment project.

The investment approval process for agricultural and plantation projects is undertaken at three different levels (district, provincial and central), depending on the size of the investment capital and its production area. Projects with a production area of equal to or less than 3 ha can be processed at the district level.

Projects with an area equal to or less than 100 ha and investment capital of equal to or less than US\$3 million must be processed at the provincial level. However, the authorities of bigger provinces such as Vientiane, Savannakhet and Champassak are allowed to consider and approve larger scale investments (those with a production area of equal to or less than 100 ha and investment capital of equal to or less than US\$5 million). Projects exceeding 100 ha and US\$3 million in the smaller provinces, or exceeding US\$5 million in the bigger provinces, have to be processed at the central level. The approval of “mega investment projects” (exceeding 10,000 ha) must be obtained from the National Assembly. Please see Annex 6 for more information on the plantation approval process.

### *3.5.1 Environmental and social impact assessment*

The GoL attempts to balance economic, social and environmental development, and the Investment *Promotion Law* of Lao PDR states that projects with serious negative social and environmental effects should not be approved. All investment projects are required to carry out an environmental impact assessment (EIA) and to obtain an environmental certificate; investment projects without this certificate are legally not allowed to be implemented. According to Lao law, plantation projects that involve the clearing of primary or secondary forest or development in a watershed area are prohibited, as are those using chemical materials with highly negative effects on the environment and human health. EIAs are processed at either the central or provincial level, depending on the size of the investment. WREA is responsible for EIAs for projects exceeding 100 ha, while provincial offices for water and environment are responsible for small scale investment projects (equal to or less than 100 ha).

There are five different types of environmental certificates in Lao PDR:

- Environmental impact study exception certificate
- Initial Environmental Examination (IEE)-certificate without conditions
- IEE-certificate with conditions
- EIA-certificate without conditions
- EIA-certificate with conditions



To obtain any one of these certificates, the investor is required to submit an initial project description to WREA which includes preliminary information about the scope of the project, its anticipated positive and negative environmental and social impacts, and mitigation measures WREA then circulates the project description to relevant government agencies at the central and local level, including the DPRA (development project responsible agency). Once the project description is submitted, the investor is required to invite representatives from the relevant line agencies to a consultation meeting. The purpose of the meeting is to provide a forum for government agencies to review the project and to set up a project review team for completing the environmental screening requirements. Screening determines whether the project needs an environmental impact assessment or not. The screening team must complete this analysis and submit a report to WREA in writing within 30 days.

Based on the report from the project screening team, WREA then decides whether further information on the environmental impacts of the project is required. At this point WREA will either issue an environmental impact study exception certificate or ask for an IEE report (Annex 7 provides an outline of the information required in this report). After the IEE is completed, WREA circulates it to the DPRA, and the project owner is required to convene another consultation meeting, including the participation of civil society actors. Based on the IEE and the meeting, the DPRA will complete an “IEE-record of decision” and then WREA must decide whether a certificate can be issued or whether an EIA is required. If WREA finds that the project does not have significant negative social and environmental impacts and has an adequate environmental management plan (EMP), it will issue an IEE-certificate (with conditions or without conditions as deemed necessary)<sup>14</sup>.

If WREA finds that the project may have significant negative impacts or does not have an adequate EMP, it will require the project owner to conduct an EIA (including an EMP). The investor must submit the EIA directly to WREA and to organize another consultation meeting. Relevant government agencies, organizations and individuals are invited to Should the EIA be rejected after this process, the project must be halted. If approved, the investor must also prepare a

---

<sup>14</sup> The conditions in IEE and EIA certificate are obligations for project owners during project implementation. If the conditions are violated, WREA can deprive the company of its certificate and halt the project.

detailed engineering design and EMP and submit it to WREA again. If these are considered adequate, WREA will give the project owner an EIA-certificate (without or with conditions).

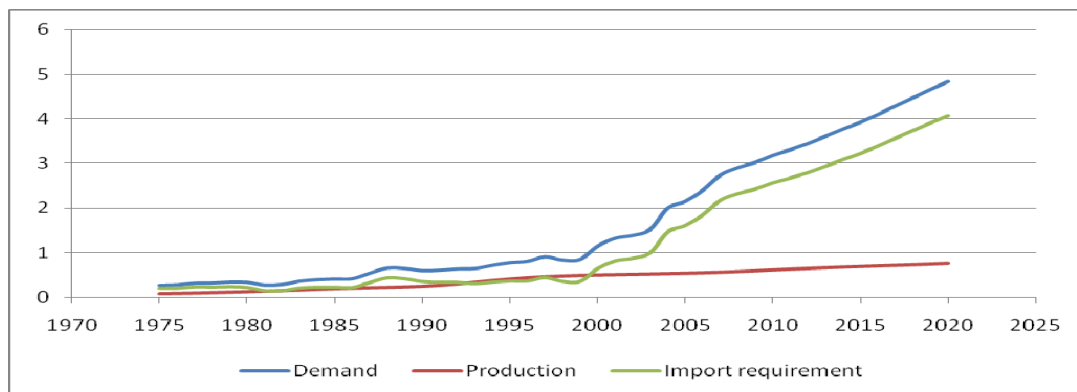
Research in Luang Namtha and Champassak provinces for this study has shown that many investment projects in the rubber sector, especially small-scale projects that are normally processed at the provincial or district levels, do not have any environmental certificate. The environmental problems that have resulted from certain plantation developments reflect the ineffective implementation of environmental protection regulations and laws.

### **3.6 Market Linkages**

Lao PDR's rubber sector is closely linked to rubber production centers in neighboring countries, particularly in China and Vietnam. As discussed above, demand for natural rubber is expected to increase, with a projected demand-supply gap of between 1 and 1.3 million tons per year from 2010 to 2020. China, Japan, Europe and the United States are the main sources of this demand, and together consumed over 64% of global natural rubber supplies in 2006 (IRSG, 2007). The information available indicates that the market for natural rubber is relatively safe for producing countries like Lao PDR.

As discussed above, China is the world number one rubber consumer. According to IRSG (2007), China's demand for natural rubber is expected to increase constantly and rapidly during coming decade, and is predicted to reach 4.8 million tons by 2020. China has a limited capacity to increase its domestic rubber production due to a number of reasons, land scarcity in particular. IRSG predicts that China could increase its production capacity to 0.8 million tons annually at the most by 2020, meaning that it would need to import around 4 million tons of natural rubber. Figure 6 shows previous and predicted production, demand and import levels for natural rubber in China until 2020.

**Figure 6: Demand, production and import of natural rubber in China until 2020 (million tons)**



Source: IRSG, 2007

Demand for imported natural rubber in China represents a significant opportunity for producer countries such as Lao PDR, particularly for border regions in the north of the country that already benefit from proximity, historical ties and cultural similarities. China is Lao PDR's third most important trade partner, after Thailand and Vietnam. According to the MCI (2006, unpublished data), the trade volume between Lao and China has been continuously increasing from US\$25.8 million in 2000 to US\$43.9 million in 2003, and further to US\$64 million in 2005. This corresponds to average growth rate of almost 30% per annum. The most important export commodities from Lao PDR to China are agriculture products. Regional economic integration through the ASEAN-China Free Trade Agreement (FTA)<sup>15</sup> is expected to further facilitate trade and the movement of goods between Lao PDR and China. ASEAN and China agreed in 2002 that an FTA would be established within ten years (ASEAN, 2002).

Natural rubber is considered one of four strategic raw materials (other three are coal, iron and petroleum) for economic growth in China (Shi, 2008). Due to limited domestic capacity, China therefore has a strong interest in cooperating with neighboring countries, including Lao PDR, on rubber production and trade. Since 2000, China has officially integrated narcotics control efforts into its national economic agenda and began subsidizing the development of opium replacement plantations in northern Lao PDR and Myanmar. Currently, it is reported that more than 40 Chinese companies operate in northern Lao PDR under the opium replacement programme, mainly through rubber plantations (Shi, 2008). As

<sup>15</sup> Lao PDR has been a member of ASEAN since 1997.

mentioned above, the Chinese Government has also been supporting the development of a long-term socio-economic strategy for northern Lao PDR since 2004. In the draft strategy, rubber plantations and the export of rubber to China is selected as a key measure to promote development in the northern provinces.

The expanding economic relationship between the two countries, as well as the programs and measures described above, all indicate a clear interest on the part of China to increase imports of rubber from Lao PDR. However, the Lao rubber sector must also compete with other rubber producing countries such as Thailand, Vietnam, Indonesia, Malaysia, Cambodia and Myanmar, as well as with China's own rubber producers. These countries have significantly more experience with producing and exporting rubber, and the rubber produced in Thailand and Indonesia alone could fully meet Chinese demand. The pressure this places on the Lao rubber sector to keep production and transportation costs as low as possible merits further study and discussion. However, according to IRC (2006), over half the production cost for natural rubber is labour: Lao PDR's labour costs are low (although faced with shortages) and its proximity to China reduces transportation costs, giving Lao producers some level of advantage over their neighbours. The research team questioned a number of Chinese investors regarding the rubber market in China and received generally optimistic answers showing confidence in the market for their products. Chinese company representatives stated: "Chinese demand for natural rubber is high while the country has a very limited production capacity due to land shortages".

Vietnam is another important market for Lao PDR's rubber sector. Vietnam is a significant rubber exporter, and is expected to produce over 1 million tons of natural rubber by 2020 (IRSG, 2007). Only 10% of the country's rubber production will be consumed domestically (Douangsavanh et al, 2008). The remaining 90% is exported to China, India, the United States and others. Vietnam is expected to be the world's number three rubber exporter, following Thailand and Indonesia. Most of the rubber produced through Vietnamese investment in the Lao rubber sector will be destined for export to a third country.

Importantly, this research has shown that no domestic Lao investors or rubber smallholders have direct links to rubber consumers in China, Vietnam or other countries. They expect that Chinese or Vietnamese investors and traders will buy

their latex for export to China and Vietnam, followed by re-export to other countries. These indirect market linkages reduce the share of profits that accrue to Lao rubber producers, and contribute to a sense of market insecurity. Should there be oversupply or significant price fluctuations, Chinese and Vietnamese investors may buy less Lao rubber to improve the market opportunities for their own products.

### **3.7 Analysis and Conclusions**

Based on the discussion above, the demand and price for natural rubber has been increasing continuously and rapidly since 2001. Global economic growth, especially growth in the automotive industries of China and India, as well as increasing energy prices and environmental consideration, are identified as the main drivers of demand for natural rubber. According to IRSG (2007), the global demand for natural rubber is expected continue to increase, reaching 13.6 million ton by 2020, while natural rubber production is expected to be 12.6 million tons. This equals a gap in supply and demand of about 1 million tons by 2020. China alone is expected to import around 4 million tons of rubber.

On one hand, this implies a significant opportunity exists for Lao PDR in terms of economic development and poverty reduction. On the other hand, the strong demand and price for natural rubber may also lead to rapid, unplanned investments that have negative social and environmental effects for Lao PDR.

#### *3.7.1 Opportunities*

The investment and market trends highlighted in this study provide opportunities for poverty reduction and enhanced living standards for Lao PDR, a country which is rich in land and other natural resources. If managed effectively, the growth of Lao's rubber sector can provide employment for laborers and income generation opportunities for farmers and traders. In addition, the expansion of rubber plantations could contribute to stabilizing shifting cultivation, contributing in turn to reducing the negative environmental impacts of "slash and burn" practices.

#### *3.7.2 Threats*

However, investments in rubber also raise a number of potential threats for Lao PDR, the most significant of which are:

- Deforestation and loss of biodiversity. Unplanned and unregulated investments in rubber plantations may contribute to deforestation in Lao PDR. Deforestation has been widely recognized as a threat to local environments and livelihoods through the degradation of ecosystem services (such as the provision of non timber forest products, NTFPs), watershed quality and soil quality.
- Increasing livelihood uncertainty. An industrialized and modernized rubber sector could lead to significant changes in livelihood strategies in Lao PDR. Independent farmers who previously cultivated their own land for their own needs may lose access to land and other resources, and may become dependent labour employed in the rubber industry in the case of concessions. Farmers and employees will become more dependent on market forces and trends. Any subsequent return to subsistence agriculture is often difficult, especially if the resources once relied upon have been depleted. If rubber prices remain high, people may enjoy increasing profits, but farmers dependent on rubber, or any other single cash crop, for their livelihoods will face difficulties should prices drop.
- Effect on soil quality. Using chemical fertilizers, herbicides and insecticides in the plantation industry can contribute to the rapid deterioration of soil quality. Concerns have been raised that under the free market economy, the use of the chemicals to enhance productivity and competitiveness is intensive and increasingly prevalent.
- Conflict over land. Before the “rubber boom”, upland areas belonged to the community, but individual could occupy and use the land to meet their subsistence needs. After the harvest, the land would come back to the community; no-one occupied the land for long periods. Traditional land ownership and use has now changed, with occupation continuing and land being sold on. This may lead land shortages for some communities and land conflict between villagers themselves, as well as between villagers and companies and between companies. Cases in Champassak Province show this to be happening already.

- Food insecurity. According to the results of our field survey in Luang Namtha, increasing rubber plantations have led to declining food production areas, as rubber is often planted in rice fields. This could lead to increasing food insecurity. The loss of forested areas, which supply NTFPs for food and income generation, will contribute to this problem.
  
- Labour shortages. Sourcing the labour required to produce rubber efficiently will be a challenge for Lao PDR, a country with a small population. On average, rubber plantations require one person to tap one ha, meaning that Lao PDR's projected plantation area of 300,000 ha will require some 300,000 people to manage it<sup>16</sup>. This represents 11.5% of the total labour force available. Given that other sectors in Lao PDR face similar shortages, this may lead to the need to import labour from neighboring countries, such as China and Vietnam.

---

<sup>16</sup> Estimates vary regarding the number of workers required per ha to tap rubber. Vietnamese interviewees for this study estimate that one person is needed for every two ha, while in China, Yunnan State Farms use one person to tap about three ha. In Lao PDR, estimates tend to be higher, such as one person to tap one ha. Labour requirements also depend on the density of trees, the number of productive trees per ha and the skill level of the workers.

## **4. CHINA'S ROLE IN THE LAO RUBBER SECTOR**

This section will examine the close linkages between the Chinese and Lao rubber sectors, and will focus on:

- The scope of Chinese rubber development in Southeast Asian countries, particularly in Lao PDR;
- Enabling market conditions and broad policy environments for Chinese rubber investments overseas;
- The key actors in the Lao-China rubber linkage, with particular emphasis on the interplay between the public and private sectors;
- Modes of operation, finance, land and labour use by Chinese rubber companies;
- Opportunities and uncertainties in the Lao rubber sector as perceived by Chinese investors;
- Existing mechanisms in monitoring and evaluating cross-border rubber investments;
- Willingness and readiness of the public and private sectors to make sustainable development a priority.

By describing and analyzing the above issues, this section seeks to identify policy inconsistencies, misplaced incentives, and gaps in coordination and oversight in the intricately linked Lao and Chinese rubber sectors. We search for recommendations that build upon existing regulatory framework to improve incentive structures and facilitate the more sustainable development of rubber.

### **4.1 Overview of China's Rubber Sector**

Rubber was first brought to China in 1904 by an aboriginal chief returning to Yunnan from overseas travel. Shortly after, rubber was introduced in Hainan and Taiwan Islands (Guangxia and Lianmin, 2005). The nascent developments remained modest until the early 1950s, when the state established large industrial farms in strategic southern provinces to provide for industrial growth as well as to strengthen border security. The early rubber landscape was dominated by Hainan, accounting for 90% of China's rubber production in 1974 (Alton et. al, 2005). The



prominence of Yunnan, however, rose over time. In 2006 China possessed a total area of 776,200 hectares of rubber plantations with 415,100 ha in Hainan, 326,500 ha in Yunnan (concentrated in Xishuangbanna), and the rest fragmented among Guangdong, Guangxi and Fujian (Guangdong State Farms, 2008).

From the 1950s to 1980s, rubber development in China was planned centrally and undertaken by the state farms.<sup>17</sup> In 1978, economic reform brought about the implementation of a household responsibility system, followed by the forest allocation process in 1981. State farm boundaries were delineated. Rubber development began to take a variety of shapes and forms, with a declining role of the state. Major modes of development encompassed joint cultivation and contract farming between the state farms and villagers, development through local municipalities and, increasingly important, a proliferation of private investments among villagers and business persons. The state farm system itself also underwent reforms to place farm partitions under individual contracts and to introduce incentive-based compensation schemes. Currently state farms account for 60% of the total plantation area in China and 70% of latex production (*China Economic Weekly*, 17 July 2006). In Yunnan, state farms account for slightly less than half of the total area.<sup>18</sup> Domestic latex commodity markets have also been liberalized since 1995. Rubber farmers and private processing factories are now free to sell latex directly to manufacturers without state intermediaries.

Over the last half century, rubber has grown into a major industry in China that helps to feed rapid economic growth and enlists a workforce of over one million. The growth was fuelled by rising demand, technological advance, state investments as well as market liberalization. China's total natural latex production amounted to 4.5 million tons in 2006, ranking the fifth in the world after Thailand, Indonesia, Malaysia, and India. China has made significant progress in rubber research and cultivation techniques. In 1949 the national average for per hectare dry latex yield was 122 kg (Douangsavanh et. al., 2008). The yield is now on par with international average at 1109.85 kg/ha (Guangdong State Farms, 2008). State farms in Xishuangbanna have also achieved productivity of over 2 tons per hectare,

---

<sup>17</sup> The state farms were initially staffed with urban youths and decommissioned People's Liberation Army soldiers. After the Cultural Revolution, local ethnic villagers were drawn into the system to fill the acute labor shortage left by urban youth returning to the cities.

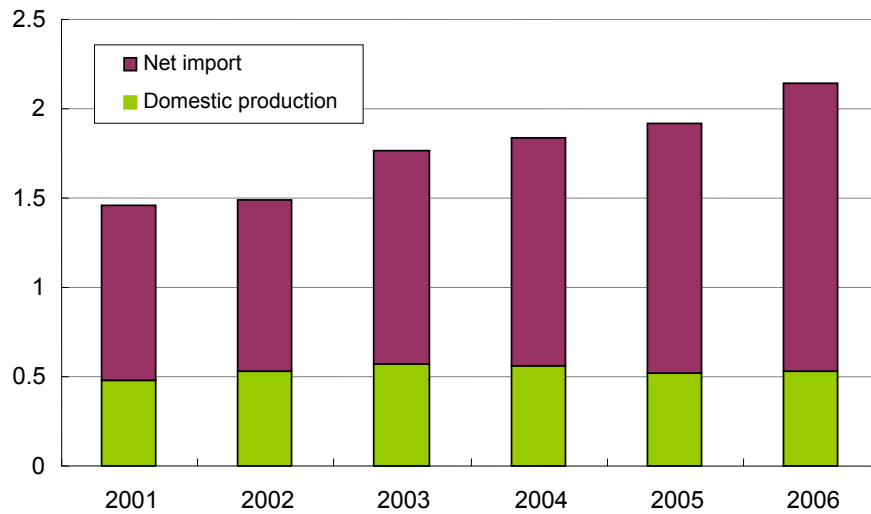
<sup>18</sup> Interested readers will find a more detailed account of the history and current state of rubber development in Yunnan in Shi (2008, Chapter 8) and Xu (2006).

one of the highest in the world. Socio-economically, rubber cultivation was able to improve material livelihood for a sizable rural population since engaging indigenous villages in the 1980s.

However, rubber development also faces challenges in China. Decades of monoculture cultivation have posed significant strain on biodiversity and forest conservation in Xishuangbanna, where threatened rainforest hosted a plethora of rare plant species and mammals (Wu, 2001). Infections spread more easily in large, monoculture plantations: a powdery mildew epidemic of historical proportions is expected to reduce Xishuangbanna's latex harvest by 6-8% (roughly equivalent to 15,000 tons) in 2008 (*Xinhua News*, 5 March 2008). Over the years a substantial population, including certain "specialized villages," has grown to depend on rubber as their principal means of livelihood. This makes their income susceptible to market volatility and slows environmental restoration efforts. The increasingly decentralized modes of rubber development, while allowing villagers to capitalize on investments, also make the sector harder to regulate and monitor. The state has compromised its authority in propagating new seedling varieties, promoting advanced tapping techniques, and ensuring practices with lower environmental impacts among smallholders. In recent years, short on land, investors and villagers have been known to expand their rubber holdings in areas of excessive altitude or slope and sometimes at the peril of community forests and watersheds, further endangering the province's already precarious tropical ecosystems.

From a national strategic perspective, China's challenge lies in a strong demand outstripping insufficient, constrained domestic supply. China has been the world's largest consumer and importer of natural rubber since 2001. Around two thirds of China's consumption relies on imports (see Figure 5). Until the recent global financial crises, world prices for natural latex had risen fourfold since the trough in 2001, significantly increasing the costs of imports. Meanwhile, domestic rubber development has stagnated due to land shortage. Bridging the supply gap is one of the primary factors motivating Chinese rubber investments abroad.

**Figure 7: China's Natural Rubber Consumption: Domestic Production vs. Import (million tons)**



*Source: China Rubber Industry Association (CRIA), 2008*

## **4.2 Chinese Rubber Investments Abroad**

### *4.2.1 Motivation and Strategies*

China's overseas rubber investments are motivated by strategic concerns as well as market fundamentals. Since the late 1990s (and particularly after China's accession to WTO), China has actively promoted outward investments, a strategy known as "go out", through a series of policy provisions and bilateral engagements. Over the last decade, China gradually decentralized and streamlined the approval process of Chinese investments overseas, relaxed capital requirements, expanded credit access, reduced controls on foreign exchange, and established subsidy programmes. Since 2004, China has imparted authority to provincial governments to approve overseas investment projects of less than US\$30 million in the resource sector (National Development and Reform Commission, 2004).

China's investments in the region maintain a strong focus on the resource sector, in order to secure strategic raw supplies for China's rapidly industrializing economy. According to the first set of country-specific investment guidelines, released by key state agencies in 2004, extraction and development of forestry resources are China's investment priorities for Lao PDR, Myanmar, Cambodia, Malaysia, and Thailand. Lao PDR, Myanmar, and Cambodia are also promoted as destinations for commercial crop cultivation (Ministry of Commerce, 2004). The China-ASEAN

FTA is expected to further facilitate export of agricultural goods and raw materials from ASEAN countries to China. Rubber-related investments and acquisitions are but an example of China's rising influence in the region's agribusiness and forestry sectors.

Less developed countries in Southeast Asia such as Lao PDR, Myanmar, and Cambodia are deemed ideal destinations for expanding China's rubber holdings. These nations offer relatively untapped land resources, low costs of labour, suitable climate and terrain, and proximity to Chinese markets. Chinese rubber investments serve both China's need to expand and secure supply as well as host countries' desire to modernize their economies and participate in global markets. Lao PDR, Myanmar, and Cambodia also all have favorable policies that attract foreign investments to commercialize the agriculture sector. As discussed in section 3 of this report, on Lao PDR, rubber is seen as a means to stabilize shifting cultivation, increase forest cover, and reduce poverty. Investors are offered tax breaks, land concessions, as well as contract farming schemes with local growers. Cambodia and Myanmar are also eager to supply hungry Chinese markets. Myanmar grants concessions of up to 50,000 acres (20,234 ha) for a maximum of 60 years and expects to establish 400,000 ha of rubber by 2020 (China ASEAN Expo, 2008). Cambodia offers generous concessions and aims to expand its rubber plantations from 70,000 hectares in 2006 to ultimately 350,000 ha, presenting tantalizing opportunities for foreign investors (ANRPC, 2007).

China's rubber investments in Southeast Asia are manifold. Mr. He Jianan, official with Yunnan Department of Commerce, summarizes the primary modes as follows: 1) direct investments through land concessions; 2) cooperation with the local government to provide rubber seedlings and technological training to local growers; 3) providing training directly to local growers and purchasing latex; and 4) contract farming and profit-sharing schemes between companies and local growers (*Economic Reference*, 21 September 2006). For countries with a relatively mature rubber industry, China shifts away from developing plantations and instead concentrates on investing in processing facilities and trading platforms, thereby securing and sustaining the supply chains.

China's overseas rubber investments are channeled through both public and private actors. The state offers policy incentives, acts as financier through the

provision of credit and subsidies to private businesses, and also invests directly through now semi-privatized state farms.

#### 4.2.2 State Farms

Yunnan, Hainan, and Guangdong state farms (YSF, HSF, and GSF) are the main state enterprises venturing out. Their overseas explorations, focusing on Southeast Asia, began around 2004. YSF targets Lao PDR and holds a national agreement to plant rubber in four northern Lao provinces (Luang Namtha, Bokeo, Sayaburi and Oudomxay) for a total area of 166,667 ha. 33,333 ha are to be established as demonstration (concession) areas and the rest accomplished through contract farming and profit sharing with local villagers.

HSF has set sights on Preah Vihear, Cambodia, and Sarawak, Malaysia.<sup>19</sup> In March 2006, HSF signed an agreement with a Cambodian company to develop and manage 62,659 ha of plantations over a 70-year period in Preah Vihear Province (*People's Daily*, 1 April 2006). In its overseas development plan HSF aims to establish 60,000 ha of rubber plantations in Malaysia and 80,000 ha in Cambodia in the next years. HSF also seeks to establish electronic latex trading platforms with suppliers in Vietnam and plans to construct a 200,000 tons/year processing facility in Indonesia (Ministry of Commerce, 2006).

GSF began a 6,667 ha plantation through land concession in Sarawak, Malaysia, in addition to purchasing several processing facilities in Thailand and Vietnam. The company aims to establish 33,333 ha overseas plantations in total by 2010 (*Finance Daily*, 23 March 2006)<sup>20</sup>.

#### 4.2.3 Other Companies and Investors

In addition to state farms, private Chinese companies play a prominent, if not dominant, role in overseas rubber development. However, there is a lack of systematic data on their activities except for those receiving Poppy Replacement Special Fund (PRSF) from the Chinese government. Established in 2006 by the State Council, PRSF supports Chinese businesses in northern Lao PDR and

---

<sup>19</sup> The costs of operating plantations in Malaysia are in fact higher than in China, but due to the extremely favourable climatic conditions and high productivity, state companies with strong financial backings, such as GSF and HSF, consider it an attractive option (*Finance Daily*, 23 March 2006).

<sup>20</sup> However, reality shows that there are difficulties keeping pace with development plans.

Myanmar in developing economic alternatives to poppy growing. Almost all formally organized Chinese rubber companies in Lao PDR and Myanmar are supported in part by the PRSF. According to incomplete statistics from the Xishuangbanna and Kunming Bureaus of Commerce, there are currently 29 rubber companies investing in northern Laos and 19 operating in Myanmar under the directive of poppy replacement.<sup>21</sup>

In addition to companies supported by PRSF, there is a proliferation of smaller private investments whose presence predates the establishment of PRSF or whose limited scales of operation do not qualify for governmental funds. In the border areas, cross-border informal ventures among relatives and friends are common and account for a substantial portion of the local rubber landscape, but are undocumented by Chinese or host country authorities. Anecdotally, private Chinese investments are also known to permeate the rubber sectors of northern Vietnam (Lao Cai), Cambodia, Thailand, among other Southeast Asian countries. Due to the lack of data, however, the scope of these investments is difficult to assess. By the end of 2006, there are reportedly 66 Chinese companies investing in agribusiness in Cambodia, though it is unclear how many are in rubber (Ministry of Commerce, 2007). There is very little public information available about Chinese rubber investments in other parts of the world, such as Africa and South America. The Chinese government offers a series of policy incentives, loans, and subsidies to businesses investing in these two continents. Nigeria, Liberia, and the Amazon basin are generally considered to be desirable locations for rubber investments, but we were unable to identify reliable documentation of actual plantations established by Chinese investors.<sup>22</sup>

China's overseas expansion is not without competition. Other rapidly growing Asian economies, including Vietnam and India, vie for similar investment opportunities as Chinese companies. While Chinese investors are dominant in the northern Lao

---

<sup>21</sup> Poppy replacement companies are registered with local commerce bureaus in Kunming, Xishuangbanna, Dehong, Nujiang, Pu'er (formerly known as Simao), Lincang, and Baoshan of Yunnan Province. We were only able to access partial data for companies registered in Xishuangbanna and Kunming, and none for other prefectures and municipalities, so the total number of Chinese rubber companies operating in Lao PDR and Myanmar under poppy replacement will be greater than listed here. By the end of 2007, Yunnan Province lists a total of 102 poppy replacement companies engaging in various commercial plantations, including rubber, in northern Lao PDR and Myanmar (Yunnan Alternative Development Association, 2008).

<sup>22</sup> Anecdotally, we identified one Chinese company, Eng Hua, emerging as the preferred bidder for rubber plantations offered by Cross River State government in Nigeria in 2003. Eng Hua outbid the local company PAMOL Nigeria.

rubber sector, their Vietnamese counterparts lead in the south and aim to plant 100,000 ha of rubber by 2010 (Vietnam Ministry of Foreign Affairs, 2008). Vietnam Rubber Group is said to be adding 4,000 ha of new rubber plantation to Cambodia in 2008 (Vietnam Investment Network, 2008).

### **4.3 Chinese Investments in the Lao Rubber Sector**

Relative to its neighbours, Lao PDR is a latecomer to rubber. Its first plantations were not established until the mid 1990s. Champassak was the first province in the south to adopt rubber, with 50 ha planted by a state company in 1995 (Manivong and Cramb, 2006). In the northern province of Luang Namtha, the Hmong village Ban Hadnyao and a small group of repatriated American War refugees began planting rubber around 1994. Until the mid 2000s, rubber development remained modest in northern Lao PDR. It consisted mainly of smallholders and development by individual investors hailing from the immediate borderlands of China and Lao LDR. Beginning in 2004, however, northern Laos saw a rapid influx of Chinese rubber companies, most of which are supported by PRSF and enter into contract farming schemes with local farmers<sup>23</sup>.

Combining data from Chinese and Lao authorities as well as secondary sources, we compiled a list of rubber companies operating in northern Lao PDR in Table 3. Chinese companies dominate formal rubber investments in the north.

---

<sup>23</sup> Please see section 3 of this report for a detailed discussion on the development and status of rubber cultivation in Lao PDR.

**Table 3: Formal Chinese Rubber Companies in Northern Lao PDR**

Company	Year began planting	Year of official registration, if later than year began planting	Provinces	Districts	Contracted area (ha)	Planted to date (ha)	Cumulative area verified by GoY, 2007 (ha)	Note
					(1)	(2)	(3)	
Baosen	2007		Bokeo	Meung	1500	500		
Deshang	2007		Bokeo	Meung	1500	500		
Jiafeng	2006		Bokeo	Pha Oudom	3000	750		
Jinsen	2007		Bokeo	Houay Xai	3000	1200		
Leilin	2006		Bokeo	Meung	1500	1500		
LS (Ruipu)	2006		Bokeo	Paktha	3000	1200		registered as Lao company
Luhang	2006		Bokeo	Ton Pheng	4000	2000		
Nanyong	2007		Bokeo	Houay Xai	400	200		
Nayada (Lao Jin Se)	1999	2006	Bokeo	Houay Xai	3000	2000	742	
Yunnan Rubber	2007		Bokeo	Houay Xai	3000	900		
Diyuan	2007		Luang Namtha	Long	17500		490	
Heli	2005		Luang Namtha	Sing			86	
Jiachuang	2006		Luang Namtha	Nalee	2000		924	
Jingu	1994	2004?	Luang Namtha	Sing			2181	registered as joint venture
Ruifeng (Ruipu)	2006		Luang Namtha	Long	300,000			
Shengli	2005		Luang Namtha	Sing	2000		60	
Taijiang	2007		Luang Namtha	Namtha	1004		72	
Yunnan Rubber	2006		Luang Namtha	Long				
Zhenhua	1992	2006	Luang Namtha	Vieng Phukha	3000		948	



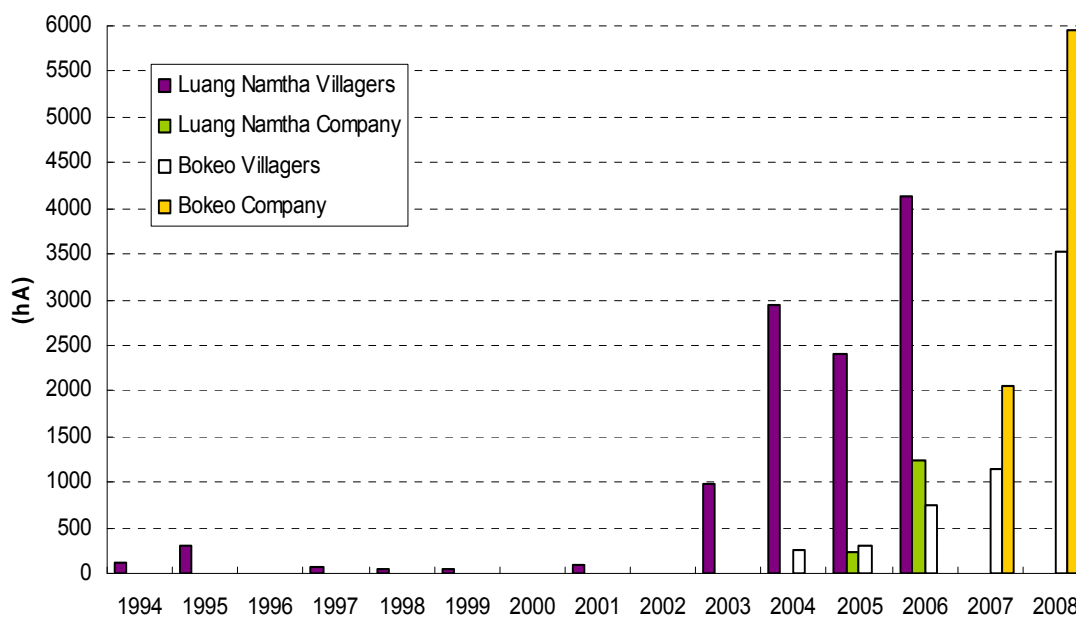
Hengrun	2005		Oudomxai	Xai				
Jianfeng	2003		Oudomxai	Houn, Beng	8600	1895	2222	
Jongxai	2006		Oudomxai	Xai	2000	120		
Mengla External Trade Limited	2003		Oudomxai	Xai			327	
Sino-Lao	2006		Oudomxai	Xai	5000	650		
Ying Zhou Ba	2006		Oudomxai	Na Mo	2500	309		
Naliga (Siphansalika)	2005		Oudomxai	Beng	2000	1034	1094	registered as Lao company
Xishuangbanna External Trade Limited	2004		Oudomxai	Xai			323	
Xuandali (Sientali)	2006		Oudomxay, Sayaburi	Houn				

Jinrun	2003		Luang Prabang				1285	
Jinjiang	2006		Phongsaly				595	
Xishui Yongyi	2005		Phongsaly					
Zhongtian Luye	2006		Phongsaly				511	
Yunnan Rubber			Sayabouri					
Power Biological	2006		Sayabouri, Vientiane				828	

Source: Cols (1) and (2) are based on PAFO data. PAFO data is extracted from Shi (2008) for Luang Namtha and partially from Thongmanivong et. al. (2008). Col (3) is only available for businesses registered under Xishuangbanna prefecture. We were not able to access GoY verification data for companies under the jurisdiction of other prefectures or municipalities. Please also note that there are minor discrepancies in data regarding Chinese company investments depending on the source of the data.

Table 3 does not account for investments without formal registration or plantations developed with villagers' own funds. The scale of company-led development versus villagers' own development varies across provinces. In Luang Namtha, where informal ties to the Chinese rubber sector long predated entries of formal companies, villagers' own plantations outweigh company development. We should note, however, that the portion attributed to Lao villagers often does not reflect entirely villagers' own funds, but informal cooperation with individual investors, relatives, and friends both in Lao PDR and across the Chinese border (Shi, 2008). In Bokeo, where few villagers possess immediate links to China, company-led plantations play a more prominent role. Except for a few Hmong villages that share ties with the Hmong communities in Luang Namtha, most villagers in Bokeo came to rubber fairly late, their engagement in the crop beginning with the entry of Chinese investors (Figure 8).

**Figure 8. Rubber Planting in Luang Namtha and Bokeo  
Villagers' vs. Company-Led**



Source: PAFO Luang Namtha, PAFO Bokeo.

Note: Data are unavailable for Luang Namtha in 1996, 2000, 2002, 2007, and 2008. Data for Bokeo are only available from 2004 on. The 2004 figure represents all rubber planted in Bokeo from 2001 to 2004.

Chinese rubber investments are focused in the north, which in turn accounts for a substantial section of the overall rubber development in Lao PDR (Table 4). China's role in the Lao rubber sector is pivotal, serving as capital source as well as market destination. At the present stage, Chinese investors are focused on developing plantations and preliminary processing facilities. Some, operating in remote

locations, also engage in building basic infrastructure (roads, power supply) to support rubber development and/or in exchange for land concessions.

**Table 4: Target and Potential for Planting Rubber in Lao PDR**

Region	2007		2010 (plan)	
	(ha)		(ha)	
Northern	16,547	59%	121,000	66%
Central	2,946	10%	10,000	5%
Southern	8,738	31%	52,840	29%
Total	28,231	100%	183,840	100%

*Source: based on data table extracted from NAFRI (2007).*

#### **4.4 Enabling Policy Measures**

The rapid influx of China’s rubber investments in Lao PDR is supported by favorable policy environments in both countries.

##### *4.4.1 China*

As was mentioned above, Chinese government provides a series of policy incentives and guidelines to encourage businesses to “go out”. Specific to the northern Lao agricultural and forestry sector, China promotes poppy replacement plantation projects, including rubber plantations. According to relevant regulations, qualified Chinese rubber investors operating in Lao PDR may enjoy the following benefits under the umbrella of Poppy Replacement:<sup>24</sup>

- Subsidies for the project exploration and feasibility studies based on actual costs;
- Subsidies of 10 to 30 yuan per mu per year for plantation projects based on actual areas planted (1 ha=15 mu);
- Expanded credit access at domestic policy and commercial banks and full interest reimbursement for up to three years on loans taken from domestic banks;
- Subsidies for obtaining insurance and guaranty from domestic providers;
- Exemption from tariff and import value-added tax (VAT) on products and outputs sent back to China (but limited by quota);

---

<sup>24</sup> Certain policies listed here are not just limited to poppy replacement businesses.

- Tax-free export of fertilizers to the host country;
- Greater freedom in cross-border movements of labour, equipment, and vehicles;
- Simplified and localized procedures for border customs and product inspection.
- Relaxed foreign exchange policy: simplified assessment process for exchange risks and freedom for businesses to keep profits abroad to reinvest.

In addition to specific policies, Chinese rubber investors are also supported by a broadly favorable investment climate in Lao PDR and increasingly friendly political relations and strengthened cooperation between the two countries. In April 2007, China's Yunnan Province began working with GoL to devise a comprehensive development plan until 2020 for the northern nine provinces (Phongsaly, Luang Namtha, Bokeo, Oudomxay, Huaphan, Xiengkhuang, Luang Prabang, Sayabury and Vientiane), including a sub-plan for the industrial development of agriculture and forestry (also known as "The Northern Plan"). According to the plan, natural rubber-based agricultural and forestry product processing industry will become backbones of northern Lao economy and 200,000 ha of plantations will be established. The plan calls for diversified modes of operation, utilization of advanced tapping and processing technologies, training of a skilled workforce, and development of large rubber enterprises without destroying the ecological environment (NLIEDCPPG, 2008)<sup>25</sup>. It is not yet clear how this plan will be integrated with existing Chinese rubber development in Lao PDR as well as a myriad of other development plans and programs in the country.

#### *4.4.2 Lao PDR*

Since adopting the New Economic Mechanism and open-door policy in 1986, GoL has encouraged private sector development and welcomed foreign investors. Most investments are directed toward the natural resource sector, whose development is seen as a vehicle for increasing national revenues and alleviating poverty (GoL, 2003).

---

<sup>25</sup> While informants at Lao line agencies are optimistic about implementing the Northern Plan, a Chinese expert has clarified that this is a technical assistance project with no committed further funding.

This creates a shared interest between Lao policymakers and Chinese rubber investors. Though rubber was never singled out for promotion on a national scale, several national and sectoral plans, including National Socio-Economic Development Plans and the *Lao National Forestry Strategy to the Year 2020*, promote commercial tree planting to stabilize shifting cultivation, increase forest cover, and reduce poverty. Arguably under the influence of their northern neighbor, rubber is promoted more explicitly in the northern provinces. In 2006, Luang Namtha government stipulated that every family without paddy should plant at least 1 ha of rubber. In Bokeo, similar policies exist to encourage villagers in poor districts to plant 1 ha of rubber in addition to other cash crops. In Oudomxay, provincial authorities are also keen to promote contract farming and smallholder rubber planting together with private investors (NAFRI, 2007).

To attract and accelerate foreign investments, GoL has streamlined and decentralized the investment approval process<sup>26</sup>. The Committee for Promotion and Management of Investment (CPMI) in MPI (and its provincial counterparts) is to provide one-stop service for the registration and approval process. Major provinces (Vientiane Municipality, Savannakhet, Champassak and Luang Prabang Provinces) are given authorities to approve general investments up to 5 million USD and others up to 3 million.<sup>27</sup> Companies also enjoy tax breaks of varying percentages depending on the zonal classification of their sites. For most rubber companies operating in remote areas with little infrastructure (Zone 1), this means a profit tax exemption of 7 years (after tapping begins) and a reduced tax rate of 10% thereafter.<sup>28</sup>

However, the Lao authorities' attitude toward rubber seems to have taken on a more cautionary tone in recent months at both the provincial and national levels. In addition to the longer-standing moratorium on large concessions, Luang Namtha authorities have declared that no more rubber plantations will be allowed until their socio-economic impact and profitability are better understood (*Vientiane Times*, 11

---

<sup>26</sup> Section 3 of this report contains a detailed overview of Lao PDR's policy framework for agriculture, forestry, land management and investment promotion, as well the investment approval process.

<sup>27</sup> Decree 64 (2003) decentralized the power of managing foreign investments, giving major provinces (Vientiane Municipality, Savannakhet, Champasak and Luang Prabang Provinces) authorities to approve investments of up to 2 million USD and other provinces up to 1 million USD. In 2004, the implementation decree of Implementing Decree of the Law on the Promotion of Foreign Investment (Article 53) further lifted the caps to 5 and 3 million USD respectively.

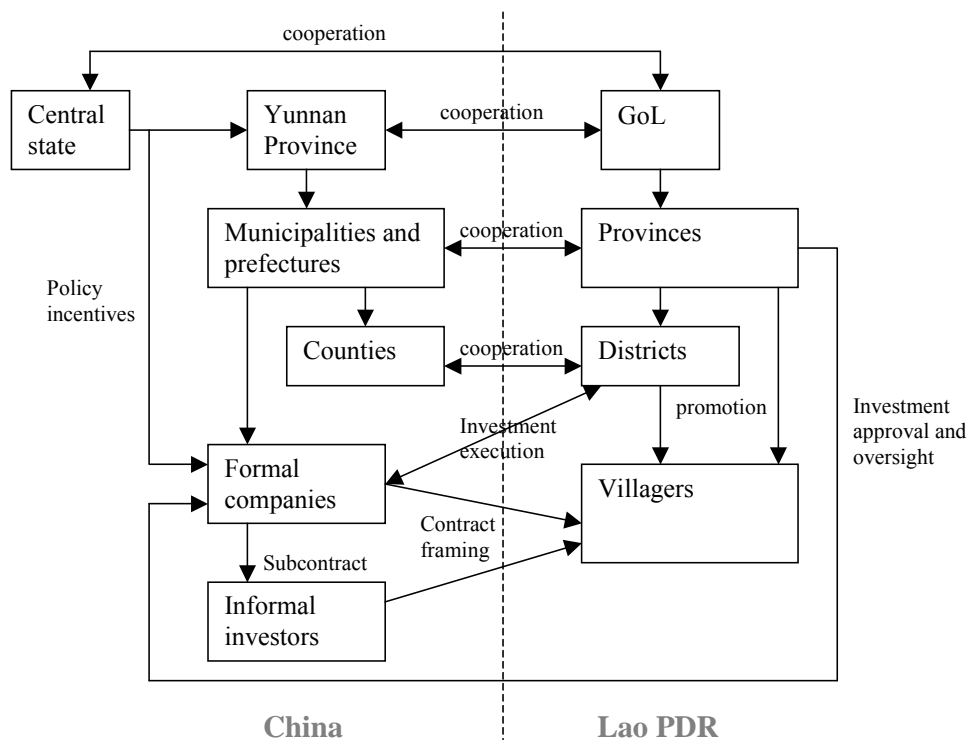
<sup>28</sup> Adherence to this depends on the province. Luang Namtha currently holds the policy of taxing 6 yuan/tree/year after tapping begins. Bokeo does not have tax policy specific to rubber.

Nov 2008). MAF has also expressed concerns over the damage that uncontrolled rubber development causes to the country's dwindling natural forest, announcing that rubber plantations would now only be allowed in areas that contained less than 30m<sup>3</sup> of forest cover per ha (*Vientiane Times*, 18 November, 2008).

#### 4.5 Key Stakeholders

In the intricate China-Lao rubber linkages, key stakeholders include central and local levels of Lao and Chinese governments, formal and informal Chinese investors, and Lao investors and villagers. The relationship between the Chinese and Lao governments characterizes multi-tiered cooperation and exchanges at the central, provincial, and local levels. In addition to making direct investments through the state farms, the Chinese state is an important financier in northern Lao rubber development through the provision of subsidies and loans. GoL facilitates rubber investments by foreign companies as well as Lao villagers. Both the Chinese and Lao governments play multi-faceted roles in promoting, facilitating, as well as monitoring investments in rubber. The close interactions between public bodies and private enterprises are typical of investment scenarios in the sector. We illustrate linkages among stakeholders through the diagram below:

**Figure 9: Stakeholder Relationships**



## 4.6 Investment Approval and Decision-Making

### 4.6.1 *China*

Due to the province's proximity to Myanmar and Lao PDR, the Yunnan Department of Commerce was delegated the tasks of administering poppy replacement policies and PRSF, in addition to managing general applications for investing abroad. As a result, Chinese rubber companies operating in Lao PDR, regardless of their ultimate capital source, at least establish a subsidiary in Yunnan Province. The company then goes through the following procedures:

- Submit application (including registered capital, investment amount, etc.) and agreements or contracts signed with relevant host country authorities to local or provincial department of commerce (PDOC);<sup>29</sup>
- Undergo assessment at local or provincial bureau of foreign exchange;
- PDOC consults with the Economic Counselor's Office at the Chinese embassy in host country;
- If approved, company obtains People's Republic of China Certificate of Approval for Overseas Investment. The entire process takes 20 to 25 days;
- To meet qualifications for PRSF, companies submit additional materials, including feasibility reports and supporting documents from Lao authorities, to local or provincial Poppy Replacement Office for approval.

### 4.6.2 *Lao PDR*

On the recipient end, most Chinese rubber companies begin by applying through the one-stop service of CPMI at the provincial department of planning and investment (PDPI). The exact process varies across provinces. In general it appears to entail the following elements (consultations; NAFRI, 2007; Shi, 2008; Thongmanivong et. al, in preparation):

- Submit investment proposal to PDPI;

---

<sup>29</sup> If applying at local level, local authorities will submit the application for approval at the province. Provincial authorities serve as the final gatekeeper.

- PAFO (and/or DAFEO), in cooperation with the company, determines land availability and suitability at the district and village levels;
- Consultation back at the provincial level with relevant institutions;
- If proposal is deemed acceptable, PDPI issues Investment Approval Certificate and develops and signs contract;
- Subsequent contractual arrangements at district and/or village levels.

Chinese companies interviewed suggest that there is room for improvement on application procedures on both sides. On the Chinese side, investors feel that, even though the Poppy Replacement Office was established to coordinate among various agencies, it doesn't have the actual executive power to provide one-stop service. Similar problems exist in Lao PDR, where businesses claim that, in spite of the official procedures described above, in practice there are no set paths for obtaining investment approval, much less land access. Indeed, in the field we observe great variations in executing the approval procedures. Some companies had invested before provincial protocols were set up and operated under district level contracts alone. In Luang Namtha, where rubber investments began relatively early, several companies were known to survey and plant before formalizing their investments. In Bokeo, it is said that companies primarily worked with districts before the province felt the need to monitor and take greater control over the process. In Oudomxay, cases were also known where companies worked directly with district authorities in identifying land plots with minimal involvement of the province (Thongmanivong et. al, in preparation). This suggests that, though the CPMI and PDPI have been given the authority, it remains an ongoing effort to establish an effective body to streamline the investment process.

In determining land availability and village designations, joint efforts are made among PAFO, DAFEO, investors and village committees. The PLMA is also involved in some cases, but as with the central NLMA, the relatively new agency is generally believed to lack executive power and many land use decisions are still led by PAFO. Interviewed investors describe a general process where they express investment intent, PAFO, in cooperation with DAFEO, assigns a district or villager cluster, and then companies and authorities join efforts in consulting with villagers



and promoting the crop. However, as is evidenced by the paragraph above, this process does not fully apply to all cases.

The investment decision process reflects a combination of participatory consultations and a top-down contract making mechanism. This somewhat paradoxical mix has proved problematic when provincial contracts are established before completing thorough surveys and consultations at the village level. An unholy trinity arises in this case: villagers are not committed to the development schemes; lower level authorities are in an awkward position between approvals granted by higher authorities and lack of land or cooperating villages on the ground; companies with higher-level contracts are frustrated by the lack of alignment between various levels of the Lao government.

As a result, where provincial or national contracts are signed first, investors often do not access the total amount of land prescribed by their contracts. However, it should be noted that, while this is a source of frustration for investors, it is also a fact that they exploit strategically or even facilitate:

- Investors purposefully pursue unrealistically large contracts in an attempt to obtain more subsidies and larger loans from the Chinese government and banks;
- Investors are motivated to claim as much land as possible, even if only contractually, as land alone constitutes valuable investment and is easily sublet at a profit to other investors;
- Contracts of large areas made at a higher level strengthen a company's negotiating position at lower levels.

In determining which companies to accept in the province, Lao provincial authorities have little information beyond the companies' applications and find it difficult to thoroughly evaluate the background of investors (interviews; NAFRI, 2007). As a result, investments are largely approved on a first-come, first-serve basis. In both Bokeo and Luang Namtha, officials express that there are enough rubber companies already and do not plan to accept new investors in the rubber sector.

## 4.7 Financing

Most formal Chinese companies operating in northern Lao PDR are supported in part by PRSF (or in the process of becoming so). The PRSF of 250 million yuan was established by key state agencies in 2006 to be allocated over a period of five years. In 2007, national PRSF dispensed a total of 29 million yuan to 82 businesses operating in northern Lao PDR and Myanmar. Yunnan Province contributed additional funding of 30 million yuan, of which 15 million was dedicated to subsidizing the development of demonstration areas (YADA, 2008).

The research team was not able to obtain financial information for individual businesses. However, we are under the impression that the financing structure, as measured by what percent of funds is the companies' own capital and what is financed through governmental loans and subsidies, is highly uneven across businesses. Some businesses observe that the fund distribution process lacks transparency. When PRSF officers were consulted, they explained that funds are distributed strictly according to the actual, physical areas of plantations companies have established.

Most individual Chinese investors are excluded from governmental financing because many do not hold formal contracts with the Lao government. However, they may receive a share of the subsidies by forming implicit agreements with a formal Chinese company already qualified for PRSF. In exchange the company then claims the individual investors' plantations their own when applying for funds.

## 4.8 Models of Investment: Concessions vs. Contract Farming

According to the Lao PDR *Investment Promotion Law*, foreign investors may invest through business cooperation by contract without forming a new entity, joint ventures, or one hundred percent foreign owned enterprises. A majority of Chinese rubber companies in northern Lao PDR fall in the last category. It is also quite common for companies registered for sole Lao ownership to be unofficially funded with Chinese capital. Formal joint ventures are relatively rare.

Whatever the legal organization may be, there are two main operational models for rubber development: concessions and contract farming. We will first establish what we mean by the terms in the context of this report, as their definitions have not been standardized in the policy literature and are used loosely to refer to a wide range of

specific arrangements. In this report, we refer to concessions as a model where state land is conceded to investors for development, though what constitutes state land is a source of frequent disputes. In this model, companies enjoy autonomy in managing plantations, own all the trees, keep full profits, and if local villagers participate in the process at all (plantations may also be established and maintained by external labour), are compensated as wage laborers. Examples of this model include “demonstration gardens,” military concessions in the country’s northern borderlands, and incidental concession plots obtained as compensation for failed contract farming schemes, in exchange for infrastructure development, and through other pathways.

Contract farming in the policy literature generally refers to a “2+3” model where companies contribute capital, technology, and marketing while villagers provide land and labour input. The venture’s profits are then shared between companies and farmers according to a typical 30% and 70% split. “2+3” is the official stance promoted by the Lao government. However, in implementation, contract farming takes many varied forms. For example, “1+4”, where the villagers contribute only land, is popular in Luang Namtha. This model is similar to a concession except that villagers obtain a small share of the trees. In this report, we classify all arrangements where villagers retain a certain share of the profits, latex, or trees as contract farming.

#### 4.8.1 Concessions

In October 2005, three northern provinces, Luang Namtha, Bokeo, and Oudomxai, formed an official agreement to avoid land concessions in rubber development and promote “2+3” contract farming schemes. In May 2007, the prime minister announced an indefinite suspension of concessions over 100 ha in industrial tree plantations, perennial plants and mining, citing the lack of a comprehensive land management strategy and emerging negative environmental and community impacts (*Vientiane Times*, 9 May 2007). The “2+3” model is seen as a better model for alleviating poverty, preserving land access, and promoting a sense of ownership among local growers. The recently revised *Forestry Law* (No.6/NA, 24 December 2007) provides that, regarding the conversion of degraded forest land, provinces can authorize no more than 100 ha per activity, MAF and NLMA no more than 1000 ha, above which the endorsement by the National Assembly is necessary.

Nevertheless, concessions of various sizes continue to exist in rubber development in northern Lao PDR, most typically in the form of demonstration gardens. Official records in Bokeo indicate recent demonstrations granted are at or under 100 ha, but interviews with companies and villagers alluded to larger areas. Companies tend to sign “2+3” contracts with authorities and villagers initially and, as negotiations deepen, demonstration gardens are added on. In Luang Namtha, where most companies’ applications are already in the pipeline before the central moratorium, provincial government is known to grant larger areas. Luang Namtha also possesses expansive concessions of defense land in the border areas (Shi, 2008). In addition, demonstrations are sometimes granted as compensation for failed contract farming schemes or in exchange for infrastructure development.

The legality of new concessions of over 100 ha, if they exist, is debatable. Apart from interviews, we could not identify any actual documentation to evidence approval by provincial authorities in Bokeo Province. Most interviewed investors are well aware of the provincial limit and describe ongoing efforts or immediate plans to upgrade their contracts to the national level, possibly to justify the legal status of new concessions.

According to investors, the motivations for establishing demonstrations are multiple:

- Demonstrations provide examples of sound techniques and good management to educate local farmers;
- It is a safeguarding and insurance policy. If contract farming fails, investors can count on partial profits from demonstration gardens;
- Investors have better control over the maintenance of demonstrations, so investors also hope to use them to underscore the quality of inputs, should disputes arise later with villagers regarding seedling quality;
- Since December 2007, companies have had added incentives for pursuing demonstrations. The Yunnan government set aside part of PRSF specially for subsidizing demonstration areas (see section 4.5.2).

When asked whether this policy move signifies preference for one investment model over another, Xishuangbanna authorities suggest that the government supports both models of development. In the broader context of China’s overseas rubber

development, Lao PDR is uncommon in instituting “2+3” as the predominant mode of investment. China’s rubber investments in Myanmar and Cambodia, for example, are primarily accomplished through land concessions. Some investors acknowledge that incentives for demonstrations may be inconsistent with Lao government’s promotion of the “2+3” model. They expressed hope that governments on both sides will resolve policy differences to clarify the legal standing of demonstration areas and streamline the application process.

Concessions, particularly those larger in area, present a source of conflicts between investors, government, and villagers. Even though concessions, by definition, apply only to state land, what constitutes state land is highly contested. What the authorities classify as state land may in fact be customarily occupied by private parties, but unclear land allocation and lack of land titling often make it difficult for villagers to establish and prove their legal rights to land.

#### 4.8.2 *The many faces of contract farming*

Though “2+3” is officially promoted, contract farming takes a variety of shapes and forms in practice. Below, in Box 1, we attempt an incomplete comparison and analysis of contract farming situations in Luang Namtha and Bokeo.

##### **Box 1: Contract Farming in Luang Namtha vs. Bokeo**

Before the term “2+3” was even coined, Luang Namtha already had informal contract farming schemes in the borderlands. Chinese individual investors would enter into arrangements with local villagers to share inputs and outputs. However, a majority of these arrangements were not exactly the “2+3” model promoted by the government. Some may call them “1+4,” where villagers provide land and investors provide capital, markets, and technology (in these, capital is by far the most important factor drawing villagers). Villagers may or may not work on the plantations. If they do, they are paid a wage. After 2004, formal investors began flocking to Luang Namtha. Most signed provincial contracts conforming to “2+3”. However, in implementation, many arrangements also reverted to “1+4,” with villagers obtaining a smaller share (30% - 40%) of the latex or trees. Villagers are in turn paid for their labour input. In many cases the plantations were demarcated early on. After the first years (sometimes as little as one year), investors and villagers tend to their own plots of trees.

Compared to Luang Namtha, Bokeo has a relatively short history in rubber contract farming. Its rubber sector is dominated by large, formal Chinese investors partly because, except for the Hmong communities that were influenced by and benefited from ties to Hmong rubber villages in Luang Namtha, most villagers did not have the initiative or technical know-how to develop their own plantations. Not surprisingly, individual Chinese investors have a weaker presence in Bokeo than Luang Namtha due to the greater distance to China.

Unlike Luang Namtha, where “1+4” is a popular contracting mode, Bokeo appears to implement “2+3” consistently. While “1+4” was officially acknowledged in several provincial contracts in Luang Namtha, “2+3” appears to be the only permissible official approach in Bokeo. The villagers, companies (including those working in remote areas), and provincial authorities we interviewed all reported adopting the “2+3” scheme. The greater conformity to “2+3” in Bokeo thus far, based on our partial observations, may be attributable to the following factors:

- ◆ With limited time and resources, our village visits in Bokeo were concentrated in Houay Xai district, which is a relatively developed, wealthy part of the province with infrastructure, market access, and significant experience with commercial crops. These are also attributes that correlate with successful implementation of “2+3” in parts of Luang Namtha (Shi, 2008). In poorer, more remote areas, the actual field arrangements are less well known to the provincial authorities or even company management. In fact, there was even

reported that at in least one village in the more remote Meuang District trees are already demarcated. The company was concerned with inadequate maintenance by villagers and decided to take greater control while villagers, running out of money, sold substantial shares to the investors.

- ◆ Bokeo Province promotes intercropping aggressively (see Table 5 below). Among other considerations, rubber companies' performances are assessed on their distribution of other seedlings (most typically corn and rice) to villagers to intercrop with rubber. Intercropping provides an alternative income source and food security during the initial pre-tapping years. However, intercropping with these agricultural crops is only viable in the first two to three years before the rubber canopies close, while it takes seven to eight years before rubber trees will generate income<sup>30</sup>.
- ◆ In Bokeo, villagers are relatively new to rubber and have not directly confronted the competing labour demands this presents for their livelihood systems. Houay Xai District has had a long history in planting commercial crops (corn, soybeans, oranges) and trees (eaglewood, teak) to supply the Thai markets. While this diversifies villagers' income sources, it also complicates the management and coordination of labour. Most interviewed villagers in Houay Xai district do not appear to have an adequate understanding of rubber's intensive labour requirements. If necessary, some expressed plans to hire external laborers and, if that is not possible, to sell trees to investors.

**Table 5: Intercropping in Rubber Plantations in Bokeo**

District	Rubber planted	Intercropped with		
	during 07-08	Rice	Maize	Other
	(ha)			
Houay Xai	2,459	1,693	510	170
Pha Oudom	2,268	212	-	-
Meung	1,035	-	106	152
Pak Tha	136		no data	
Ton Pheung	44	44	-	-

Source: PAFO Bokeo.

Typical "2+3" contract farming arrangements may not be conducive to large industrial plantations, but investors are nevertheless creative in devising incentives to encourage larger plots among villagers. A company in Meung District of Bokeo, for example, is said to implement a policy where, if five families manage to put together more than 3 ha each on the same plot, the company will provide machines for drilling and grass clearing for free. "2+3" investors in Bokeo are also eager to pursue demonstration plots to tag onto existing contracts. Whatever the specific arrangement investors may have subscribed to, in Luang Namtha or Bokeo, they share a desire for greater autonomy, easier management, and, naturally, larger plots over scattered pockets.

It should be noted that, although "2+3" and "1+4" have become policy buzz words, such highly stylized characterizations often cannot capture the fluid, dynamic process of contract farming. In Thongmanivong et. al. (in preparation) the authors suggested that even a single project could evolve through several operational models, depending on the need of a specific project phase. While seedling gardens, demonstration areas, and factory buildings may be procured through concessions, land clearing and terracing accomplished through paid labour (alluding to a "1+4" type arrangement), the subsequent maintenance may be done through a "2+3" type arrangement where villagers contribute uncompensated effort. Shi (2008) also documents a wide spectrum of contract farming arrangements with varied input levels from the investors and farmers. Instead of focusing on static definitions and

<sup>30</sup> If new plantations are established at a planned, controlled pace and there is adequate land, it may be possible that villagers will be supported partially by intercropping until the first cohort of rubber trees matures, but this scenario would require sophisticated planning and control and favorable market conditions. It will be critical to evaluate the state of contract farming, particularly in the remote upland corners of Bokeo, after intercropping has been phased out.

connotations, we may characterize an arrangement through the following key dimensions:

- What are the responsibilities of each contracting party? What inputs do investors provide? What inputs do villagers provide? How do shares of responsibilities vary over the course of the project?
- Is labour provided by villagers or external hires? How is labour compensated, if it is compensated? How does the labour arrangement vary over the course of the project?
- When does each contracting party claim its share (e.g. one year after planting, three years, five years, or after tapping)? What exactly is claimed (trees, latex, or profits)? What share does each party obtain?
- Must villagers sell latex to the contracting investor or whoever offers the higher price?
- Is there a minimum guaranteed collection price?

Likewise, in evaluating whether a contract-farming scheme brings benefits to villagers, rather than focusing on whether it qualifies for the typical “2+3” or “1+4” or neither, we may focus on:

- Is the division of gains (trees, latex, or profits) proportionate to the level of input and effort by each contracting party? However, this is difficult to evaluate because there are no developed markets for land.
- Do villagers possess sufficient labour supply to integrate rubber into their household production systems?
- Do villagers have alternate income sources during the pre-tapping years?
- Is there mutual understanding and commitment between the villagers and investors?

Villagers are motivated by a variety of reasons to participate in contract farming schemes. Most cite that they would like to plant rubber but lack funds and technical know-how. In some cases, however, villagers face the difficult choice of participating in contract farming or risk losing their land to concession. Using the threat of land concession to facilitate contract farming has been observed in Luang Namtha as well as Oudomxay (Shi, 2008, Thongmanivong et. al, in preparation). Fear of

concession has also motivated villagers in Sekong to sell land plots to rubber companies preemptively to fetch a better price (*Vientiane Times*, 2 September 2008).

Villagers generally have the following concerns about contract farming:

- Villagers are unsure about how rubber will be integrated into their existing livelihood system. Labour shortage is a concern. If labour shortages arise, some anticipate they may reduce their shares of the proceeds in exchange for the company managing plantations.
- They are wary of the uncertainties presented by such long-term investments: will the trees actually give out latex? If we get latex, will we be able to sell it? Will the investors give us a good price?
- In remote, mountainous areas, where villagers are relatively new to commercial crops, concerns also loom regarding food security and alternative income sources during the pre-tapping years. In Luang Namtha, this is one of the reasons why many contract-farming schemes dissolved from “2+3” to “1+4”; villagers are eager to obtain immediate compensations for their labour input (Shi, 2008).
- Both investors’ and Lao government’s technical extension services are inadequate.

Investors, on the other hand, are plagued with the following concerns:

- Villagers ignore signed contracts. It is not uncommon for villagers to have already signed contracts with an investor, but default when better offers, either by another company or individual investors, emerge.
- It is difficult to motivate the villagers to work. Some companies opt to pay the villagers, but the pay doesn’t necessarily encourage consistent work (villagers don’t come to work again until pay for the last period has run out).
- The quality of villagers’ work is difficult to control. The companies don’t have enough technical staff to monitor all the villages closely. As a result companies opt to demarcate the plots early to obtain better control of their shares of the trees.



- Villagers may negate the contract and not sell future latex yields to the investors, presenting tremendous risks for the companies. This is another incentive for investors to push for demonstrations or demarcate shares early.
- Labour shortages, particularly after tapping begins.

## **4.9 Monitoring, Evaluation and Environmental Impact**

### *4.9.1 Lao PDR*

In governing foreign investments, legal and institutional frameworks already exist in the Lao PDR to mitigate their potential environmental impacts. Section 3 of this report includes an overview of the environmental assessment process, but to summarize briefly, the *Investment Promotion Law* obligate investors to protect the environment and allows for the granting of incentives to investment activities that protect the environment or biodiversity. Under the *Environmental Protection Law*, all investment projects must have an environmental certificate to proceed. WREA is the agency responsible for issuing the certificate and leading a multi-tiered evaluation and consultation process involving key line agencies and district as well as village authorities. If, after the initial assessments, WREA finds the project may have significant negative environmental consequences or the project does not have an adequate environmental management plan, investors will be required to conduct an environmental impact assessment (EIA).

In implementation, however, rubber plantations in northern Lao PDR have rarely gone through a formal EIA process. This has been documented widely in the literature (NAFRI, 2007; Shi, 2008; *Vientiane Times*, 18 November 2008) and is also consistent with this study's current field findings. The feasibility studies carried out by companies generally focus on economic viability over environmental assessment. Delegating the responsibility of feasibility studies to investors without third-party comment is problematic, as few rational, profit-maximizing businesses will knowingly produce results that preclude themselves from investment opportunities based on environmental concerns.

The lack of a formal process, however, does not imply that environmental considerations are entirely excluded from the provinces' decisions over land availability and suitability. Both Bokeo and Luang Namtha, for example, have

provincial regulations and guidelines on land eligibility for rubber based on land degradation, altitude, slope, and proximity to watersheds.<sup>31</sup> While surveying land, the technical staff from the province and district also play an active role in facilitating compliance with these guidelines. The ultimate enforcement, however, is spotty and plantations have been known to encroach on forests or even protection forests. This is possibly due to: 1) lower level authorities and villagers are under pressure to identify land for investors; 2) in the contract farming model, due to limited monitoring capacity of both the Lao government and Chinese companies, it is difficult to maintain precise control of where villagers plant.

Once a company has been approved to develop plantations, the ongoing monitoring and evaluation efforts focus on the company's adherence to contractual arrangements and progress made in terms of physical plantation areas. In Luang Namtha, businesses are required to submit progress reports to the provincial DPI every year, and more frequently during the first year of operation. In Bokeo, companies are required to report three times a year at Months 3, 6, and 12.

#### *4.9.2 China*

Formal Chinese investors receiving PRSF are evaluated by the GoY annually. The evaluation process consists of analyzing SPOT and Quickbird satellite images and paying field visits to ascertain that actual plantation areas conform to companies' reported areas in their applications for subsidies. However, it is widely acknowledged that the exercise is poorly equipped to verify the "ownership" of the plantations. It is easy for investors to cheat the system by pointing to other companies' or Lao villagers' plantations as their own. The evaluators produce a credibility ratio (defined as ascertained plantation area divided by company-reported plantation area) on which companies' subsidies in the next year are discounted. The average ratio is said to have hovered around 50%. Table 4 earlier in this report attempted to show a partial comparison of physical plantation areas by company across two data sources: data gathered from PAFOs in Lao PDR and those published by the evaluation mission of GoY. However, due to missing data, there are simply too few data points for drawing valid patterns.

GoY conducts a similar exercise in northern Myanmar for the purpose of subsidy distribution. Compared to northern Lao PDR, China's promotion of poppy

---

<sup>31</sup> However, regulations are nearly blank on the environmental standards of processing facilities.

replacement plantations in Myanmar began earlier and is more concentrated geographically. As a result there is more intense territorial competition among investors, which has inadvertently led to a peer monitoring system. While Chinese companies in Lao PDR tend to know little about one another's operations, companies in northern Myanmar watch closely and, if an investor reports exaggerated areas for an unfair advantage in subsidies and quota, the inconsistency is often disclosed to authorities by its competitors. Chinese experts speculate that a similar phenomenon may arise in northern Lao PDR as PRSF-led commercial agricultural development deepens.

Similar to Lao authorities, the focus of GoY's monitoring and evaluation efforts thus far are focused on verifying plantations areas. Though experts claim to also consider the technical quality of the plantations, there are no explicit, binding requirements tying environmental performance to the allocation of subsidies. Chinese businesses predominantly report adhering to the technical and environmental standards adopted by Yunnan State Farms.

In mid-2007, China's State Forestry Administration (SFA) developed *Draft Guidelines for Sustainable Silviculture Practices Overseas* in collaboration with GEI, the University of International Business and Economics, and the Chinese Academy for Environmental Planning. However, the guidelines only require Chinese companies to adhere to the laws of the countries in which they operate, so they are at best as effective as the regulatory framework in Lao PDR (Rutherford et. al., 2008). Most of the businesses and Chinese officials we interviewed professed to not knowing about the guidelines. It is also suggested that PRSF-based plantation development in northern Lao PDR or Myanmar does not fall within the executive boundaries of the SFA. Composed of a number of key agencies such as Ministry of Commerce and Ministry of Agriculture, the Poppy Replacement Working Group at the national level (and in subsequent local incarnations) does not include any forestry authorities.

A GoY informant expressed hope that GoL will strengthen monitoring of foreign investors: "This ultimately should be the responsibility of the Lao government. Trying to monitor these businesses is a tremendous resource drain for us, and we are hopeful that Lao authorities will step up their efforts, too."

#### **4.10 Labour**

Labour shortage, among both smallholders and company-led investments, has been widely observed in Luang Namtha (Shi, 2008). It is a shared concern among farmers as well as investors. According to the *Investment Promotion Law*, the use of foreign laborers, if necessary, must not exceed 10% of the enterprise's labour force and businesses must give priority to employing Lao workers.

Investors have found this a difficult limitation to manage. Not being able to bring in an adequate number of technical workers and supervisors has interfered with the progress and quality of plantation development; the high costs of obtaining temporary residential permits for imported workers also place extra burdens on the businesses. Chinese investors list labour shortage as one of their primary concerns, if not the top concern, about operating in the rubber sector of Lao PDR.

#### **4.11 Market Chains, Trends, and Risks**

With a small latex production and most rubber trees in a pre-tapping stage, northern Lao rubber farmers still rely primarily on individual traders and middle agents to supply the Chinese markets. During the last six months of the 2007-08 fiscal year (April - September 2008), Luang Namtha Province exported more than 400 tons of latex to China (*Vientiane Times*, 17 September 2008). This amount, however, accounts for a negligible fraction of China's total latex imports. From January to September 2008, China imported a total of 1.29 million tons of natural latex from global suppliers (CRIA, 2008).

An increasing majority of natural latex in China, domestically produced or imported, is being channeled to the automobile and tire industry. Driven partly by state promotion of the automotive industry, tire production (particularly the production of passenger car radial tires, PCR) has increased rapidly in recent years to meet rising domestic demands and to supply export markets. The primary input of tires is natural latex. Table 6 shows the patterns in tire production in the context of total natural latex consumption in China from 2001 to 2006.

**Table 6: Tire Production vs. Natural Rubber Consumption in China: 2001- 2006**

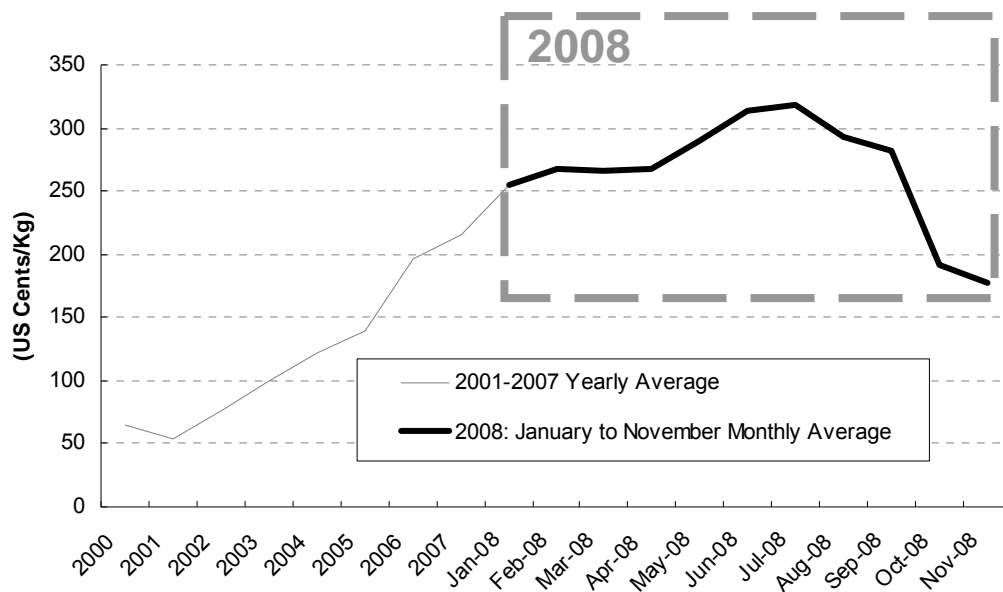
	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Tire production ( <b>millions</b> )	83.87	92.64	102.48	127.61	148.29	189.18
Rubber used ( <b>million tons</b> )	0.85	1.02	1.15	1.47	1.67	2.07
Natural ( <b>million tons</b> )	0.55	0.67	0.75	0.98	1.15	1.43
as percent of input	65%	65%	65%	67%	69%	69%
Synthetic ( <b>million tons</b> )	0.3	0.36	0.4	0.49	0.52	0.64
as percent of input	35%	35%	35%	33%	31%	31%
China's total natural rubber consumption ( <b>million tons</b> )	<b>1.46</b>	<b>1.48</b>	<b>1.77</b>	<b>1.84</b>	<b>1.92</b>	<b>2.14</b>
Natural rubber used for tire production as percent of total natural rubber consumption	<b>38%</b>	<b>45%</b>	<b>42%</b>	<b>53%</b>	<b>60%</b>	<b>67%</b>

Source: CRIA, 2008

While the country's rubber production bases are in the far corners of Yunnan and Hainan, the numerous processing facilities in these provinces predominantly engage in preliminary processing only. Jinghong Municipality (of Xishuangbanna Prefecture) alone has 41 such privately owned facilities, not including the additional facilities in the YSF system. Advanced processing facilities are located in central and coastal China. Currently, the largest PCR factories are located on the east coast in Shanghai, Hangzhou, Nanjing, and parts of Shandong province.

In the latter half of 2008, however, the world economic and financial crises began dampening China's natural latex demand. In July 2008, China imported 128,646 tons of latex, a 13% drop from July 2007 (CRIA, 2008). Meanwhile, international prices for rubber, from farm gates to commodity trading floors, saw dramatic drops (Figure 10). In Cambodia, prices have plummeted from US\$3,200 a ton in April to \$1,800 in October 2008 (*Phnom Penh Post*, 24 October 2008). In Thailand, buyers have been known to renege on contracts, creating considerable losses for the industry (*The Nation*, 6 November 2008). At Ban Oudomsin, a latex producing village in Sing District of Luang Namtha, villagers saw collection prices decrease from 7-8 yuan/kg early this year to a current 2.5 yuan/kg. At Wan Jing Dai, a Dai (Leu) village in Jinghong Municipality, Yunnan, villagers report a 50% drop in the farm gate prices of liquid latex compared to this year's peak.

Figure 10. MRB FOB NOON PRICES FOR SMR20 (US Cents/Kg)



Source: Malaysia Rubber Board, 2008.

Recent market trends underscore that rubber is a highly volatile commodity subject to the uncertainties of the global economy<sup>32</sup>. Yet, Chinese investors in Lao PDR are generally confident about the long-term prospect of rubber, noting:

- Price troughs are temporary. Investors remain confident in the long-term economic growth in China and therefore robust demand for natural latex.
- Unlike manufacturing and services, where fierce competition can often drive down profits, development of commercial plantations and cash crops are ultimately constrained by land and location. There is less risk of oversupply.
- Production costs are much lower in Lao PDR (cheap land and labour, plus subsidies). The Chinese government cannot afford to let its own rubber sector (consisting of giant state farms as well as a sizable rural population whose entire livelihood depends on latex) fail, so the government must exercise price floor if necessary. And the price floor required to break even in Lao PDR is much lower (about 2,000 yuan/ton lower) than in China.
- Large investors working under the poppy replacement program have tax and tariff export quotas guaranteed by the Chinese government, so even if China was to temporarily stop rubber imports in order to protect domestic producers,

<sup>32</sup> Please see section 3 of this report for a discussion of global supply, demand and price trends in rubber.

the move will disadvantage informal investors and Lao companies/villagers before it affects formal Chinese investors.

The investors are, in fact, much more concerned with these possibilities during favorable market conditions:

- Villagers will renege on contracts and not sell to them.
- There will be an oversupply of traders and middle agents who will drive up the collection prices. Investors prefer to have enforceable exclusive collection rights among Lao villagers.

It should be noted that key stakeholders in the China-Lao rubber sector are not exposed equally to potential market risks. While most formal Chinese investors are partially shielded from market volatility through quotas and subsidies, these options are not available to Lao villagers and individual investors. Under the China-ASEAN FTA, Lao PDR obtains preferential tariff rates for a wide variety of agricultural exports, but natural rubber is not included to our best knowledge. This makes it all the more important to ensure credit provision and encourage income diversification among villagers to weather market fluctuations.

#### **4.12 Opportunities, Challenges, and Incentive-Based Approaches**

Synthesizing the findings of previous sections, we conclude that the China-Lao transnational linkages present a number of opportunities as well as challenges to the Lao rubber sector. The observations below not only apply Chinese investors in rubber, but also have broader relevance for foreign investments in the Lao resource sector.

##### *4.12.1 Opportunities*

- Capital injection. Chinese investors provide much needed capital. Lao PDR lacks adequate financial infrastructure, so it is difficult for Lao entrepreneurs and villagers to obtain enough credit to start rubber ventures on their own. The government also lacks the revenue to make substantial state investments in the sector. A crop like rubber, with a delayed economic return, requires intensive capital commitment in the initial stage. Whether it is through the form of joint venture, contract farming, or informal cooperation, the injection of

foreign funds can help Lao villagers and entrepreneurs overcome the initial capital constraints.

- Integration with global markets. In spite of the current global economic downturn, China remains a robust market in the long run. Lao farmers are poised to profit from an expansive market demand for rubber as well as other agricultural commodities. Chinese investors and traders serve as crucial linkages to market access. With rubber, the northern Lao uplands, once isolated and forgotten, are quickly gaining market value. If well governed, the capitalization of land can have profound implications for poverty alleviation and effective management of natural resources.
- Technological transfer and value adding. With decades of experience in rubber cultivation and industrial processing, China can provide much needed technical expertise (as well as cautionary lessons) to the nascent Lao rubber sector. As Lao farmers and entrepreneurs move forward on the rubber value chain, they also stand to benefit from the added returns from advanced processing.
- Related infrastructure development. The development of rubber sector can facilitate the development of a peripheral economy and improvement in physical as well as economic infrastructures.

#### 4.12.2 Challenges

- Ensuring concrete benefits and access to land for villagers. Although the Lao rubber sector has developed rapidly in recent years, it is unclear how many concrete benefits it has given to Lao farmers and how much potential it really holds for alleviating local poverty. Although the so-called “2+3” contract farming has been promoted as a win-win scenario, it faces a number of constraints in implementation. When many contract farming arrangements dissolve into concession-like operations, it is a challenge to ensure Lao farmers still maintain v access to their land resources.
- Ensuring technological transfer and value adding actually occur. Current Chinese investments are only focused on establishing plantations and preliminary processing facilities. It is not yet clear when and how Lao producers will move forward on the rubber value chain. It is also difficult to ensure the current contract farming schemes actually facilitate technical



transfers from investors to villagers. Many arrangements are not implemented as intended and investors also cite a lack of technical staff to provide adequate extension.

- Confronting the labour shortage. The labour shortage has been raised as a concern among both Chinese investors and Lao farmers. The gap will only worsen when many more plantations enter the tapping phase. Villagers will be confronted with surging labour demands by a significantly altered livelihood system. The government may be placed under substantial pressure to allow freer migration of foreign workers.
- Land management. Without a well-governed rural land market, it remains a challenge for both the Lao government and villagers to capitalize on the sudden increase in rural upland value.
- Managing global market risks and ensuring livelihood security. Upland villagers in poor, isolated areas are particularly ill equipped to weather global market fluctuations. They have limited livelihood alternatives and market access. Encouraging crop diversification and strengthening the provision of credit and a safety net will be paramount to protect this vulnerable group. Rubber has a prolonged maturity period. It is also important to encourage alternative incomes and strengthen livelihood security particularly during the pre-tapping years.
- Mitigating environmental impacts. Most Chinese investors, inheriting the Chinese traditions in rubber cultivation, tend to prefer monoculture development on large plots. However, China's industrial approach to rubber cultivation may have led to environmental consequences that warrant further examination and scrutiny. The negative environmental impacts of monoculture rubber plantations have been suggested in a wide body of scientific and policy literature (Wu et. al, 2001; Liu et. al, 2006; ADB, 1997). It will be a significant challenge to mitigate the environmental impacts of rubber in Lao PDR, when the Northern Plan is already intent on developing an industrial rubber sector based on large enterprises. In addition, the Lao government lacks capacity to perform thorough environmental assessment and monitoring of rubber projects. The current monitoring efforts are focused mainly on physical plantations already established and contract implementation.

## 5. VIETNAM'S ROLE IN THE LAO RUBBER SECTOR

In the last five years, Vietnamese investors have begun to develop rubber plantations in the south of Lao PDR. Millions of dollars are being invested by Vietnamese actors to achieve a planned 30,000 ha of rubber<sup>33</sup>. Vietnamese investors are also planning to mobilize additional financial capital to enlarge this plantation area to 100,000 ha in the next five years (*Vietnam News*, 22 June 2007).

As Vietnamese investors are expanding their rubber plantations in Lao, there has been growing concern about the negative economic, social and environmental impacts of largely unplanned and uncontrolled landscape changes, as well as the lack of information and transparency regarding the expansion of rubber plantations. This concern has helped to motivate this study on Vietnamese investments in Lao PDR's rubber sector.

This section will:

- Describe the development of rubber plantations in Vietnam and current Vietnamese overseas investments in rubber;
- Investigate the motivations, priorities, resources, mode of operation, relationships and concerns of Vietnamese investors and actors involved in the Lao rubber sector, including companies, smallholders, service providers and key government agencies;
- Analyze challenges and opportunities posed by Vietnamese investments in the Lao rubber sector.

### 5.1 An Overview of Rubber Development in Vietnam

Rubber has had a long historical development in Vietnam. It is believed that rubber was first brought to Vietnam by French colonists in the early part of the 20<sup>th</sup> century. It then became a plantation species in various colonial estates in the south of Vietnam, in provinces such as Dong Nai, Binh Duong and Binh Phuoc. The French colonists established rubber fields in the south of Vietnam in the hope that they could provide natural rubber for the "Mother Land". During the first half of the 20<sup>th</sup> century, around 10,000 ha of primary forest were converted to large-scale rubber

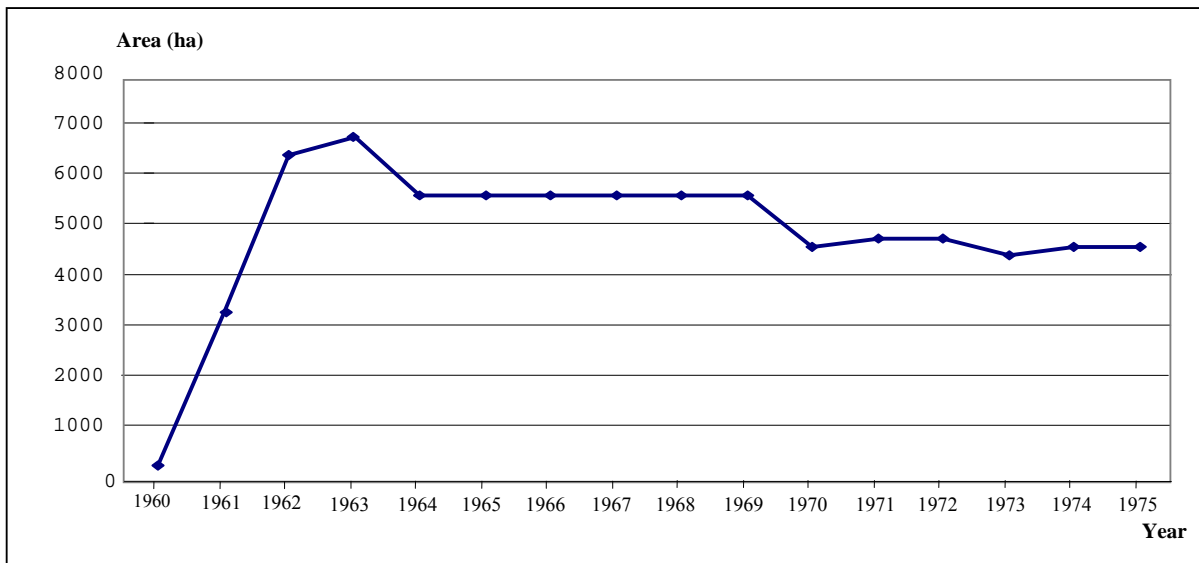
---

<sup>33</sup> The figure of 30,000 ha is based on information shared by informants interviewed for this study.

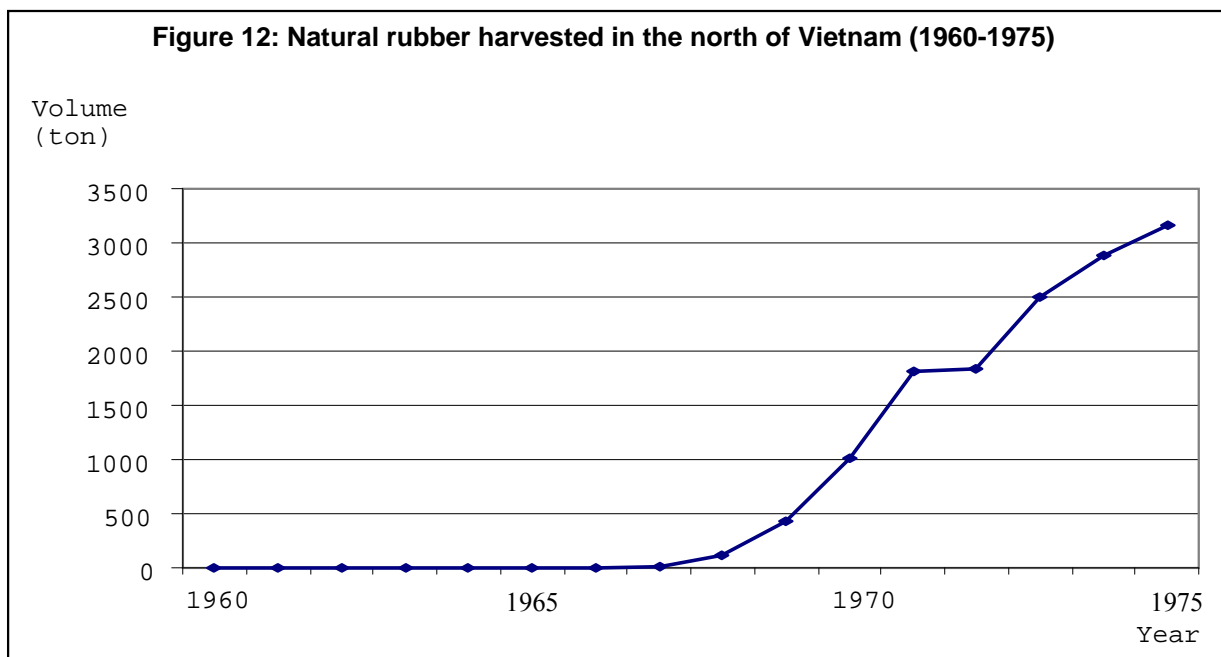
plantations with this goal in mind (Vietnam Rubber Group (VRG), 2006; Hoang, 2000).

After the collapse of the French colonial regime, the north of Vietnam was controlled by the government of the Vietnamese communists, while the south was controlled by a regime supported by the American Government. In the south, the original French colonial owners of the rubber estates had been replaced, but changes in ownership produced little to no effect on the direction of rubber development and rubber plantations expanded in southern Vietnam at a more rapid rate. During this period, the estates in the south of the country planted about 50,000 ha of rubber (General Statistics Office (GSO), 1976). The Northern Vietnamese government also attempted to boost rubber plantations in this period. Statistical data shows that the area of planted rubber in the north increased from 187 ha in 1960 to 4528 ha in 1975 (please see Figures 11 and 12 below).

**Figure 11: Area of planted rubber in the north of Vietnam (1960-1975)**



Source: GSO, 1976



*Source: GSO, 1976*

After reunification in 1975, the new socialist republic of Vietnam, based on the idea of constructing a modern agricultural production system, promoted rubber plantations on a large scale. The State established a number of state-run farms and allocated large areas to those farms for rubber plantations. Most of the areas allocated to state-run farms were forests. Annually, many thousands of hectares of forest were replaced by rubber, and between 1975 and 1986 over one hundred thousand hectares of forest in the upland areas of Vietnam were replaced by rubber (see Table 7).

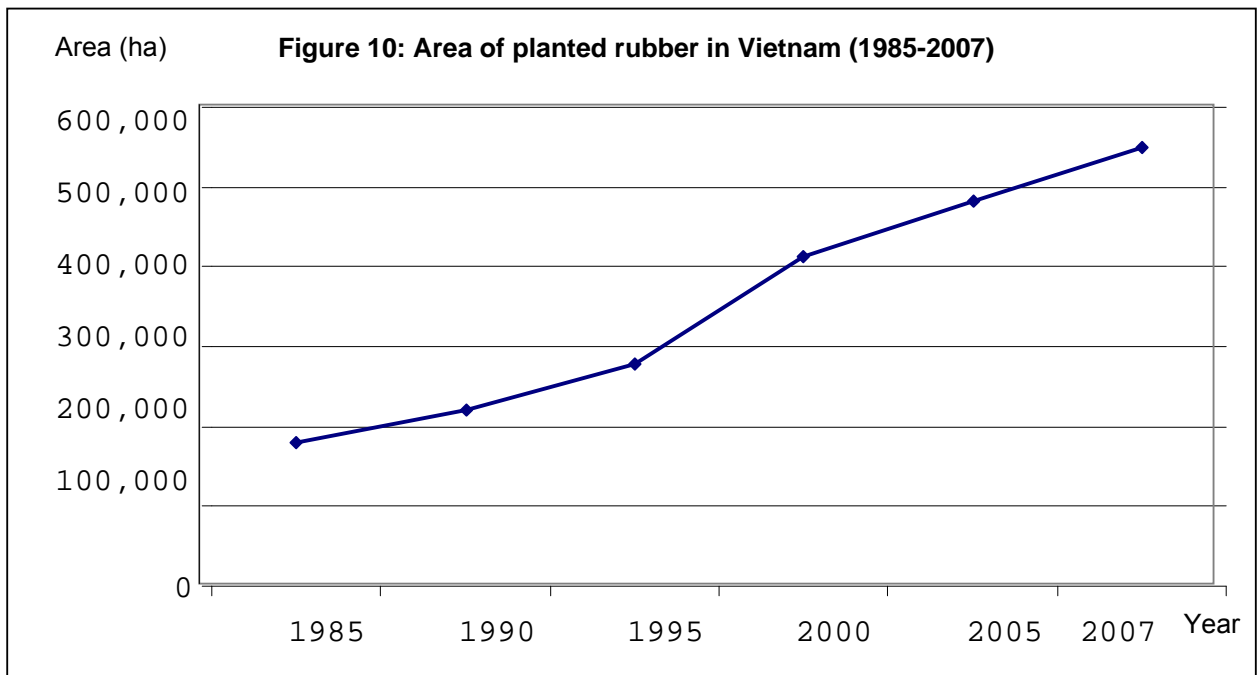
**Table 7: Area of rubber in Vietnam (1976 - 1985)**

Item	1976	1980	1985
Total rubber area of whole country	76,600	87,700	180,236
Area under harvesting	-	58,500	63,650

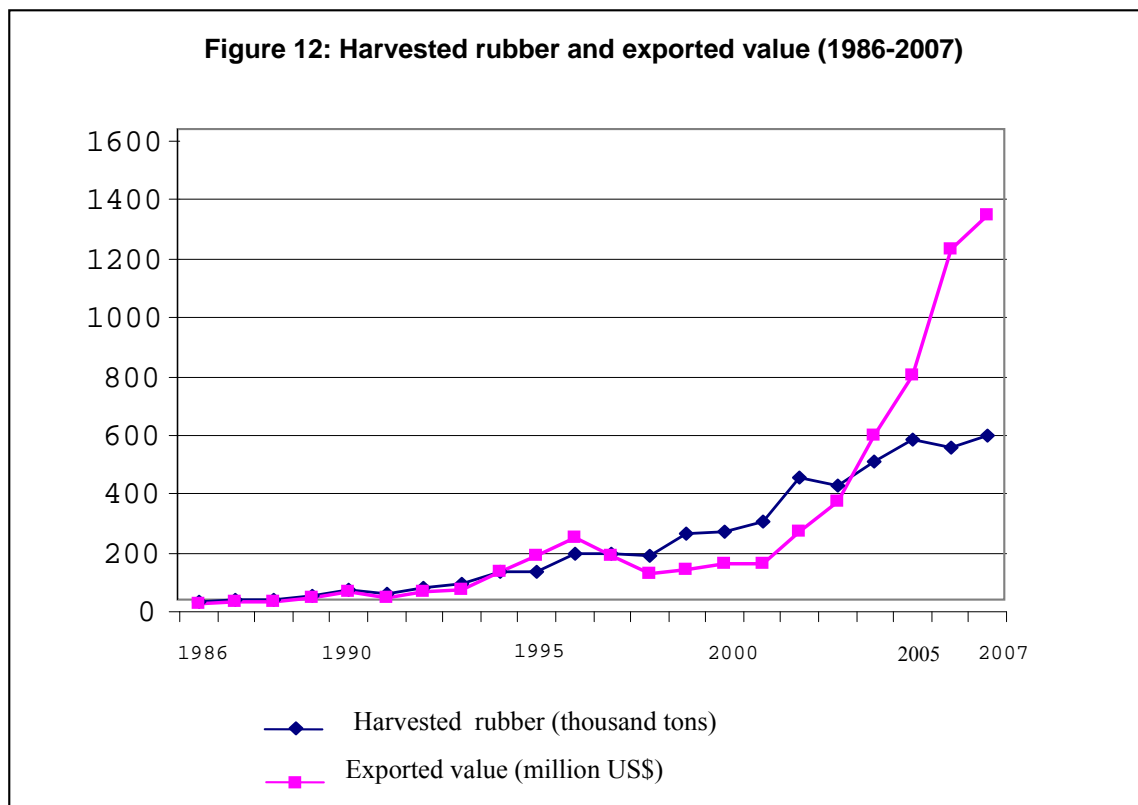
*Source: GSO, 1993*

Since Vietnam launched the opening up and reform of its economy in 1986 (termed “renovation” in English and “đổi mới” in Vietnamese), rubber plantations have been further developed at a very rapid rate. According to national statistical data, Vietnam’s rubber area reached 550,000 ha in 2007, three times the area under rubber in 1985 (Ministry of Agriculture and Rural Development, 2008; Vietnam

Government Office, 2005). In addition, rubber has become of one of the country's largest exported products. In 2007, the value of exported rubber reached US\$1.3 billion (see Figures 10 and 11 below).



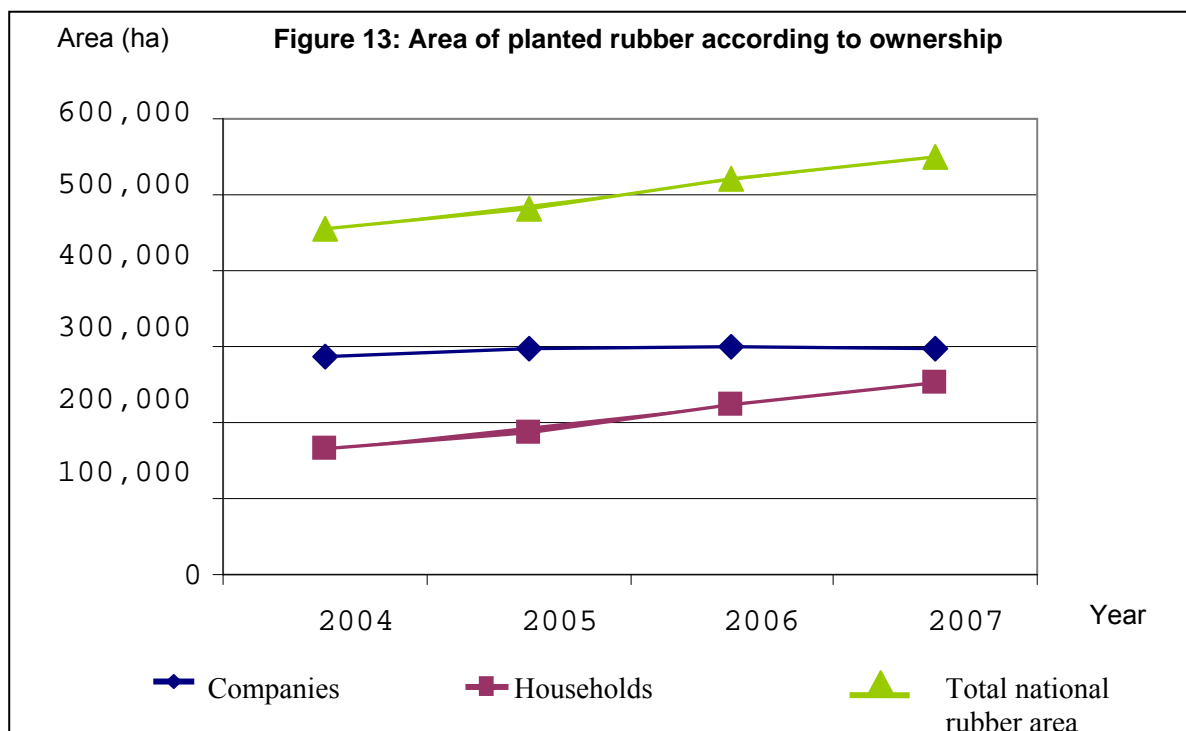
(Source: GSO, 2008)



Source: GSO, 2008

The rapid development of rubber plantations in Vietnam is an outcome of the economic “renovation process”, which as in China, led to the creation of enabling policies favorable for rubber development. For example, households became recognized as independent economic units, and were then allocated land with their own rights in deciding what kind of crops or trees that they want to plant on their land. Further, their products could now be sold freely in the market. As a result, thousands of households in the upland areas of Vietnam have planted rubber in order to earn a better income. According to a number of recent reports (for example, Hung, 2007), 46% of the current rubber area in Vietnam is planted by households, contributing around 34% of the total amount of rubber produced in 2007. VRG (2006) estimates that local households earn about US\$1,500 per year from one hectare of planted rubber.

“Renovation” policies also recognized state-run farms as economic organizations and allowed them to carry out business activities and investments based on the calculation of economic benefits rather than government-directed policies. Due to this change in policy, most of the state-run farms modified the way that they develop rubber plantations. A number of rubber companies in the south enlarged their plantation area through cooperation with state-owned enterprises with suitable land for rubber plantations in the north. Meanwhile, other companies opened up plantations in remote areas in the Central Highlands or the northwest region of Vietnam through applications to the provincial authorities or through agreements with local households that were allocated land during “renovation”.



*Source: Hung, 2007*

At the same time, Vietnam has strengthened its trade relationships with countries around the world, allowing rubber producers to sell their products to different markets with better prices. Vietnam's rubber products are sold to 50 countries, and currently the ten largest importers of Vietnamese rubber are: China; South Korea; Taiwan; Germany; Russia; the United States; Japan; Malaysia; Hong Kong; and Singapore (Ministry of Finance, 2008; GSO, 2008). About 60% of Vietnamese rubber is exported to China and 23% to the other nine top importers (please see Table 9 for more detail about rubber exports). The major exported products are natural latex and primary processed latex, such as SVR 1, SVR 2, SVR3, SVR L, SVR3L, and SVR 10. Annually, the exported value of these products accounts for more than 90% of Vietnam's national exported value of rubber products.

**Table 8: Ten largest importers of Vietnamese rubber sector and their imported volume  
(Unit: 1,000 ton)**

No.	Country	2000		2001		2002		2003		2004		2005	
		Vol.	Market share	Vol.	Market share	Vol.	Market share	Vol.	Market share	Vol.	Market share	Vol.	Market share
<b>I</b>	Total exported volume of the country	273.4	100%	308.1	100%	454.8	100%	432.3	100%	513.3	100%	587.1	100%
<b>II</b>	Ten largest importer of Vietnamese rubber sector												
<b>1</b>	Russia & CIS	19.5	11.2%	15.4	5.0%	7.6	1.7%	14.1	3.3%	15.1	2.9%	19.2	3.3%
<b>2</b>	Singapore	33.7	19.4%	42.6	13.8%	63.5	14.0%	27.6	6.4%	6.3	1.2%	2.7	0.5%
<b>3</b>	Germany	12.4	7.2%	13.6	4.4%	14.4	3.2%	17.8	4.1%	18.4	3.6%	20.7	3.5%
<b>4</b>	China	111.1	64.1%	94.7	30.7%	162.9	35.8%	196.2	45.4%	303.5	59.1%	369.8	63.0%
<b>5</b>	Taiwan	13.3	7.7%	17.7	5.7%	23.9	5.3%	21	4.9%	18.8	3.7%	22.5	3.8%
<b>6</b>	Malaysia	4.6	2.7%	17.3	5.6%	28.4	6.2%	12.3	2.8%	5.6	1.1%	6	1.0%
<b>7</b>	Hong Kong	8.3	4.8%	5.3	1.7%	13.4	2.9%	11.4	2.6%	27.8	5.4%	4.3	0.7%
<b>8</b>	Japan	27.2	15.7%	8.4	2.7%	15.4	3.4%	11.3	2.6%	13.3	2.6%	11.5	2.0%
<b>9</b>	South Korea	15.8	9.1%	20.1	6.5%	24	5.3%	25.9	6.0%	3.2	0.6%	29.1	5.0%
<b>10</b>	United States	--	--	3.9	1.3%	16.5	3.6%	12.2	2.8%	16.1	3.1%	19.2	3.3%
<b>III</b>	Others	27.5	15.9%	69.1	22.4%	84.8	18.6%	82.5	19.1%	85.2	16.6%	82.1	14.0%

Source: GSO, 2008



In Vietnam today, rubber is seen as one of the country's most important agricultural activities. The rubber sector, in the view of the Vietnamese government, has played an important role in the national economy: it has employed a large number of rural laborers; increased rural incomes; and has become an important export product. Based on this perception, the government is preparing a national program for rubber development (Ministry of Agriculture and Rural Development, 2008; Vietnam Government Office, 2005; Vietnam Government Office, 2006), aimed at following objectives:

- To replace 200,000 ha of “poor forest” by rubber over the next ten years in the Central Highlands and the Northwest Region, in order to create more employment and improve incomes for local people in the upland areas;
- To develop high-quality species of rubber for plantations;
- To develop rubber processing factories in order to earn more benefit from rubber plantations;
- To encourage foreign investment in rubber processing and the production of high-quality products for export.

However, it can be argued that Vietnamese rubber companies are facing a number of challenges in meeting such ambitious objectives:

- A scarcity of land suitable for rubber plantations, due to both government land allocation policies and the non-cooperation of local households in planting rubber. In Vietnam, rubber plantations are classified as “industrial plantations” and can only be established on agricultural land. However, the Vietnamese Government has allocated all national agricultural land to the people, leading to a scarcity for rubber companies. In addition, households that have received agricultural land do not normally want to cooperate with rubber companies, believing that the strict contracts with companies may lead

to their land being taken over. Therefore, many households have refused the contracts offered by rubber companies.

- Second, there is public recognition of the negative impacts of industrial plantations. Recent media reports and scientific studies have pointed to environmental problems, such as the serious degradation of forests, water resources and biodiversity, caused by industrial plantations including rubber, coffee and other species. For example, Tran (2008) found that the development of rubber plantations in Vietnam's Central Highlands has led to the destruction of thousands of hectares of natural forest in Dak Lak and Gia Lai Provinces. Nguyen (2008) also recounts that underground water levels in the Central Highlands have decreased by 20% in comparison with data collected in the late of 1970s. These and other problems have led to some changes in the planning and management of rubber plantations, such as the Central Government's decision to reduce the plantation area and extend the implementation period for rubber plantations in the Central Highlands of Vietnam.
- Third, Vietnam faces rural unrest in its upland areas. In last few years, various ethnic groups in Vietnam's uplands have organized demonstrations to claim their rights to use land and forest resources, which were previously allocated to state-run farms. These demonstrations have even resulted in the destruction of state-run plantations (for example: Vu *et al*, 2000).

## **5.2 Vietnamese Investments in Rubber Plantations Abroad**

Vietnamese investments in rubber plantations in other countries appeared in the early part of this decade. This wave of overseas investment was initiated through political relationships between Vietnam and other countries, and is focused in countries with relatively abundant land resources and suitable natural conditions for rubber plantations, such as Lao PDR, Cambodia and several African countries. After the signing of bilateral political and economic agreements, the Vietnamese government has encouraged Vietnamese

investors to develop and implement investment plans for rubber plantations in the cooperating countries.

To date, Vietnamese investors have implemented around 12 rubber plantation and processing projects in Lao PDR and Cambodia, of which nine projects are in Lao PDR and two projects are in Cambodia (one Cambodian project has been suspended because of forest destruction). Each project has been allocated about 10,000 ha of land, and most have recently received approval and are in the process of site preparation. The total amount of investment is almost US\$500 million. There are another five rubber projects in Lao PDR and Cambodia that are waiting for approval, with a total investment of about \$US150 million. In addition, there several project proposals relating to rubber plantations in African countries currently in the design stage.

#### *5.2.1 Key investors in Lao PDR*

According to information collected during field work in Vietnam and Lao PDR, there are three main Vietnamese investors operating in the Lao rubber sector. The first and the most important Vietnamese investor in overseas rubber plantation is the Vietnam Rubber Group (VRG), which is a state-owned enterprise established to manage 97 state companies (involved in rubber plantations, rubber processing, timber products and import-export services). According to VRG interviewees, 28 rubber companies under the Group are managing 200,000 ha of state-run farms (40% of the national planted rubber area) and producing 320,000 tons of natural rubber (53% of the national total). VRG also runs 30 processing plants and exports to 40 markets, the most important of which are China and Taiwan. VRG's first overseas investment in rubber is a plantation and rubber processing facility located in Champassak Province in Lao PDR, initiated in 2005. Some successes and lessons learnt from the first projects have encouraged VRG to expand its investments in rubber plantations in Lao PDR, Cambodia and African countries. Currently, VRG is implementing six projects, of which four projects are in Lao PDR and two are in Cambodia. The four Lao plantations have reportedly reached an

area of 30,000 ha, and preparations are underway for a processing plant in Champassak<sup>34</sup>.

The second largest Vietnamese investor in overseas rubber plantation is Dak Lak Rubber Corporation (DAKRUCO). DAKRUCO is a state-owned enterprise under the Dak Lak Provincial Government. The company includes seven smaller rubber companies, managing 14,000 ha of rubber, as well as processing facilities, two Lao-based companies and a quality control centre. DAKRUCO produces around 15,000 tons of natural rubber each year. This company is implementing two projects in Lao PDR<sup>35</sup>: a rubber plantation and a processing project. The Lao investment was launched in 2005, with 8,000 ha of rubber planted so far across Champassak, Saravan and Attapu provinces. DAKRUCO has also started to construct a primary rubber processing unit. According to the project plan, the first planted rubber area will be harvested in 2010. The processed rubber will be sold to consumers in the United States, South Korea and the EU.

The third main Vietnamese investor in overseas rubber plantations is Hoang Anh Gia Lai Group (HAGL). This is a privately owned group, which has only recently turned its attention to rubber. In Vietnam, HAGL has invested in rubber plantations in Gia Lai and Kon Tum provinces. This group has two rubber plantation projects in Lao PDR, with the first started in 2007 (a cooperative project between HAGL and VRG). The project has planted 1,800 ha of rubber and it aims to have 10,000 ha planted by 2012. Another HAGL investment in a rubber was approved by the Government of Lao (GoL) in mid-2008. Beside rubber plantation projects, HAGL also has a number of projects relating to wood processing, mining and fertilizer production, and the company is preparing plans to plant forests in Lao PDR in order to provide timber for its wood processing factories in both Lao PDR and Vietnam.

---

<sup>34</sup> VRG is also involved in another four joint venture rubber plantation projects with other Vietnamese companies, two of which are in Lao PDR and two in Cambodia.

<sup>35</sup> DAKRUCO has also initiated a rubber plantation project in Cambodia. This investment was only started last year and is currently in the site preparation phase.

In addition to these key, large companies, there are numerous other Vietnamese investors who are involved in rubber plantation projects in Lao PDR. Information from interviewees indicated that, for example, there are a number of joint ventures, Vietnamese military units and a pharmaceutical company involved in Lao rubber plantations. However, there is little to no public information available (nor is there an over-arching agency that collects such information) on many Vietnamese investments overseas.

### **5.3 Motivations and Priorities of Vietnamese Investors**

According to our survey of key actors, there are a number of major motivations or driving forces for Vietnamese investments in the Lao rubber sector. The first and most obvious motivation is the profitability of investing in rubber plantations, created by the high demand and recent high prices for natural rubber on the world's market. As noted by interviewees, the F.O.B. (free on boarder) price for all kinds of natural rubber and latex, as well as primary processed rubber, has remained high over the last four years. Although the rubber price is volatile and there have been recent drops, informants still consider rubber profitable in comparison to other plantation activities. Informants also noted that plantation managers can control harvest activities and volume, providing some influence over the price.

Another motivating factor for investing in the Lao rubber sector is the existence of political commitments between the two governments and a stable political environment. For example, in 2002 the governments of Vietnam, Lao PDR and Cambodia signed an agreement to establish a development plan covering the ten provinces sharing borders between the three countries<sup>36</sup> (*Vietnam News*, 5 December 2006). In accordance with the development plan, Vietnam has established an international road system and border gate to facilitate trade between Vietnam, Lao PDR and Cambodia.

Related to this are the expanding trade and investment relationships between countries in the Greater Mekong Subregion (GMS) and ASEAN, and the

---

<sup>36</sup> These are Ratanakiri, Stung Treng, Mondulkiri of Cambodia; Attapu, Saravan and Xekong of Lao PDR; Kon Tum, Gia Lai, Dak Lak and Dak Nong of Vietnam.

expectations of greater ease of trade through planned investments in infrastructure that will better link these countries. For example, ASEAN and China have agreed to practice policies that allow the products of the countries involved to be exchanging freely (Chu, 2006). To support this objective, road and railway links between major cities in ASEAN countries and Yunnan Province in China are under construction, as well as a number of sea ports. From the perspective of Vietnamese companies, this new infrastructure will create much improved conditions for transporting their products.

Lao PDR is also seen as a country with abundant land resources and endowed with suitable natural conditions for rubber plantations. All the interviewees in this study stated that Lao's land resources and environmental conditions meant that it is particularly favorable for large-scale rubber plantations, thus reducing production costs (including the cost of site preparation, protection the plantation areas, transportation of harvested rubber to processing units, and so on). This is particularly pertinent for Vietnamese investors, as there is a significant scarcity of land for cultivation or large-scale developments in Vietnam.

Flowing from this, the main priority of Vietnamese investors in the Lao rubber sector is to develop plantations and the primary processing facilities in areas with "good soil conditions" intensively and at a large scale. This priority, as explained by the interviewees, is the most critical one because intensive rubber plantations at a large scale can help the investors to reduce costs, and improve efficiency.

The social and economic development of plantation areas is another stated priority for the investors interviewed in this study, and not one commonly thought of in the context of Vietnamese overseas investments. Interviewees noted that socio-economic development was a priority in order to support continued production and profits from investments in plantations. It is claimed that all the rubber plantation projects in Lao are committed to using local labour, constructing infrastructure and supporting local development plans. Some projects have invested in local road construction, local schools and housing for employees. In practice, around 90% of activities in the

establishment and running of plantations are carried out by local laborers. Interviewees also noted that contracted laborers are allowed to grow agricultural crops for three years after the plantation is established to ensure continued income.

The reduction of negative environmental impacts produced by rubber plantations is also seen as a priority, and some projects have applied techniques to control soil erosion and to protect forests and watershed areas. However, discussions with key informants also showed that the environmental impact statements in the feasibility studies of approved projects are generally very simple. Further, most plantation projects do not then apply techniques to reduce environmental impacts on the ground. Therefore, it can be inferred that claims of attempts to reduce environmental impacts are most likely aimed at obtaining land concessions and approvals for projects.

## **5.4 Modes of Operation**

### *5.4.1 Regulatory and approvals processes*

Based on discussions with VRG and DAKRUCO representatives, investment projects in Lao PDR follow a similar series of steps to obtain approval and begin operations. These are detailed below:

- The investors look for suitable plantation areas in Lao PDR, utilizing relationships with both Lao and Vietnamese authorities;
- Second, the investors establish an overseas subsidiary and apply for an overseas investment license from the Vietnamese government;
- After receiving the overseas investment license, the newly formed rubber company applies for permission from GoL to carry out feasibility studies and begins designing a project proposal. The feasibility study is usually carried out within two or three months, and is mainly focused on collecting secondary data regarding land conditions, policy documents and administrative aspects. Interviewees also noted that current Lao laws require each plantation area to be less than 10,000 ha, and that each project includes a rubber plantation and a processing component;

- A project proposal is then formulated using the collected secondary data. In general, the research team found that this does not involve any study of environmental impacts and there is no mention of negative impacts in the project proposal. The proposed project then needs to be approved by GoL. These initial steps to gain project approval generally take at least one year for projects with a large investment<sup>37</sup>.

#### *5.4.2 Planting and processing*

Once approved, the investors begin land preparation. The company will negotiate compensation with the owners of fallow land or cultivation land, usually with the support of the local authorities and even traditional village headmen. The rate of compensation is generally about US\$60 per ha. Once land is secured, the company will invest in road construction and marking out the boundaries of the plantation area.

When ready to plant, the investors buy young rubber seedlings in Vietnam and bring them to Lao PDR. The seedlings are kept in the nursery gardens near the plantation areas for at least six months before they are planted. Plantation sites are generally prepared with modern machinery and equipment, such as chain-saws, tractors and trucks. Most of these machines and technical workers are brought to Lao from Vietnam.

Vietnamese investors also generally set up plantation units and establish a management board for each plantation unit. Each management board comprises five to six people, including the director, the vice director, one or two technicians, one accounting staff and one interpreter. The director, vice director and technicians are always Vietnamese, while the accounting staff and interpreter are often bilingual Lao people. The management board is responsible for managing the activities of the plantation, including tree protection and rubber harvesting in its assigned plantation area. The assigned area of one management board ranges from 2,000 to 3,000 ha.

---

<sup>37</sup> Please see section 3 of this report for a more in-depth discussion of Lao PDR investment approval processes and EIA requirements.



The companies generally make short-term contracts with local workers. It was reported that the cost of planting one hectare of rubber ranges from US\$300 to \$400, and for maintaining one hectare after planting ranges from US\$200 to \$300. Vietnamese companies also organize technical training for contracted workers, usually provided by Vietnamese technical staff. According to the Vietnamese investors interviewed, this is one of the most difficult activities because local workers have little to no knowledge related to rubber plantations and often have a low general educational level. The training courses also cover some techniques associated with agroforestry, as the local workers are allowed to cultivate other crops such as rice for the first three years after rubber is planted.

Planting generally takes place over two or three months in the second half of the year, and is strictly organized, with investors bringing over Vietnamese technicians and laborers to work closely with local laborers to ensure planting follows the schedule and technical requirements. Rubber trees require maintenance and protection for four years or so after planting. During this period, local laborers are hired to clear grass, to spread fertilizer or to work in the protection team controlling forest fire and other threats.

Vietnamese companies also establish units for processing rubber. To date, all Vietnamese rubber plantation projects in Lao PDR must have a processing component<sup>38</sup>. In general, the rubber processing unit of one plantation project has an annual processing capacity of about 20,000 tons of harvested natural rubber. The processing machines are imported from various countries and are actually primary processing machines only, indicating that the additional stages of processing and value-adding will be done elsewhere.

None of the Vietnamese-funded rubber plantations in Lao PDR have yet reached the stage of harvesting or processing rubber. However, companies involved must have long-term plans and contracts, and the processed products will most likely be sold to regional buyers, mainly in China.

---

<sup>38</sup> According to our interview results, three rubber processing units for three different projects will be constructed in Lao PDR over the next year.

## 5.5 Financing and Resources

Different Vietnamese investors utilize different financial sources for their investments in Lao PDR. For large companies like VRG, the profits of rubber production are the main financial source for overseas investments and the company faces few difficulties in mobilizing finance. Similarly, DAKRUCO earns significant revenues from its rubber plantations in the Central Highlands of Vietnam, and uses these profits to finance ventures in Lao PDR.

For HAGL, the main source of money for investments in the Lao rubber sector is profits from wood processing and furniture production. However, this suggests that HAGL is more concerned with the timber that can be harvested from areas to be converted to rubber plantations in Lao PDR, rather than long-term rubber production.

All rubber plantation areas with Vietnamese investment are located in the south of Lao PDR. According to information collected in this study, around 30% of these plantation areas were, or still are, bare land or fallow land (left fallow during rotational shifting cultivation), while some 70% can be classified as poor or degraded forests<sup>39</sup>. The investors commonly hold the view that their projects play an important role in transforming “poor” areas into areas producing benefits or, to use the terms of one interviewee, producing “white gold”.

To date, the Vietnamese government does not provide any specific subsidies or incentives for rubber plantations in Lao PDR. GoL also provides no subsidies for Vietnamese investors in this sector, although interviewees for this study note that there are two main incentive policies for all investors: there is no land tax for the first nine years after establishing a plantation; and

---

<sup>39</sup> According to our interviewees, they believe that Lao policy classifies poor or degraded forest as that with stumpage volume of less than 120 m<sup>3</sup>. The revised *Lao Forest Law* (2007) does not include specific volume of biomass criteria to designate degraded forest. In practice, there is the understanding in some provinces in the south that degraded land suited to development has a biomass volume of 30 m<sup>3</sup> or less. This was recently given a more formal status, with MAF announcing that rubber plantations would now only be allowed in areas that contained less than 30 m<sup>3</sup> / ha of forest cover (*Vientiane Times*, 18 November 2008). This is significantly less than the figure quoted by the Vietnamese interviewees, indicating that land used for some plantations may actually be considered relatively “forested”, such as regenerating forest land.

investors can bring in machinery and equipment from their own countries to set up plantations in Lao PDR.

## **5.6 Challenges and Opportunities**

### *5.6.1 Challenges for Vietnamese investors*

The Vietnamese investors interviewed for this study note several key challenges for investments in the Lao rubber sector. First, land-use policy and planning in Lao PDR are not clear for many investors, particularly regarding land rights. Moreover, different local authorities implement national policies and planning in different ways. These inconsistencies and issues have caused the loss of time and money for investors.

Second, human resources also pose a challenge. Local labour is limited and local workers often have relatively low educational levels, making it difficult to transfer relevant technical knowledge. According to estimates based on interviews for this study, a Vietnamese rubber plantation in Lao PDR would use about 5,000 laborers over the duration of the project (approximately 25 years). In addition, Vietnamese investors pointed out that Lao policies regulating the employment of “foreign experts” caused problems, as this process involves significant fees.

A third challenge noted by Vietnamese investors is the poor living conditions in project areas. Most of the plantation projects are in remote areas, with poor roads, no electricity and no primary health care.

### *5.6.2 Opportunities*

Interviews and discussions for this study identified four main opportunities or benefits arising from the flow of Vietnamese investments to rubber plantations in Lao PDR.

First, these projects employ a large number of local laborers over an extended period of time, and these workers can earn a relatively stable income over this period. For example, DAKRUCO’s project in Lao PDR employs 579 people permanently and has put in place long-term contracts with 600 local

households for the planting, maintaining and harvesting of rubber. DAKRUCO has estimated that each contracted household earns around 100,000 Lao Kip per month from the project. VRG reports that their local contracted laborers received from 70,000 to 100,000 Lao Kip per month. This can be viewed as both a challenge and an opportunity. It is lower than the average monthly wage of about 250,000 Lao Kip per month cited by other sources (see, for example, *Business in Asia*, 2004)<sup>40</sup>.

Second, rubber plantations have the potential to contribute to a better standard of living for people in the local area of such projects. Vietnamese investors point out that their projects include investments in local infrastructure, such as roads, schools and primary health care clinics. A DAKRUCO project, for example, has constructed two primary schools, one for Ban Laongam in Saravan Province and the other for Ban May in Champassak Province, as well as health care clinics in these two provinces. Further, the company has provided medical equipment for the provincial hospitals, constructed an inter-village road system and electricity transmission system for remote villages. VRG also reports that it has constructed three classrooms for two villages and fifty houses for contracted households in Champassak Province.

Third, local workers engaged in the rubber plantation projects have the opportunity to learn new cultivation skills and knowledge. As stated above, Vietnamese companies provide training courses not only on rubber cultivation, but also about agroforestry, which may contribute to improved agricultural practices.

Fourth, the investments flowing into rubber plantations and processing contribute to Lao PDR's GDP and this contribute to national economic development.

---

<sup>40</sup> In addition, Manivong and Cramb (2007) state that the daily wage for an adult agricultural worker in Hadnyao village in Luang Namtha is about 20,000 – 25,000 Lao Kip.

### *5.6.3 Challenges posed by rubber development*

Although this study indicates that Vietnamese investments in the Lao rubber sectors have a number of positive contributions to socio-economic development in Lao PDR, there are also a number of challenges or threats to sustainable and equitable development.

First, the Vietnamese rubber plantations in southern Lao PDR are being established on both agricultural land and “degraded forest land”. The relatively widespread clearance of forests that this indicates may create negative impacts on the natural environment. According to our interviewees, some 90% of the land allocated to Vietnamese investors for rubber development is forested land. This means that the rubber plantation projects associated with Vietnamese investors will necessitate the clearance of thousands of hectares of forest annually. Lessons learnt from rubber plantations in Vietnam and other countries demonstrate that such a clearance of forest will contribute to soil erosion, biodiversity loss and the decline of underground water resources.

Second, the rubber projects do not necessarily result in a positive transformation of the livelihood strategies and cultural practices of local people. As we have learnt, rubber projects in Lao PDR are often implemented in areas with a number of different ethnic groups and a mosaic of agricultural production practices, including rotational shifting cultivation, livestock raising and the gathering of NTFPs. In Lao villages, social organization, relationships, production activities and households have been ordered in accordance with local cosmology, knowledge, beliefs and subsistence ethics generated over a long period of adaptation to the natural environment as well as other living conditions. Based on lessons from other countries with similar experiences, the decline of cultivation land and forest resources will contribute to negative impacts on both livelihoods (such as contributing to food insecurity) as well as the cultural practices of certain ethnic groups.

Third, the high demand among Vietnamese investors for land for rubber and other plantations is increasing pressure and competition for land resources in Lao PDR and may contribute to a growing problem of corruption in the

countries involved. Although most of interviewees did not provide detailed information about instances of corruption, they all agreed that they had to pay some amount in “unofficial fees”. Based on information shared by the interviewees, we estimate that “unofficial fees” range from US\$50-70 per hectare granted to the investor. In other words, one project may spend from US\$500,000 to 700,000 (equal to 1.5% to 2.5% of the total investment in a project) in order to obtain 10,000 ha of land. According to our interviewees, this level of “unofficial fees” is still lower than those required in Cambodia, a country that is also attracting Vietnamese investments in rubber.

Fourth, rubber cultivation is relatively labour intensive and the growing demand for human as rubber plantations are established and reach the harvesting stage may result in increased migration both within Lao PDR and from Vietnam to the plantation areas. Uncontrolled migration often brings with it a host of other problems, such as the formation of relatively vulnerable communities, increased human trafficking and health problems including sexually transmitted diseases.

## **5.7 Conclusion**

This section has attempted to enhance the current understanding of Vietnamese investments in rubber plantations and processing in Lao PDR, a topic that previously has received relatively little attention. It has explored the major driving forces, priorities, resources and modes of operation, as well as challenges and opportunities associated with Vietnamese investments in the Lao rubber sector. The major actors involved in these investments are both state-owned and private companies and groups, and the main driving forces motivating the recent flow of investment are the high prices for rubber, the political support available in the close Lao-Vietnamese relationship and the relative abundance of land suitable for rubber cultivation in Lao PDR. The major priority for a number of Vietnamese investors is to develop rubber production at a large scale, while supporting socio-economic development and reducing negative environmental impacts also receive attention.

Although this study shows that Vietnamese rubber projects in Lao PDR have some clear positive impacts, such as creating jobs and increasing income for local people, and providing access to new knowledge and skills in cultivation, there are also a number of challenges and threats that require further consideration. The major environmental threats of soil erosion, biodiversity loss and the degradation of water resources, as well as increased migration and the uncontrolled and perhaps unforeseen transformation of local livelihood strategies and traditional cultural practices must also be recognized.

## **6. DISCUSSION: CHALLENGES FOR SUSTAINABLE AND EQUITABLE RUBBER DEVELOPMENT**

This study's analysis of the complex linkages between Lao, Chinese and Vietnamese actors in the rubber sector has highlighted that although there are different business models behind investments in the north and south of Lao PDR, there is a convergence around a number of issues.

First, regardless of the origin of the investment, or whether a concession or contract farming model is used, the major concerns of investors in Lao rubber plantations are: ensuring the security of that investment; and maximizing profits from that investment, by improving the efficiency of production and reducing costs where possible. This creates a preference for concessions or concession-style models, such as a "1+4" contract farming system or "demonstration gardens" in the north of Lao PDR. It also means that despite the difference in style between north and south, Chinese and Vietnamese, the substance of practices and impacts of rubber cultivation remain very similar.

Second, investors in the north and south point to similar challenges in terms of the security and operation of their investments. The Chinese and Vietnamese investors interviewed for this study, as well as other stakeholders, raised the issue of labour supply, and labour knowledge and capacity. Unclear land rights and regulatory frameworks were also identified as challenges, indicating that although Lao PDR's physical environment and land resources may suit rubber cultivation, the policy environment is not yet ready for the rapid influx of investment. Problems and conflicts over land rights and labour are likely to become more acute in the future, especially as plantations mature and become ready for harvesting.

Third, although Vietnamese informants spoke more openly about the need to mitigate social and environmental impacts, possibly due to their operations being larger and more centralized in concessions, this study shows that in general there have been few efforts undertaken on the ground to minimize the impacts of rubber development. EIA requirements, for example, are rarely adhered to in the sector, and a lack of GoL resources hinders the full



implementation of the EIA process. In addition, other existing laws and regulations are inconsistently implemented, and reports of blatant abuses of the law (such as planting in national protected areas) have appeared. Although there are Chinese guidelines, for example, that address environmental issues such as soil erosion and water protection, the technical support provided by investors tends to focus on maximizing productivity. Other support, if provided, so far has also focused on providing basic technical knowledge about rubber and addressing more immediate livelihood concerns.

Fourth, real concerns have been raised in both the south and the north of the country over the rapid move to single crop cultivation, with the associated problems of increased vulnerability for farmers and food insecurity. The current models for rubber cultivation in Lao PDR are relatively inflexible, either because they are monoculture concessions or because companies need to ensure maximum returns in more risky smallholder, contract farming systems. Although Bokeo Province and some Vietnamese investors are actively encouraging intercropping, there is an insufficient understanding of the scope or appropriateness of intercropping or other diversified, agroforestry models. General accepted wisdom is that: a) cultivators can only intercrop certain crops in first 3-4 years of a rubber plantation; and b) that rubber will lead to increased incomes allowing farmers to buy food they would have previously have grown. Encroachment of rubber crops on protected and non-protected forests further exacerbates potential food insecurity, given the role of NTFPs and wildlife in supplementing rural livelihoods and providing a safety net in times of food shortages.

These issues pose challenges to ensuring that Lao PDR is able to fully benefit from the use of its land and other natural resources in developing rubber plantations and processing facilities. The current trajectory of rubber development in Lao PDR also raises questions about whether the costs to the country's natural capital and rural livelihoods will be matched by the benefits of rubber. The following section of this study will examine pathways and approaches which could promote the more sustainable development of rubber in Lao PDR.

## **7. APPROACHES FOR SUSTAINABLE RUBBER PRODUCTION AND INVESTMENTS**

The information and analysis presented so far in this report demonstrates a number of key points regarding the sustainable development impacts of rubber investments in Lao PDR. These key lessons can be briefly summarized as follows:

- Rubber investments have grown rapidly in Lao PDR, driven by demand which outstrips supplies in neighboring centers of production and processing, such as China and Vietnam
- Despite the positive impacts of the expansion of Lao PDR's rubber plantations, such as the injection of capital and technology, infrastructure development and potential improvement of rural livelihoods, the lack of effective planning, regulation and monitoring means that rubber development is also leading to negative economic, social and environmental impacts. Economic, social and environmental impacts may become a more urgent problem once processing facilities are established and operating.
- Laws that do exist to mitigate such impacts, such as EIA requirements and the moratorium on large concessions, are not being implemented fully or consistently.
- Although the Chinese Government is taking steps to monitor and regulate the behavior of Chinese companies overseas, it lacks the power to enforce guidelines; Vietnamese and other governments do not seem to be moving in a similar direction, and any joint regulation of commercial behavior also relies on the cooperation and action of the GoL.
- Lao farmers and local communities lack access to technical knowledge about rubber cultivation, production and markets, including methods to enhance productivity, options to increase crop diversity and reduce vulnerability, and potential negative impacts.

- In the absence of effective government controls, companies and investors have so far shows little inclination towards self-regulation or CSR. Some companies recognize the need to control negative impacts to ensure longer-term operations, but mitigation measures are often not implemented, and loopholes are even exploited, adding to social and environment problems.

The examination of relevant literature shows that there are a number of approaches being taken by governments, civil society and companies around the region and globally to maximize the positive and reduce the negative impacts of rubber cultivation. The following section will examine private sector, government and civil society approaches and initiatives aimed at encouraging “best practice” in the rubber industry. This includes: an assessment of the status of CSR in the lower Mekong region, focusing on Lao PDR; a review of private sector strategies to promote best practice in the rubber industry, including CSR and the use of certification; and an overview of government and civil society initiatives to guide and support rubber development, including the promotion of diversified agroforestry models and the role of guidelines and extension services.

## **7.1 Corporate Social Responsibility in Lao PDR**

To inform the research presented in this report, the research team carried out an assessment of environmentally-focused corporate social responsibility (CSR) practices in the lower Mekong region. Provided as Annex 8, the full study includes an overview of the status of CSR understanding and practice in the Mekong region, including case studies of CSR activities in Lao PDR’s plantation, mining, and hydropower sectors. It also discusses gaps in current CSR practices and proposes recommendations and solutions applicable to the promotion of environmental CSR in Lao PDR. The following section provides an overview of the findings of this assessment of CSR.

CSR is based on the idea that corporations and businesses should consider the greater interests of society by taking responsibility for the potential impact of their behavior on customers, stakeholders, and the environment. Thus,

good CSR on behalf of a corporation would not only seek to minimize the impacts of their own operations, but might also attempt to improve the world in areas not directly related to their business activities. Based on the definition presented above corporate social responsibility in this report refers specifically to voluntary actions by corporations to mitigate the impacts of their activities, or beyond that to use their wealth and influence to improve the world and the areas in which they operate.

CSR, although slower to develop than in the West, has been a rapidly developing concept in Asia since around 1997 and the aftermath of the Asian Financial Crisis. Influenced by such factors as an increasingly knowledgeable consumer base, the diligence of civil society, as well as the restrictions of increased environmental regulation, globally-focused transnational companies have been the first to respond with robust CSR programs within their area of operations (APEC, 2005). However, although CSR activities have become increasingly commonplace in Asia, it does not mean that that growth has been uniform. Indeed the vast majority of robust CSR programs exist in the already developed economies of Japan, Korea, or Taiwan. In Asia's least developed countries, Lao PDR or Cambodia, for example, CSR is still in its infancy. In between sits the rapidly growing economic giants of the Mekong Region, Thailand and Vietnam, both with increasingly strong CSR practices<sup>41</sup>. The experiences of these countries could serve as valuable lessons for promoting the CSR agenda in the lesser developed countries of the region.

Although the CSR agenda in Lao PDR is still in its infancy, a number of larger, usually foreign, corporations have begun to implement CSR programs in their Lao operations. Companies that take a leadership role can set an example for other members of the private sector through their commitments to CSR and improve the reputation of their industries in general. The case studies (provided in Annex 8) cover three major sectors of the Lao economy, plantation farming, mining, and hydropower, with one corporate example provided per sector. These cases were not chosen simply to provide examples of best practice CSR, although there are aspects of the corporate

---

<sup>41</sup> Please see Annex 8 for the full discussion of CSR practices in Vietnam, Thailand and Lao PDR.

programmes described that fit that description. Rather, they demonstrate several key points about the important role CSR can play in Lao PDR and key challenges that companies need to address in the process:

- Good CSR practice can provide a blueprint for greater private sector involvement in economic and social development, and high-profile companies can have in promoting modes of behavior in their sector. The sectors chosen, including plantations, are among the fastest growing in Lao PDR, providing significant contributions to Lao GDP while having substantial impacts on the environment and communities.
- There remains a tendency for companies to approach CSR as an effort external to their own operations. Best practice CSR includes measures to reduce any negative social and environmental impacts of a company's own operations, rather than simple philanthropy aimed at contributing to socio-economic development or environmental protection in the countries in which they operate.
- Large, multinational companies with strong CSR programmes at home and in other markets need to ensure that CSR measures taken in other countries of operation are appropriate and really address potential or actual problems associated with operations in the local environment.

#### *7.1.1 Challenges for CSR in Lao PDR*

CSR in Lao PDR is a very new concept, and few corporations have embraced it. There are a number of other gaps or challenges for the promotion and implementation of CSR in Lao PDR. First, a lack of stakeholder involvement and low capacity amongst CSR actors and regulators are common barriers towards CSR implementation in Asia. These issues are even more acute in Lao PDR, where a lack of understanding of CSR and its benefits is prevalent not just among companies but also among actors who facilitate CSR activities, such as industry associations and government.

An additional challenge is Lao PDR's significantly uneven playing field among companies, where only a small proportion practice CSR and act responsibly,

and creating disincentives to improve performance. As in other countries in the region, the Lao economy is also dominated by small and medium sized enterprises (SMES) that lack the motivation, resources and access to information and capital necessary for the implementation of CSR activities.

The promotion of CSR in Lao PDR at this stage is also hindered by the absence of a supportive policy environment. This refers to both the lack of policies to encourage better corporate citizenship, as well as the inconsistent implementation of existing regulations.

Finally, the Lao market and trade relationships are characterized by a relative lack of linkages between buyers, supply chains and markets in destinations sensitive to CSR. In effect, this means that most exports go to markets where environmental and social performance is not considered in purchasing decisions.

#### *7.1.2 Opportunities for the promotion of CSR in Lao PDR*

Despite these challenges, Lao PDR does possess several advantages in promoting CSR. For example, CSR has slowly become a more prominent issue in some of the countries influential neighbors, such as China and Thailand. In addition, as Lao PDR continues to attract foreign investment, its linkages to other, more sensitized markets, will increase.

Lao PDR's key economic sectors have also become increasingly sensitive to environmental and social concerns; tourism, mining, forestry and agriculture and hydropower are all dependent on natural resources. Consequently, more attention has been paid to the environmental and social impacts of activities in these sectors, and due to a long history of campaigning internationally, there are a wide range of tools and strategies available to companies operating in these sectors to improve their performance. In addition, international donor and financial institutions play an important role in financing and monitoring projects, and can draw on international experiences and best practice to "lead the way".

## 7.2 Best Practice in the Rubber Industry

### 7.2.1 Private sector and market-based approaches

The key private sector players in the natural rubber industry are: the producers (plantation managers and investors); the traders (import-export companies); and the manufacturers (companies producing rubber goods, such as latex gloves, tires and industrial components). This section will examine relevant literature on the development and impact of CSR policies and activities among the most influential private sector actors in the rubber industry: tire companies and large-scale plantation companies.

#### CSR in the tire industry

About 90% of the 7.15 million tons of natural rubber produced globally is converted to dry rubber, and is then mainly used to make tires and other automotive parts; about 10% of the world's rubber is used to make latex goods, such as gloves, balloons and mattresses (IRRDB, in Gouyon, 2003). Natural rubber accounts for about 30% of the raw materials that go into producing a car (Gouyon, 2003). The tire industry is therefore a major consumer of natural rubber and an important factor in strategies to promote more sustainable or "green" rubber production.

CSR and sustainability considerations are increasingly prominent in the communications and activities of the world's major tire companies. The industry is dominated by the three top producers (Michelin, Bridgestone/Firestone and Goodyear), which each have a market share approaching 20% (Gouyon, 2003). As Gouyon shows in her 2003 analysis of potential "green" rubber markets, the tire industry is dependent on high levels of technology, research and development, and companies are focused on maintaining a reputation for technological advancement, safety and efficiency. Claims of environmental responsibility are generally focused on reduced fuel consumption through better tire technology, the company's own greenhouse gas or other pollutant emissions, and external, philanthropic activities unrelated to rubber or tire production. For example, Bridgestone Americas provides an *Environmental Report* on its website, which includes information

on the safety and performance of its tires, recycling, provision of tires for hybrid cars, measures to reduce energy and water consumption, waste and greenhouse gas emissions in the production process, and philanthropy, such as donations for wilderness conservation. It does not extend to the sourcing of raw materials for Bridgestone tires (Bridgestone Americas, 2008). Similarly, the Goodyear 2007 *Corporate Responsibility Report* details the company's "Environment, Health and Safety Policy", its commitment to sending zero waste to landfill, measures to increase energy and manufacturing efficiency, workplace safety, and community and social programmes such as hospital donations and safe driving promotions (Goodyear, 2008).

Where the major tire companies are involved in growing rubber, there are mixed results in terms of the management of social and environmental impacts. Bridgestone/Firestone has operated a very large rubber plantation in Liberia for decades, which has been the target of criticism regarding human rights abuses, poor labour standards, conflict and pollution from its processing plant (for example: Save My Future Foundation, 2008; *Los Angeles Times*, 17 May 2007).

Michelin has directed more attention to integrating its CSR policies and measures into its supply chain. The company chooses to purchase materials from ISO14001 certified suppliers and has developed a purchasing code (Michelin, 2008b). The company also maintains 21,000 ha of rubber plantations in Brazil and Nigeria, and notes on its website that it aims to improve rubber quality and productivity while protecting biodiversity (Michelin, 2008a). Michelin has attempted to put this into action through its "Green Gold" initiative at its Bahia plantation in Brazil. In 2001, Michelin was considering closing the plantation, as it was faced with declining productivity in its aging trees, potential threats to nearby rainforest and falling rubber prices. Michelin decided instead to convert the plantation to 12 medium-sized plantations of 400 ha each and sell them to local managers. The company also invested in replanting, diversifying the plantations with other crops such as banana and cocoa, and setting up a number of attached smallholder plantations. Michelin also established a research centre and put in place a series of biodiversity



corridors to help protect around 3,000 ha of Atlantic forest within the plantation area. The decision to revitalize production at Bahia has paid off, with the creation of 150 new jobs and an 11% increase in productivity (WBCSD, 2008).

An analysis of company and media reports shows that the top tire producers have clear CSR policies and statements, and have taken on the challenge of improving the manufacturing process, reducing fuel consumption and promoting recycling. However, excepting the case of Michelin, the social and environmental impacts of rubber plantations are rarely addressed and sustainability considerations are generally not fully integrated into the whole supply chain. This may be partly due to the fact that rubber has a long and complicated supply chain, where tire and other manufacturing companies have few direct connections to a product grown mainly on smallholder plantations<sup>42</sup>. However, a long and complex supply chain characterizes the global forest products trade in general. In a clear contrast to the rubber industry, growing concerns over the social and environmental impacts of illegal and uncontrolled logging has prompted an increasing number of governments and companies to seek to certify forest operations and wood products.

#### Sustainability certification for rubber

As discussed above, the rubber industry is not yet at the same stage as the forest products industry in terms of mitigating the social and environmental impacts associated with how the product is grown and harvested. However, there have been some initial moves to apply forest and other certification schemes to rubber plantations. Certification schemes aim to provide guarantee to consumers that the product they are purchasing comes from a legal and preferably sustainable source. Forest certification, for example, is a way of recognizing the careful and sustainable management of forests and the legality of forest products (FSC, 2008).

---

<sup>42</sup> In Thailand, for example, the world's largest producer of natural rubber, 93% of rubber produced by the country is grown by smallholder farmers (Somboonsuke et al, 2008).

There has been growing interest in certifying both rubber wood and latex from research organizations such as the World Agroforestry Center (ICRAF) and a number of private companies, mainly in Sri Lanka, Malaysia and Thailand. In 2003, ICRAF with the support of several partners published a preliminary study by Anne Gouyon on the feasibility of using environmental certification, such as forestry and organic certification, as an incentive to conserve biodiversity through smallholder rubber agroforestry systems<sup>43</sup> (Gouyon, 2003). Based on assessment of rubber industry trends, the growth of timber and organic certification schemes, and positive and negative aspects of rubber agroforestry models, the study made a number of recommendations. It found that, although the market for ecologically sensitive natural rubber products was almost non-existent at that time, “[u]sing certification to provide incentives for the conservation of smallholder agroforestry in Indonesia has good long-term perspectives” (Gouyon, 2003: 34). Indeed some companies and rubber industry associations have already begun to market natural rubber as “environmentally friendly”, particularly for consumer products such as latex mattresses and balloons. The author notes, however, that certification remains complex for rubber, and may not necessarily advantage more diverse smallholder plantations over large-scale monoculture plantations. Gouyon recommends additional studies to determine potential markets, partners, institutional arrangements and standards.

There are indications, however, that this assessment of the relative lack of market incentives to pursue certification of rubber products is undergoing some change. A number of rubber growing and processing companies in the Asia-Pacific region have achieved Forest Stewardship Council (FSC) certification. These certificates include both forest management and “chain of custody” (CoC) certification for traded timber products. FSC is the world’s fastest growing forest certification system, and has now certified more than 100 million ha of forest in 79 countries (FSC, 2008). An examination of the FSC database shows that more than 20 companies are listed as holding

---

<sup>43</sup> Diversified rubber agroforestry models will be discussed in detail in the next section. For interested readers, there is a range of information on rubber agroforestry, including the results of research by ICRAF. For example: Somboonsuke et. al., 2008; Penot, 2004; and the Smallholder Rubber Agroforestry Systems (SRAS) Project website (<http://www.worldagroforestry.org/sea/Projects/CFC/>).

management or CoC certificates for rubber wood and/or latex products. The majority of these companies are rubber wood and latex plantations and producers in Sri Lanka, Malaysia, Thailand, China, India and Vietnam, but the list also includes retail and processing companies in the United Kingdom and Pakistan.

There are several other certification and market-based incentive schemes that may encourage more sustainable rubber production. Gouyon (2003), for example, analyses the potential to utilize existing organic and sustainable agriculture schemes to promote smallholder rubber agroforestry, such as Sri Lanka's Forest Garden Products Certification Service and Rainforest Alliance's Conservation Agriculture Program. Rainforest Alliance's certification of farms has been implemented in South America, Africa and Southeast Asia through the Sustainable Agriculture Network (SAN), a coalition of conservation groups. The Rainforest Alliance works with farmers to ensure compliance with the SAN standards for protecting wildlife, wilderness areas, workers' rights and local communities. More than 30,000 farms growing a variety of crops have now been awarded the Rainforest Alliance Certified seal (Gouyon, 2003; Rainforest Alliance, 2008). There have also been moves to investigate whether rubber cultivation is eligible for earning carbon credits through schemes such as the Clean Development Mechanism (CDM) of the Kyoto Protocol. Although the authors were unable to find any projects or methodologies for carbon sequestration in rubber plantations in the UNFCCC/CDM database, it has been reported that Michelin has made a submission to the UNFCCC on the carbon emissions of synthetic rubber versus natural rubber (*The Independent*, 30 May 2007). In addition, the Rubber Research Institute of India has been investigating the CDM potential of the Indian rubber industry, focusing reducing greenhouse gas emissions during processing and manufacturing (Jacob, no date).

This examination of the available literature and current initiatives among private sector actors shows that although CSR attitudes are gradually becoming more widespread and more integrated in the global rubber industry, market-based approaches aimed at promoting more sustainable rubber

cultivation and production are still limited. They are limited in terms of both geographical scope and their capacity to reach the largest and most important sectors of the industry. However, the evidence that companies have started to pursue certification for rubber wood and latex products, largely unprompted by government or civil society, is a positive sign that there is a business case for improved environmental and social practices in the rubber industry.

### *7.2.2 Government and civil society approaches*

There are a wide range of research projects, support programmes, extension services and policy and technical guidelines aimed at improving the productivity, profitability and sustainability of rubber development in various rubber-producing countries around the world. It is beyond the scope of this report to review the multitude of government, NGO and donor organization efforts to provide support to rubber cultivators and producers. Instead, the following section will focus on several major examples of relevance to Lao PDR.

#### Rubber agroforestry systems

Rubber agroforestry systems, also known as “jungle rubber” and “rubber integrated farm livelihood systems”, refers to a system where rubber trees are integrated with single or multiple agricultural or tree crops and/or other livelihood activities, such as livestock raising. This system stands in contrast to rubber monoculture, where farmers or companies plant their entire holdings with rubber alone (Viswanathan and Shivakoti, 2008). Rubber agroforests, or “jungle rubber”, have been the prevalent model for rubber cultivation in Indonesia, Malaysia and Thailand since the first half of the 20<sup>th</sup> century. Farmers incorporated rubber in their traditional “slash-and-burn” practices, allowing rubber to grow with natural secondary vegetation, as well as timber and fruit trees (Gouyon, 2003). Although most complex rubber agroforests have disappeared in Malaysia and Thailand, and are under threat in Indonesia, there were still more than 1 million ha of jungle rubber in Indonesia at the beginning of this decade (Gouyon, 2003).

There has been ongoing research and efforts to promote rubber agroforestry systems (RAS) in Indonesia and Thailand in particular, due to the socio-economic and environmental benefits offered by this approach. ICRAF, for example, has supported projects to increase the productivity of smallholder rubber agroforestry in Thailand, and has been testing improved RAS with partners in Indonesia for more than a decade<sup>44</sup>. Viswanathan and Shivakoti (2008) have also investigated the socio-economic and institutional factors that have encouraged farmers to utilize RAS in northern India.

Although rubber agroforests have a lower productivity of latex than traditional monoculture plantations<sup>45</sup>, the studies above demonstrate that there are several significant socio-economic and environmental advantages offered by RAS. These include:

- Reduced risk for smallholders. Although other land uses such as rubber or oil palm monoculture plantations may be more profitable, RAS is low-cost to develop and offers minimal risks to smallholders (Gouyon, 2003). Rubber trees take around seven years to reach maturity, meaning a long wait for farmers before tapping can begin and they start to see a return on their investment. In addition, the price of rubber is volatile. Intercropping with agricultural and other tree crops provides farmers with increased food security and additional income, particularly during rubber's non-productive period. In northeast India, Viswanathan and Shivakoti (2008) also found that RAS had a significant positive impact in reducing the selling off of rice and other grain during times of distress, allowing farmers to keep this food for their own consumption. However, it is also worth noting that the

---

<sup>44</sup> For more information on ICRAF and partner initiatives in RAS, please see Joshi et al (2002), Gouyon (2003), Penot (2004) Somboonsuke et al (2008), and the ICRAF website at: <http://www.worldagroforestrycentre.org/af2/SRAS>

<sup>45</sup> Traditional jungle rubber productivity is typically less than half that of monoculture plantations. However, proponents argue that productivity of RAS can be improved with the use of improved clonal rubber seedlings and farming techniques (for example, Penot, 2004).

profitability of intercropping or more complex RAS depends on the availability of labour and specific environmental conditions<sup>46</sup>.

- Increased biodiversity. Although planting rubber and other crops can originally triggered deforestation, rubber agroforests retain a higher level of biodiversity than other land-uses, particularly in comparison to monoculture plantations. In his discussion of jungle rubber in Indonesia, Joshi et al (2002) note that plant biodiversity in rubber agroforests is about half that of natural forests, and that jungle rubber can now be considered a “reservoir” of biodiversity in areas where biodiversity is fast disappearing. Gouyon claims that research conducted by ICRAF shows that vegetal biodiversity in complex agroforests can reach 60-80% of that of primary forests in similar areas (Van Noordwijk et al, 2002, in Gouyon, 2003).
- Improved environmental services. In addition to retaining higher levels of biodiversity, RAS provides other environmental services similar to those provided by forests. These include carbon sequestration, maintenance of soil fertility and moisture, and providing corridors or remnants that allow wildlife to move between forests and protected areas (Penot, 2004; Joshi, pers. comm.).
- Suited to existing farming systems and labour availability. RAS involves relatively little modification of existing smallholder farming and livelihood systems, meaning less disruption to traditional practices and food security. Farmers can continue to grow multiple crops and harvest NTFPs, for example. Depending on the intensity of the system chosen, rubber agroforestry can also be well suited to the availability of labour in smallholder farming families. RAS requires less maintenance (for example, in terms of weeding and fertilizing) than monoculture rubber. In Indonesia, it was found that rubber has proven to be well suited to combining with rice; there is little to no competition between the two

---

<sup>46</sup> For example, ICRAF’s Smallholder Rubber Agroforestry Systems study of the profitability of RAS in Thailand found that rubber with pineapple and rubber with salacca were the combinations with highest economic returns, but require more labour and resources (Somboonsuke et al, 2008).

systems, with rubber maintained or tapped in the mornings, leaving afternoons free for upland rice cultivation (Penot, 2004).

Based on the existing literature and the results of initiatives to promote RAS, it can be seen that rubber agroforestry offers some clear benefits in terms of reduced risk, increased resiliency and environmental protection. However, there are also some difficulties in the promotion of RAS models against more profitable and productive monoculture plantations. There is a delicate balance between the economic, social and environmental benefits provided by RAS, and the economic decisions by farmers and investors often mean that plantation style operations are preferred. Challenges in the promotion of RAS include:

- Lower productivity. Despite improvements in productivity through the selection of better planting material and more intensive maintenance of rubber trees, RAS still produces less latex than monoculture rubber plantations. Improved productivity also requires increased inputs in terms of labour, resources and technical knowledge.
- Investor preferences. Investors in rubber, whether they are smallholder farmers or companies, need to ensure a good return on their investment, and this is generally achieved through increased productivity and lower costs. Investors therefore generally favor monoculture plantations, preferably on a large-scale, where they can produce more rubber and have greater control over its quality. This study has shown that this is the case for Chinese and Vietnamese investors in the Lao rubber sector. High prices in recent years for natural rubber and palm oil have also driven the conversion of both forest and rubber agroforests to monoculture plantations, particularly in Indonesia (Gouyon, 2003; Joshi et al, 2002).
- Lack of markets for “green rubber”: As this study’s discussion of private sector approaches shows, the market for more environmentally and socially sound natural rubber is still very limited. The world’s major rubber consumers, such as the tire industry, although demonstrating some commitment to CSR, have yet to fully incorporate sustainability

concerns throughout their supply chains. As noted by Gouyon (2003), in the absence of market or other incentives, there is little to encourage rubber growers to give up economic returns for the sake of environmental or social benefits.

- Need for extension and support: The promotion of RAS as an alternative to monoculture plantations requires supportive policy and institutional frameworks, as well as access to appropriate technical information and extension services. For example, Juiprik (2006) notes that the maintenance of mixed species rubber holdings in Thailand is constrained by lack of capital and support from the Thai Government, as well as a lack of specialized technical knowledge. Further, some governments have actively promoted smallholder rubber development but do not necessarily support rubber agroforestry. For example, Viswanathan and Shivakoti (2008) write that the Indian Rubber Board provides certain subsidies and support on preconditions that maximize productivity in monoculture plantations, such as minimum numbers of seedlings per hectare and the removal of non-rubber trees and crops.

Agroforestry approaches are not new to Lao PDR and rubber agroforestry has been presented as an alternative to monoculture plantations<sup>47</sup>. There are also a number of projects underway in the country to test and promote various agroforestry approaches, including: German Agro-Action's trialing of agroforestry systems in two districts in Oudomxay; NAFRI research into agroforestry cropping systems; and the ADB Smallholders Project (SWGUp, 2008). It has been shown that smallholder rubber cultivation is profitable in northern Lao PDR (Manivong and Cramb, 2007), and current mixed, slash and burn farming practices are suited to the introduction of RAS. The incidence of poverty and food insecurity in Lao PDR also suggests that RAS should be further studied and promoted in order to reduce risks for farmers. The 2007 Lao National Poverty and Social Impact Assessment (PSIA) identified the rapid commercialization of agriculture and opening up of remote

---

<sup>47</sup> For example, see Laxman Joshi's presentation at the May 2006 "Rubber Development in Lao PDR" Workshop, and the recently released study on sustainable uplands development, commissioned by the Sub-working Group on Northern Uplands Sustainable Development (SWGUp, 2008).



areas as major causes of poverty; the assessment found that vulnerability increases with the loss of land and livestock, and decreased access to forest resources (EU, WB & GoL, 2007, in SWGUp, 2008). Malnutrition and food insecurity remain widespread in Lao PDR, with the World Food Programme finding that on average 13% of rural household are food insecure, and another two thirds are at risk of food insecurity if they experience one or more livelihood shocks in any given year (WFP, 2007, in SWGUp, 2008).

Despite the socio-economic and environmental arguments for the promotion of RAS, based on the results of Viswanathan and Shivakoti's (2008) study of smallholder rubber development in Kerala and northeast India, as well as the history of jungle rubber in Indonesia, it can be argued that there is only a small window of opportunity for the promotion of RAS among smallholders in Lao PDR. As rubber becomes more established, farming patterns also change and the drive for increased productivity and profitability pushes investments towards monoculture plantations. In addition, Lao PDR faces some significant constraints in the promotion of RAS, such as a lack of information and extension services, and importantly, the fact that Lao farmers are not producing rubber for domestic consumption. The preferences of investors from China and Vietnam will influence the rubber production models used in Lao PDR.

At the same time, however, Chinese and Vietnamese rubber companies may be motivated by the business case for the implementation of more sustainable rubber cultivation and production practices. Investors need to ensure the long-term operation of their plantations in the face of uncertainty and potential bans on further rubber development due to growing concerns over social and environmental problems. The GoL has also indicated that it wishes to consider its options regarding the development of the rubber sector.

### Guidelines and guidance

Technical and managerial guidelines developed by governments and civil society organizations, as well as extension services and other kinds of support, also influence the models and outcomes of rubber development. The

guidance and support provided to rubber farmers and companies can affect the balance between monoculture and intercropping, small-scale and large-scale development, cultivation and processing. In the best cases, they can also act as tools to ensure the viability of rubber plantations as well as to protect the environment, farmers and workers rights.

China, with its long history of rubber development, has developed a number of guidelines and regulations for rubber development, both at the national and provincial levels. Discussions with interviewees in Xishuangbanna in Yunnan Province indicate that the guidelines play an influential role in determining where and how rubber is developed in the region. The *Xishuangbanna Dai Autonomous Region Natural Rubber Management Regulation*<sup>48</sup> was issued in November 2005 and sets out the purpose and scope of rubber cultivation in the region. It states that rubber is considered a “special economic tree” to be cultivated “rationally” in a way that still protects forests, so that economic, social and environmental benefits can all be achieved. The regulation sets out the roles and responsibilities of relevant government agencies, as well as state-owned and private plantations and processing facilities, and notes that additional technical guidelines should be implemented. It also forbids rubber cultivation in scenic areas, watershed forests and protection/shelterbelt forests (Article 10). In addition, the regulation includes the penalties for illegal activities such as damaging or stealing seedlings, damaging rubber trees or equipment, setting fires and so on.

China’s *Technical Guidelines for Rubber Cultivation* (1993) is a longer standing set of guidelines issued at the national level by the Ministry of Agriculture. These guidelines set out in detail technical parameters and processes for site selection, preparation, planting, cultivation and maintenance, tapping, pest control, and renewal of plantations. The guidelines also include specifications for sloping sites, excavation for planting, fertilizer use, wind breaks, water channels and drainage, all aimed at promoting better productivity and soil and water conservation in rubber plantations. According

---

<sup>48</sup> This discussion is based on an unofficial translation of the two Chinese guidelines by the author.

to discussions with several informants in China, companies planting overseas should apply the same technical guidelines for rubber.

Governmental and civil society support and extension programs are another way to influence the development of rubber plantations. Agricultural and forestry extension programmes can help to address low education levels among farmers, inadequate access to information and technology and limited organizational development (Vannasou, 2006). The extensive support services provided in countries such as India and Thailand have proven influential in directing the development of rubber plantations, particularly among smallholders, although there is debate over whether this has been in positive or negative directions.

In India, commercial rubber plantations were established in the early 1900's but rubber did not gather momentum until the 1950's. According to Viswanathan and Shivakoti (2008), the expansion of rubber was encouraged by a number of factors including land reform and the "effective institutional support mechanisms provided by the IRB" (India Rubber Board)<sup>49</sup>. These interventions have favored smallholders and include protection of the domestic market, a network of research and extension offices, subsidies, propagation of high-yielding rubber clones, advice on soil conservation and plant protection, and the formation of Rubber Grower Societies (RGS) at the village level (Viswanathan and Shivakoti, 2008). Indian rubber smallholders also have access to rubber-specific insurance provided by the Agricultural Insurance Company of India Ltd. This covers both immature and mature plantations against risks including like fire, lightning, riots and strikes, storms, earthquakes, floods, and damage from wild animals (Agricultural Insurance Company of India, 2008). The support and extension services provided to rubber smallholders in India, due to conditions that require minimum tree densities and reduced intercropping, has been influential in encouraging intensive, monoculture plantations as opposed to more diverse agroforestry approaches (Viswanathan and Shivakoti, 2008).

---

<sup>49</sup> The IRB was established in 1947 to advise the Indian government on all matters concerning the development of rubber industry, as well as to provide services such as marketing, research, training, technical advice to growers, collecting statistics and promoting better working conditions (IRB, 2008).

In Thailand, a number of organizations and government departments are involved in providing support and extension services to rubber growers, such as the Thai Rubber Association and the Rubber Research Institute of Thailand. As in India, Thailand's rubber sector is dominated by smallholders. According to Kaiyoorawong and Yangdee (2008), two key government agencies have driven the development of commercial rubber tree plantations in Thailand: the Office of the Rubber Replanting Aid Fund (ORRAF), under the Ministry of Agriculture, which has supported farmers to grow rubber according to technical guidelines; and the Royal Forestry Department, under the Ministry of Natural Resources and Environment, which has issued concession rights to use degraded forest land in National Forest Reserves (Kaiyoorawong and Yangdee, 2008). ORRAF has three main objectives: 1) to encourage the replanting of farmland with improved rubber clones as well as high-value tree species; 2) to help farmers to establish new rubber plantations, and; 3) to encourage smallholder rubber producers to form cooperatives (Albarracín et al, 2006). Examples of the support provided by ORRAF include<sup>50</sup>:

- ORRAF Replanting Program: Focused on southern Thailand, this program involves the provision of support to cover the initial costs of clearing, preparing land and rubber planting. ORRAF provides 7,300 baht per rai<sup>51</sup> for seven years (i.e. until farmers can begin tapping). Extension officers perform annual audits to check that funds are being used properly and any irregularities must be corrected by farmers if they are to receive their next installment. ORRAF does not allow any tapping until the seventh year after planting but compensates this condition with low-interest loans that can be used for intercropping or animal husbandry<sup>52</sup>.
- One Million Rai program: This program aims to establish new plantations in northern and northeastern Thailand. For example, it encourages longan farmers to convert to rubber. Targets and provincial quotas for new plantations areas have been set by the government,

---

<sup>50</sup> This information is taken from Kaiyoorawong and Yangdee (2008), Albarracín et al (2006),

<sup>51</sup> Rai is a measure of area used in Thailand; one rai equals 1600 meters square.

<sup>52</sup> If the farmer decides to intercrop tree species with rubber, ORRAF will only allow a maximum of 15 species of intercrop trees per rai (Albarracín et al, 2006).

and support is provided to farmers in the form of 90 reduced-cost rubber seedlings per rai and zero-interest loans for smallholders (for the first seven years).

As in India, the support and extension services provided in Thailand have been influential over the direction of rubber development. To ensure the competitiveness of the Thai rubber sector, the Thai Government has regulations in place to control plantation zoning, rubber species used and rubber prices; the provision of aid through ORRAF has also led to the promotion of rubber monoculture (Kaiyoorawong and Yangdee, 2008).

Extension for rubber has also been established in Lao PDR, although the level of support provided to farmers has not reached that of larger rubber-producing countries. The GoL extension service operates at the national, provincial and district levels, with a presence in all 17 provinces and 141 districts in the country. At the national level, the National Agriculture and Forestry Extension Service (NAFES) was established in June 2001 as an apex body for extension. NAFES does not directly manage a national extension system but provides guidance, coordination of extension initiatives, capacity building and the dissemination of best practice (SWGUp, 2008). According to the NAFES website, it does not provide credit or financial support, manage production, or purchase or market products: "Agricultural and forestry extension in Lao PDR is essentially an educational process, not a production process". At the district level, the Government aims to strengthen and support the Village Extension System (VES) in each of the 11,000 villages in Lao PDR (NAFES, 2008). The Lao extensions system was overhauled in 2007 and a number of details are still being worked out. Provincial Extension and Technical Service Centers (PETS Centers) are to be established, as will Technical Service Centers (TSCs) at the district and village cluster ("kumban") levels (SWGUp, 2008).

In May 2007, NAFRI and NAFES established an inter-agency working group on Agriculture Information Management (AIM). This group aims to improve farmers' and extension agents access to information through better linkages and coordination between research and extension. The AIM group has also developed extension materials aimed specifically at smallholder rubber

farmers in Lao PDR. The materials are designed not to promote rubber but to provide smallholder farmers and extension staff with information (NAFRI, 2008). The problem identified by AIM is that farmers in the north of Lao PDR are planting rubber rapidly with little experience or knowledge about either the crop or its long-term prospects. The materials aim to support to make informed decisions. The communication process included radio spots in Lao, Khamu and Hmong languages, a decision-making brochure which includes a check-list, and a rubber reference manual. As well as holding workshops to disseminate the material, provincial action plans were formulated with rubber companies and projects. Videos are being considered for the next phase (AIM, 2006).

This review of existing literature and initiatives shows that guidance and support for smallholders and other rubber cultivators can play an influential role in directing the mode of rubber development. In Lao PDR, farmers account for about 80% of the population and agricultural production makes up about half of the country's GDP; the well-being of this vital sector depends on the ability of farmers to analyze their problems and find solutions (Vannasou, 2006). However, as noted by AIM (2008), Lao's rural people need more than technical information; they need information that helps to assess alternative livelihood strategies and to cope with the change from subsistence to market-oriented agriculture.

## 8. CONCLUSIONS AND RECOMMENDATIONS

The starting point for this study was the rapid expansion of rubber cultivation in Lao PDR in the context of a relatively weak policy and institutional framework and a limited understanding of the priorities and influence of external investors.

The rapid expansion of rubber in Lao PDR is confirmed by this study and by numerous others. Although Lao PDR is a latecomer to rubber and currently only has around 700 ha of mature rubber ready for tapping, a large expansion of rubber plantations is planned. The 8,770 ha planted in Luang Namtha Province are slated to grow to 20,000 ha by 2010 (Douangsavanh et al, 2008). Vietnamese companies are reportedly planning to expand their investments in 30,000 ha of rubber in southern Lao ODR to 100,000 ha over the next five years (*Vietnam News*, 22 June 2007). The estimated 28,000 ha of rubber currently in Lao PDR may reach 300,000 ha by 2020 (Douangsavanh et al, 2008), and this study indicates that this projection will be outstripped.

This expansion has so far been driven by the strong demand for natural rubber in key rubber producing and processing countries, such as China, Vietnam and India, and by the high price for natural rubber in recent years. Although the price of rubber is volatile and dependent on trends in the global economy, this study has highlighted that a continued growth in the demand for natural rubber is likely. IRSG (2007) estimates that the gap between natural rubber supply and demand will increase from 0.4 million tons in 2004 to 1.1 million tons in 2010. Lao PDR, with its geographical proximity to key rubber markets, suitable environmental conditions and relative abundance of land resources, is well-placed to profit from this demand. From this and other related studies, it is clear that rubber cultivation offers a number of benefits for Lao PDR: increased incomes for rural people; stabilization of shifting agriculture; potential value-added through processing; the development of infrastructure and a more market-based economy in some of the country's poorest regions; and the expansion of economic ties with its neighbours.

However, this study has also shown that the promotion of rubber brings challenges for both Lao PDR and investors.

Research and discussions with Chinese and Vietnamese investors have revealed a number of challenges and concerns, including: labour shortages; worries over the security of investments and the quality of latex; and unclear policies and regulations regarding land use. Challenges for the GoL and for Lao farmers include: ensuring access to benefits, land and forests for villagers; integrating rubber with existing livelihood systems; minimizing risks for vulnerable farmers; and preventing negative environmental consequences, such as soil erosion and forest degradation. Labour shortages and unfair wages or treatment, in particular, have emerged as a key concern for all stakeholders in the Lao rubber sector, domestic and foreign.

Although both companies and rubber farmers will generally aim to maximize their profits, this study has demonstrated that the priorities of investors and those of the GoL, farmers and communities are not always aligned. Chinese and Vietnamese investors in the Lao rubber sector prioritize the intensive cultivation of rubber, preferably at a large scale. This does not necessarily accord with the sustainable development and poverty reduction objectives of the GoL, or the need for farmers to assess their livelihood options and reduce their exposure to risk.

This research has also shown that the Chinese and Vietnamese companies involved in the Lao rubber sector are not motivated to reduce the social and environmental impacts of rubber cultivation or to move away from the long-standing intensive, monoculture rubber plantation model that dominates in their countries of origin. Although some companies recognize the need to control negative impacts to ensure longer-term operations, and despite the existence of guidelines for Chinese companies, there is little implementation of measures to reduce negative social and environmental impacts on the ground. This reflects not only the inconsistent implementation and monitoring of relevant laws and regulations in Lao PDR but also the absence of a CSR culture in either Lao PDR or its neighbours and in the rubber industry globally.



The understanding and practice of CSR in Lao PDR is still limited to a number of key actors and sectors, but it is not without potential. Further, CSR is an important element of a holistic approach to maximizing the positive impacts of commercial activities. There is also an emerging business case for more sustainable practices in the rubber sector. Our examination of the available literature and existing private-sector, government and civil society approaches to rubber production in a number of countries shows that these strategies can have positive effects and warrant further consideration in the Lao context. The promotion of CSR among plantation companies, further study and adaptation of diversified rubber agroforestry models, and improved support and extension services that uphold sustainable development objectives can help maximize the benefits of rubber development.

A key message arising from this study is the need for the GoL and Lao people to consider their options. This study is supportive of recent moves towards a suspension or 'go slow' on further rubber development until several key questions can be answered:

- How much rubber does Lao PDR want, where is suitable to grow it, and how will the country provide the labour to manage and harvest it? Equally important, what policy process is needed to determine scale and location of plantations in a sustainable and equitable fashion?
- What models or approaches for rubber cultivation and production would support the country's sustainable development goals? As well as understanding the trade-off between rubber plantations and other crops or land-uses, there are important trade-offs to consider in the levels of profitability, risk and environmental protection offered by different rubber cultivation methods.
- How can rubber investments be effectively regulated and monitored in a transnational context to ensure that sustainable development goals are being met?

We also make a number of recommendations for consideration by Lao, Chinese and Vietnamese policy-makers, as well as investors, farmers and researchers:

Address gaps in the policy and regulatory framework: A number of steps can be taken to improve the policy and regulatory framework governing the development of rubber and other cash crops in Lao PDR. First, the land allocation process needs to be finalized and land-use planning should be undertaken. This should be a prerequisite to the continued development of plantations or the issuing of any concessions. Second, existing laws and regulations need to be fully implemented and to be effectively communicated to investors and developers, particularly those associated with environmental protection. The capacity of WREA in this respect, as well as its capacity to consider and monitor EIAs, to carry out stakeholder consultation processes and to coordinate with other government agencies, also needs to be strengthened. The EIA requirements for rubber and other plantation projects need to be enforced. In addition, “degraded” forest land needs to be properly defined to avoid continued confusion and the conversion of secondary forest to plantations. Finally, the GoL and/or provincial governments should begin considering the formulation of additional laws or regulations to ensure that the development of processing facilities for rubber meet adequate standards.

Protect control over land resources and access to benefits: The concession model favored for plantation development in southern Lao PDR should be reconsidered. As well as promoting non-environmentally friendly logging practices and monoculture plantations, villagers lose ownership and access to agricultural and forest land resources. Earning a relatively low, and seasonal, wage as a plantation laborer is not an adequate substitute. The contract farming models as currently practiced in Lao PDR should also be improved to ensure a more equal sharing of risks and benefits between farmers and companies. Recommendations include: ensuring that an acceptable latex price is set down in the contract; and more strictly enforcing the “2+3” model or similar as a minimum standard for benefit sharing. Company out-grower schemes may offer a solution, ensuring access to land and livelihood for

farmers, while offering companies a higher level of control over a portion of their plantations. NERI also recommends in particular that a land taxation system should be introduced, where land tax per hectare increases with increasing land ownership. Although allowing more intensive cultivation, very large parcels of land would therefore attract more tax, providing an incentive to promote smallholder farming over large concessions.

Enhance transnational ties and information-sharing: Linkages between the relevant government agencies, as well as trade, industry and farming associations, of Lao PDR and China, and Lao PDR and Vietnam, should be encouraged. There is a need for improved exchanges in order to better understand the scope of linkages between the countries' respective rubber sectors and to determine which companies and other actors are involved. Better transnational communication and coordination can also help to manage inconsistencies in the implementation of laws, regulations and guidelines in the various countries, which create loopholes and inefficiencies. In addition, cooperation with other rubber producing countries may help to address issues that threaten the stability of the rubber market and process, such as the level of supply.

Improve support for rubber smallholders: Compared to other rubber-producing countries, Lao PDR lacks institutions and services to support the sustainable development of rubber, such as rubber growers' associations or rubber institutes. Given the still relatively small scale of the Lao rubber sector, this study does not propose that extensive, resource-intensive support mechanisms or institutions be established. An inter-agency body, however, could be considered to develop strategies and plans for the sector, to identify problems, and to help provide the information and guidance needed for effective smallholder rubber cultivation. It is in the interest of the Lao authorities to build on the first steps taken by NAFES and NAFRI to provide smallholders with technical, market and practical information about rubber and other livelihood options. Less centralized and resource-intensive than an institute, the formation of farmers associations at the local level, should be

encouraged. Another option is the formation of an export association to build up trade relations and directly supply rubber consumers overseas.

Consider agroforestry options: More detailed analysis of alternative models of rubber cultivation and approaches to encourage sustainability should be carried out. This study reviews several options, such as rubber agroforestry, but further study of their applicability in Lao PDR is required. In addition to current research and advocacy initiatives on agroforestry in Lao PDR, we recommend further testing of intercropping of agricultural and tree crops with rubber specifically. It is also important to study of the environmental, socio-economic, marketing and institutional factors relevant to utilizing such a model in Lao PDR.

Establish investor protection and improve investment climate: It is easy to blame investors for unsustainable practices. However, a precarious investment climate is equally responsible. Almost all Chinese investors, for example, report fears that the Lao government as well as villagers will change policies or renege on contracts. When investors are unsure about the long-term security of their projects, their priorities are to make quick gains and they are less motivated to invest in the sustainable development of rubber.

Encourage CSR among local and foreign investors: CSR is an important complement to government and civil society efforts to promote sustainable development. In order to facilitate the spread of effective CSR in Lao PDR, this study recommends that relevant government, company and civil society actors to encourage a multi-stakeholder approach towards CSR promotion and implementation. CSR in Asia, including in Lao PDR, has for the most part evolved in response to powerful external forces, such as the requirements of investment and donor organizations as well as the legal and regulatory arms of government. However, greater stakeholder participation can help to enhance the quality of CSR activities by making society's needs and desires more accessible to the private sector. Companies also benefit because communities which are given a voice in the decision-making process feel that they have a larger stake in the well-being of that company's business activities. There is also a need for active capacity building and networking

amongst CSR actors and stakeholders, including among the regulatory institutions that monitor trade, investment and corporate behavior in Lao PDR. Learning exchanges between Lao PDR and its neighbors could play a key role in building awareness of the role of CSR as well as regulatory capacity.

Encourage competition, and peer and public monitoring: The Lao authorities may opt to encourage competition among investors based on their adherence to sustainable practices. Businesses should not only be evaluated on how many hectares they manage to plant, but also on how they plant, whether they abide by land use plans, whether technical knowledge is imparted to villagers, among other considerations. Businesses that perform poorly will be penalized, with the penalty channeled to rewarding those that do well (so as to avoid creating incentives to fine on the part of local government). The presence of peer and public monitoring in addition to governmental oversight is necessary to safeguard against the possibility of corruption and cronyism, and to supplement the monitoring capacity currently available to the Lao authorities. The monitoring process should also be made open to the donor and NGO communities.

Link PRSF subsidies to investors' environmental performance: China currently monitors investors for the purpose of PRSF subsidy distribution and the monitoring efforts are largely limited to verifying physical areas. This existing mechanism may be expanded to also include sustainable practices as criteria for subsidy allocation. The timeframe and amount of subsidies may need to be re-examined. From an economic perspective, profit-maximizing enterprises will not rationally adopt sustainable practices at increased cost to the business. While one-time subsidies are often used to lower risks for investors, permanent subsidies may be necessary to motivate businesses to account for environmental externalities.

## REFERENCES

### Section 3: Lao PDR

ASEAN. 2002. "Framework Agreement on Comprehensive Economic Co-Operation Between ASEAN and the People's Republic of China". Phnom Penh, 5 November 2002. <http://www.aseansec.org/13196.htm> (accessed December 2008).

Douangsavanh, Linkham, Bansa Thammavong, and Andrew Noble. 2008. *Meeting Regional and Global Demands for Rubber: A Key to Poverty Alleviation in Lao PDR?* Sustainable Mekong Research Network (Sumernet).

Fujita, Yayoi, ed. 2007. *Key Issues in Smallholder Rubber Planting in Oudomxay and Luang Prabang Provinces, Lao PDR*. National Agriculture and Forestry Research Institute (NAFRI).

Government of Lao PDR. 2008. *Regulation Number 7/LNTH on Land Allocation*.

Government of Lao PDR .2004. *Instruction Number 962/MIC on Implementing Decree Number 37/PM on Establishment of One-stop Service at Border Points*.

Government of Lao PDR. 2003. *Land Law*.

Government of Lao PDR. 2002. *Regulation Number 1770/STEA on Environmental Assessment in Lao PDR*.

Government of Lao PDR. 2001. *Investment Promotion and Management Law*.

Government of Lao PDR. 2000a. *Regulation Number 1503/MAF on Management of Fertilizers*.

Government of Lao PDR. 2000b. *Regulation Number 0886/MAF on Use of Insecticides*.

Government of Lao PDR. 1999. *Environmental Protection Law*.

Government of Lao PDR. 1998. *Agriculture Law*.

Government of Lao PDR. 1996. *Forestry Law*.

Government of Lao PDR. 1996. *Water and Water Resources Management Law*.

International Rubber Consortium (IRC). 2006. *Trends and Lesson in Rubber Production the Region*.

International Rubber Study Group (IRSG). 2007. "Natural Rubber: What Has the Future in Store?" Presentation at SICOM, Singapore, 20 June 2007.

Manivong, Vongpaphane, and R.A. Cramb. 2007. "Economics of Smallholder Rubber Expansion in Northern Laos". *Agro-forestry Systems*, No. 10, 2007.

Ministry of Industry and Commerce. 2006. Statistical data on Exports and Imports (not published).

National Economic Research Institute (NERI). 2005. *Report on Commodity Production Promotion in Laos*. Committee for Planning and Investment, MPI, Lao PDR.

Northern Lao Industrial Economic Development and Cooperation Planning Preparation Group. 2008. *Planning for Industrial Economic Development and Cooperation in the Northern Part of Lao PDR, 2008-2020 – Mid-term Draft*.

Shi, Weiyi. 2008. *Rubber Boom in Luang Namtha: A Transnational Perspective*. German Technical Cooperation (GTZ RDMA).

Tavarolit, Yium. 2006. "Trends and Lessons on Rubber Production in the Region". Paper presented at "Workshop on Rubber Development in Laos: Exploring Improved Systems for Smallholder Production", NAFRI, 2006.

*Vientiane Times*. 11 November 2008. "No more rubber for Luang Namtha".

#### **Section 4: China**

Alton, C., D. Bluhm and S. Sannikone. 2005. *Para Rubber Study: Hevea brasiliensis*. Vientiane, Lao -German Program Rural Development in Mountainous Areas of Northern Lao PDR.

Asian Development Bank (ADB). December 1997. "Re-evaluation of the Rubber Rehabilitation Expansion Project in Bangladesh".

ANRPC News. December 2007. "Cambodia beckons FDI in NR." Volume 22, No. 3.

Cao, Guangxia, and Lianmin Zhang. 2005. "Preliminary Study of Rubber Plantations as an Alternative to Shifting Cultivation in Yunnan Province, China". In: *Voices from the Forest: Integrating Indigenous Knowledge into Sustainable Upland Farming* [Cairns, M.F. - Ed]. Washington, USA: Resources for the Future Press.

China ASEAN Expo. 2008. 缅甸农作物专题 [Feature on agriculture in Myanmar] (<http://www.caexpo.com/special/economy/cropper/index.html>, accessed in October 2008).

China Economic Weekly (中国经济周刊). 17 July 2006. 海南农垦大变革 [Reform of Hainan State Farms]. Reprinted at [http://news.xinhuanet.com/fortune/2006-07/17/content\\_4842438.htm](http://news.xinhuanet.com/fortune/2006-07/17/content_4842438.htm).

China Rubber Industry Association (CRIA). 2008. <http://www.cria.org.cn> (accessed November 2008).

Douangsavanh, Linkham, Bansa Thammavong, and Andrew Noble. 2008. *Meeting Regional and Global Demands for Rubber: A Key to Poverty Alleviation in Lao PDR?* Sustainable Mekong Research Network (Sumernet).

*Economic Reference* (经济参考). 21 September 2006. 走出国门，去越老缅种橡胶 [Go out, plant rubber in Vietnam and Laos].

*Finance Daily* (证券时报). 23 March 2006. 三大产胶巨头海外跑马圈地 [Three major rubber enterprises in race for land overseas]

Guangdong State Farms. 19 August 2008. 继续解放思想 发展好国内外橡胶事业 [Continue to liberate thought, develop domestic and international rubber industry], ([http://www.guangken.com.cn/news\\_view.asp?newsid=6417](http://www.guangken.com.cn/news_view.asp?newsid=6417))

Liu, Wenjun, Huabin Hu, Youxin Ma, and Hongmei Li. 2006. "Environmental and Socioeconomic Impacts of Increasing Rubber Plantations in Menglun Township, Southwest China". *Mountain Research and Development*, 26(3): 245–253.

Manivong, V. and R. A. Cramb. 2006. "Economics of Smallholder Rubber Production in Northern Laos." 51st Annual Conference of Australian Agriculture and Resource Economics Society, Queenstown, New Zealand.

Ministry of Commerce, International Business Daily. 20 December 2007. 加大中国-东盟合作十国夯实农业基石 [Strengthen China-ASEAN cooperation on the basis of agriculture], ([http://www.cic.mofcom.gov.cn/ciweb/cic/info/Article.jsp?a\\_no=101868&col\\_no=472](http://www.cic.mofcom.gov.cn/ciweb/cic/info/Article.jsp?a_no=101868&col_no=472))

Ministry of Commerce, International Business Daily. 29 May 2006. 中国橡胶“走出去”之路异常艰辛 [Difficult road for China's rubber industry 'going out']. (<http://fec.mofcom.gov.cn/aarticle/xiangmht/bx/200605/20060502317293.html>)

Ministry of Commerce. July 2004. *Country and Industry Specific Guidelines for Overseas Investments (1)*.

*The Nation*. 6 November 2008. "Some rubber traders renege on contracts".

National Agriculture and Forestry Research Institute (NAFRI). 2007. *Key Issues in Smallholder Rubber Planting in Oudomxai and Luang Prabang Provinces, Lao PDR*. Upland Research and Capacity Development Program.



National Development and Reform Commission of P.R. China (NDRC). 9 October 2004. 境外投资项目核准暂行管理办法 [Temporary management measure for approval of overseas investment projects]. 国家发展和改革委员会令第 21 号 [NDRC Decree no. 21].

Northern Laos Industrial Economic Development and Cooperation Planning Preparation Group (NLIEDCPPG). May 2008. *2008 ~ 2020 Planning for Industrial Economic Development and Cooperation in Northern Part of Lao People's Democratic Republic*.

*People's Daily* (人民网海南视窗). 1 April 2006. 海南橡胶产业集团到柬埔寨租地 94 万亩种橡胶 [Hainan Rubber Industry Group leases 94,000 mu for rubber in Cambodia].

Pholsena, Khamlien (Director General, Department for Promotion and Management of Domestic and Foreign Investment, Committee for Planning and Investment). 11 July 2005. Presentation at Lao Economic and Investment Seminar, Bangkok.

*Phnom Penh Post*. 24 October 2008. "Falling rubber prices put sector's future in question."

Rutherford, J., K. Lazarus and S. Kelley. 2008. *Rethinking Investments in Natural Resources: China's Emerging Role in the Mekong Region*. Heinrich Böll Stiftung, WWF and International Institute for Sustainable Development, Cambodia, Denmark and Canada: Phnom Penh, Copenhagen and Winnipeg.

Shi, Weiyi. February 2008. *Rubber Boom in Luang Namtha: A Transnational Perspective*. German Technical Cooperation (GTZ).

Thongmanivong, Sithong, Kaisone Phengsopha, Hounghphet Chantavong, Mike Dwyer and Robert Oberndorf. In preparation. *Cooperation or concession? Impacts of Rubber Investment on Land and Livelihoods: A Case Study from Oudomxai Province, Lao PDR*. The National University of Laos (NUoL), The Rights and Resources Initiative (RRI) and the Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC), Bangkok.

*Vientiane Times*. 18 November 2008. "Ministry protects forests from rubber plantations."

*Vientiane Times*. 11 November 2008. "No more rubber for Luang Namtha".

*Vientiane Times*. 17 September 2008. "Rubber farmers start to harvest income."

*Vientiane Times*. 2 September 2008. "Xekong to expand crop varieties."

*Vientiane Times*. 9 May 2007. "Government suspends land concessions".

Vietnam Investment Network (越南投资发展网). 18 April 2008. 越南扩大 在老挝和柬埔寨种植天然橡胶 [Vietnam expands natural rubber planting in Laos and Cambodia], (<http://www.vnone.vn/Exchange/ShowArticle.asp?ArticleID=1397>).

Vietnam Ministry of Foreign Affairs. 2008. "Vietnam, Laos to Cooperate in Establishing Further Rubber Plantations. (<http://www.mofa.gov.vn/en/nr040807104143/nr040807105039/ns070720091705>,". accessed in October 2008).

Voladet, Saykham. January 2008. *Sustainable Development in the Plantation Industry in Lao PDR: An Examination of the Role of the Ministry of Planning and Investment*. The National Economic Research Institute (NERI).

Wu, Z. L. et al. 2001. "Rubber Cultivation and Sustainable Development in Xishuangbanna, China." *International Journal of Sustainable Development and World Ecology*, 8 (2001): 337-345.

Xinhua News. 5 March 2008. 西双版纳 300 多万亩橡胶染上白粉病 [Over 300 mu of Xishuangbanna Rubber infected with "powdery mildew"], ([http://www.yn.xinhuanet.com/nets/2008-03/05/content\\_12619476.htm](http://www.yn.xinhuanet.com/nets/2008-03/05/content_12619476.htm)).

Yunnan Alternative Development Association (YADA). July 2008. 2007 年替代种植研究报告--境外罂粟替代发展工作基础篇 [2007 replacement crops research report: basic overview of work in opium replacement].

## Section 5: Vietnam

*Business in Asia*. 2004. "Laos at a Glance: 2004". [http://www.business-in-asia.com/laos\\_economic\\_review.html](http://www.business-in-asia.com/laos_economic_review.html) (accessed November 2008).

Chu, Chấn Minh. 2006. Hợp tác kinh tế Trung Quốc- ASEAN- và Vân Nam với "Hai hành lang, một vành đai" [Economic cooperation between China and ASEAN, and Yunnan, with "Two corridors, one belt"]. *International workshop on Developing "Two corridors, one belt" for the Economic Development of Vietnam and China, in accordance with cooperation agreement between ASEAN and China*, Haiphong, December 2006.

Dak Lak Rubber Cooperation. 2008. Báo cáo tình hình thực hiện dự án đầu tư tại Lào và Campuchia [Report of project implementation in Laos and Cambodia].

General Statistics Office. 2008. *Statistical Year Book 2007*. Hanoi: Statistical Publishing House.

General Statistics Office. 1993. *Statistical Year Book 1992*. Hanoi: Statistical Publishing House.

General Statistics Office. 1986. *Statistical Year Book 1985*. Hanoi: Statistical Publishing House.

General Statistics Office. 1976. *Statistical Year Book 1975*. Hanoi: Statistical Publishing House.

Government of Vietnam. 2008. Quyết định thành lập tập đoàn Cao su Việt Nam [Government decision of establishing Vietnam Rubber Group]. <http://vietbao.vn/Kinh-te/Ra-mat-Tap-doan-cong-nghiep-cao-su-Viet-Nam/45235385/87/> (accessed October 2008).

Hoa Binh Rubber Joint Stock Company. 2008. Báo cáo thường niên 2007 [Annual report of Financial Year 2007].

Hoang, Dong. 2000. Di dân, kinh tế mới, định canh định cư: Lịch sử và truyền thống [Migration, economic zone, fixed cultivation and fixed settlement: history and tradition]. Cục định canh định cư và vùng kinh tế mới, Bộ NN & PTNT [Department of Fixed Cultivation and Fixed Settlement, and New Economic Zone, Ministry of Agriculture and Rural Development].

Hoang Anh - Quang Minh Plantation Company. 2005. *Project proposal on rubber plantation*.

Hung, Nguyen. 2007. Hiện trạng phát triển cao su tiểu điền ở Việt Nam: Sản lượng chưa tương xứng với diện tích [Small scale rubber plantation in Vietnam: productivity and area do not match with each other]. <http://www.caosuvietnam.saigonnet.vn/index.php?csvn=chuyenmuc&chuyenmuc=20&id=316> (accessed October 2008).

Le Quang Trung. 2007. Disrupted social transformation of ethnic minorities in the Central Highlands, Vietnam (M.A. Thesis). Chiang Mai University.

Ministry of Agriculture and Rural Development. 2008. Chỉ thị số 1140/CT-BNN-TT ngày 28/4/2008 của Bộ NN&PTNN [Instruction No. 1140/CT-BNN-TT dated 28/4/2008 of Ministry of Agriculture and Rural Development].

Ministry of Finance. 2008. Mở rộng diện tích trồng cao su để xuất khẩu [To enlarge rubber plantation for exportation]. <http://www.baobinhduong.org.vn/detail.aspx?Item=30653> (accessed October 2008)

National Assembly of Lao PDR. December 2007. *Forestry Law*. (Unofficial translation).

Nguyen, Ngoc Anh. 2008. Dự báo tác động đến nguồn nước trong khai thác và chế biến Bauxite [Forecasting negative impacts of bauxite mining]. Dak Nong: CODE.

Tran, Nga. 2008. Phá rừng để trồng cao su? [Destroy forest for rubber plantation?]. <http://www.agriviet.com/?comp=agronews&id=6508> (accessed October 2008).

*Vientiane Times*. 18 November 2008. "Ministry protects forests from rubber plantations."

Vietnam Government Office, 2006. Thông báo kết luận của Thủ tướng chính phủ số 125/TB-VPCP, ngày 14 tháng 8 năm 2006 [Announcement No.125/TB-VPCP of the Government Office, 14 August 2006].

Vietnam Government Office. 2005. Quyết định số No.150/2005/QĐ-TTg của Thủ tướng chính phủ [Decision No.150/2005/QĐ-TTg of the Prime Minister].

Vietnam News. 22 June 2007. Doanh nghiệp Việt Nam đầu tư trồng cao su tại Lào [Seven Vietnamese companies invest in Laos' rubber sector]. <http://www.vnagency.com.vn/TrangChu/VN/tabid/58/itemid/201164/Default.aspx> (accessed October 2008)

Vietnam News. 5 December 2006. Thành lập ủy ban chung về tam giác phát triển [Establishment of the committee of triangle development between three countries]. <http://vietbao.vn/Chinh-Tri/Thanh-lap-UB-dieu-phi-chung-ve-Tam-giac-phat-trien/20640894/96/> (accessed October 2008)

Vietnam Rubber Group. 2008. Tạp chí cao su Việt Nam số 270-280 [Vietnam Rubber magazine No 270-280].

Vietnam Rubber Group. 2006. Tổng công ty cao su Việt Nam mở thêm công ty tại Lào [VRC open its new company in Lao]. [www.rubbergroup.vn/vn/newsdetail.php](http://www.rubbergroup.vn/vn/newsdetail.php) (accessed October 2008).

Vu, Dinh Loi, Bui Minh Dao and Vu Thi Hong. 2000. Sở hữu và sử dụng đất đai ở các tỉnh Tây Nguyên (Land ownership and land use in the Central Highland of Vietnam). Hanoi: Social Science Publisher.

## **Section 7: Approaches for Sustainable Rubber and Annex 8**

Albarracín, Gabriela, Fobissie Blese Kalame, Eddie Glover, Olli Kainulainen, Tuomas KosLao Kipää, Sini Makkonen, and Chakrit Na Takuathung. 2006. *Rubber Plantations in Southern Thailand: Management, Social and Economic Functions*. Group report for "Tropical Forest Landscape Restoration in SE Asia: Proceedings of EU Asia Link FORRSA Course, Thailand, January 2006.

Agricultural Insurance Company of India Ltd. 2008. "Rubber Plantation Insurance". <http://www.aicofindia.org/RubberInsurance.pdf> (accessed October 2008).

Agriculture Information Management working Group (NAFES and NAFRI). 2008. "Think Before You Plant: An Overview of Research-Extension

Information System”. Presented at “Regional Workshop on Conservation Agriculture”, Phonsavan, Xiengkhuang Province, 28 October – 1 November 2008.

[http://www.nafri.org.la/05\\_news/workshops/ca2008/doc/day3/session4/P4\\_AI-M-CA3.pdf](http://www.nafri.org.la/05_news/workshops/ca2008/doc/day3/session4/P4_AI-M-CA3.pdf) (accessed December 2008).

APEC. 2005. *Corporate Social Responsibility in the APEC Region: Current Status and Implications*. Human Resources Development Working Group, Capacity Building Network.

Bridgestone Americas. 2008. *Environmental Report*. <http://demos.icomstec.com/bridgestone/run/> (accessed November 2008).

Forest Stewardship Council (FSC). 2008. “What is forest management certification?”; “FSC: facts and figures”. <http://www.fsc.org/> (accessed November 2008).

The Goodyear Tire and Rubber Company. 2008. *Corporate Responsibility Report*.

Gouyon, Anne. 2003. “eco-Certification as an Incentive to Conserve Biodiversity in Rubber Smallholder Agroforestry Systems: A Preliminary Study”. World Agroforestry Centre, Bogor.

*The Independent*. 30 May 2007. “Green gold: How a Brazilian forest of rubber trees is bouncing back”. <http://www.independent.co.uk/news/science/green-gold-how-a-brazilian-forest-of-rubber-trees-is-bouncing-back-451003.html> (accessed November 2008).

Jacob, James. “CDM Potential of Indian Rubber Industry”. Rubber Research Institute of India. <http://www.ieta.org/ieta/www/pages/getfile.php?docID=1464> (accessed November 2008).

Joshi, Laxman. 2006. “Diversified Rubber Agroforestry for Smallholder Farmers: a Better Alternative to Monoculture”. Presented at *Rubber Development in Lao PDR: Exploring Improved Systems for Smallholder Rubber Production*, 9-11 May 2006, Vientiane, Lao PDR.

Joshi, Laxman, G. Wibawa, G. Vincent, D. Boutin, R. Akiefnawati, G. Manurung, M. van Noordwijk and S. Williams. 2002. *Jungle Rubber: A Traditional Agroforestry System Under Pressure*. ICRAF: Bogor, Indonesia.

Juiprik, Seree. 2006. “Intercropping and Agroforestry Experiences from Southern Thailand”. Presented at *Rubber Development in Lao PDR: Exploring Improved Systems for Smallholder Rubber Production*, 9-11 May 2006, Vientiane, Lao PDR.

Kaiyoorawong, Sayamol, and Bandita Yangdee. 2008. “Rights of Rubber Farmers in Thailand Under Free Trade”. Project for Ecological Awareness Building, February 2008,

[http://www.wrm.org.uy/countries/Thailand/Rights\\_of\\_rubber\\_farmers\\_in\\_Thailand.pdf](http://www.wrm.org.uy/countries/Thailand/Rights_of_rubber_farmers_in_Thailand.pdf) (accessed December 2008).

Lawrence, Shannon. 2008. "Nam Theun 2 dam: rising water, falling expectations". *The Nation*.  
[http://www.nationmultimedia.com/2008/06/25/opinion/opinion\\_30076424.php](http://www.nationmultimedia.com/2008/06/25/opinion/opinion_30076424.php) (accessed November 2008)

Los Angeles Times. 17 May 2007. "Terror, Latex Flow at Firestone Plantation". <http://articles.latimes.com/2007/may/17/business/fi-rubber17> (accessed November 2008).

Manivong, V., and R.A. Cramb. 2007. "The Economics of Smallholder Rubber Production in Northern Laos". Paper presented at the *51<sup>st</sup> Annual Conference of the Australian Agricultural & Resource Economics Society*, 13-16 February 2007, Queenstown, New Zealand.

Michelin. 2008. "Michelin and the Environment".  
<http://www.michelin.com/corporate/front/templates/affich.jsp?codeRubrique=86&lang=EN> (accessed November 2008).

Michelin. 2008. *Performance and Responsibility* 2007 Update.

Ministry of Agriculture of P.R. China. 1993. 橡胶树栽培技术规程[Technical Guidelines for Rubber Cultivation]. NY/T 211-93.

Nam Theun Power Company. 2006. *Laos: Moving Forward*.  
[http://www.namtheun2.com/brochure%20template\\_final.pdf](http://www.namtheun2.com/brochure%20template_final.pdf) (accessed November 2008)

National Agriculture and Forestry Extension Service (NAFES). 2008. "Lao Ex: Agriculture and Forestry Extension in the Lao PDR". [www.laoex.org](http://www.laoex.org) (accessed December 2008).

National Agriculture and Forestry Research Institute (NAFRI). 2008. "Impacts of Rubber on Livelihoods and the Environment".  
[http://www.nafri.org.la/index.php?option=com\\_content&task=view&id=98&Itemid=1](http://www.nafri.org.la/index.php?option=com_content&task=view&id=98&Itemid=1) (accessed December 2008).

Oji Paper. 2008. "Corporate Data".  
<http://www.ojipaper.co.jp/english/group/corporate/index.html> (accessed October 2008)

Oji Paper. 2007. *Sustainability Report*.  
[http://www.ojipaper.co.jp/english/sustainability/e\\_report/pdf/2007/056\\_065.pdf](http://www.ojipaper.co.jp/english/sustainability/e_report/pdf/2007/056_065.pdf) (accessed October 2008)

Oxiana Limited. 2007. *Oxiana Sustainability Report*.  
<http://www.ozminerals.com/Sustainability/Sustainability-reports.html> (accessed October 2008)

OZ Minerals. 2008. "About OZ Minerals". <http://www.ozminerals.com/About-OZ-Minerals/Overview.html> (accessed October 2008)

Penot, E. 2004. "From Shifting Agriculture to Sustainable Rubber Complex Agroforestry Systems (jungle rubber) in Indonesia: A History of innovations, production and adoption process". In D. Babin, ed. 2004. *Beyond Tropical Deforestation*. UNESCO/CIRAD.

Pulp Mill Watch. 2007. *Pulp Mill Watch Factsheet: Country Profiles Laos*. [http://www.pulpmillwatch.org/media/pdf/Laos\\_profile.pdf](http://www.pulpmillwatch.org/media/pdf/Laos_profile.pdf) (accessed November 2008)

Rainforest Alliance. 2008. "Sustainable Agriculture". <http://www.rainforest-alliance.org/agriculture.cfm?id=main> (accessed November 2008).

Save My Future Foundation. 2008. *The Heavy Load: A Demand for Fundamental Changes at the Bridgestone/Firestone Plantation in Liberia*.

Somboonsuke, Buncha, Pramoth Kheowvongsri and Laxman Joshi. 2008. "Smallholder Rubber Agroforestry for Higher Productivity in Thailand". World Agroforestry Centre, Bogor.

Sub-working Group on Northern Uplands Sustainable Development (SWGUp). 2008. *Diagnostic Study on Northern Uplands Sustainable Development: Prepared for the Sub-Working Group on Northern Uplands Sustainable Development*. Final Draft.

Vannasou, Tienne. 2006. "The Development of Extension in Lao PDR". NAFES, Vientiane, Lao PDR. [http://www.regional.org.au/au/apen/2006/refereed/1/3134\\_vanasook.htm](http://www.regional.org.au/au/apen/2006/refereed/1/3134_vanasook.htm) (accessed December 2008).

Viswanathan, P.K., and Ganesh P. Shivakoti. 2007. "Adoption of Rubber-Integrated Farm-Livelihood Systems: Contrasting Empirical Evidence from the Indian Context". *Journal of Forest Research*, 13(1): 1-14.

World Bank. 2007. "Nam Theun Moves Forward; Livelihood Activities Require Acceleration." *World Bank and Asian Development Bank Report on Lao PDR Hydro Projects*.

World Business Council for Sustainable Development. 2008. *Case Study: Michelin, Sustainable Rubber Sourcing*.

Xishuangbanna Dai Autonomous Region. 29 November 2005. 云南西双版纳傣族自治州天然橡胶管理条例 [Xishuangbanna Dai Autonomous Region Natural Rubber Management Regulation].

## **APPENDICES**

Annex 1: Key informant interview guidelines for Lao PDR field research, carried out by the National Economic Research Institute (NERI)

Annex 2: Key informant interview guidelines for China field research component, carried out by Weiyi Shi and Guifeng Zhong

Annex 3: Key informant interview guidelines for Vietnam field research component, as carried out by CODE

Annex 4: Report of IUCN-NAFRI-ERI study tour to Xishuangbanna, Yunnan Province, October 2008.

Annex 5: Lists of allowed and prohibited chemical fertilizers and insecticides in Lao PDR

Annex 6: Investment approval process in Lao PDR

Annex 7: Content and Format of an IEE Report for Development project in Lao PDR

Annex 8: Corporate social responsibility in the Mekong Region and Lao PDR



# Annex 1: Key informant interview guidelines for Lao PDR field research, carried out by the National Economic Research Institute (NERI)

## 1. Guideline for interviewing companies or HH involving in rubber plantation

### I. General information on companies/HH involving in rubber plantation

- Date of establishment:.....(in case of family production, please, describe the date of starting the plantation)
- Kind of company (describe on of the option below).....
  1. family production
  2. Lao private enterprise
  3. Foreign enterprise, please describe the nation
  4. Join venture, please describe the share of capital
    - Lao.....percent
    - Thai.....percent
    - China.....percent
    - Vietnam.....percent
    - Others.....percent
    - Total: 100 percent

### II. Main reason for investment decision (describe one or more answers below)

1. Highest profitable investment
2. Market security
3. Receiving external funding, if any, please describe source of the fund.....
4. Lowest cost
5. Easy access to land
6. Following the trend

### III. Investment volume (US\$)

Current	2010	2015	2020	2025

### IV. Production areas (ha)

Current	2010	2015	2020	2025

### V. Labour needed (person)

Current	2010	2015	2020	2025

### VI. Estimated production outcome (kg/year)

Current	2010	2015	2020	2025

--	--	--	--	--

**VII. Market perspective**

Market	Current (%)	2010 (%)	2015(%)	2020(%)	2025(%)
Domestic*					
China					
Vietnam					
Thai					
Others					
Total	100%	100%	100%	100%	100%

\* describe the percentage the percentage of total which the company do not export by itself or sell to export-import company established in domestic country.

**VIII. Estimated investment return (US\$)**

Current	2010	2015	2020	2025

**IX. Contract farming**

-If no contract, sLao Kip to X.

-If any, describe kind of contract:

- o A contract in writing
- o A verbal promising

-Contract partner and quantity of supply, fill the table below:

Market	Current (kg)	2010(kg)	2015(kg)	2020(kg)	2025 (kg)
Domestic					
China					
Vietnam					
Thai					
Others					
Total					

**X. Market for agriculture products in the provinces**

-Number of agriculture product buying companies

-Is there some cooperation among the companies?

-Number of agriculture product supplier

-Is there some cooperation among the supplier?

-Price mechanism?

-Is there some intervention policy from the government site?

**XI. Investment constrains**

-Access to Land, yes or no.....if yes, describe the details:.....

.....  
 .....  
 .....  
 .....

.....Access to credit, yes or no.....if yes, describe the details:.....

.....  
.....  
.....

.....  
-Access to labour, yes or no.....if yes, describe the details:.....

.....  
.....  
.....  
.....

.....  
-Access to information, yes or no.....if yes, describe the details:.....

.....  
.....  
.....

.....-Access to market, yes or no.....if yes, describe the details:.....

.....  
.....  
.....  
.....

.....  
-Access to investment license, yes or no.....if yes, describe the details:.....

.....  
.....  
.....  
.....

.....  
-Investment mechanism regulation and lows, yes or no.....if yes, describe the details:

.....  
.....  
.....  
.....

.....  
-Investment mechanism regulation and lows, yes or no.....if yes, describe the details:

.....  
.....  
.....  
.....  
.....

-Concerning officers, yes or no.....if yes, describe the details:.....

.....  
.....  
.....  
.....  
.....  
.....

-Other constrains, yes or no.....if yes, describe the details:.....

.....  
.....  
.....  
.....  
.....  
.....

**XII. Suggestion to improve your investment climate (Basically, this should be based on investment constrains discussed above)**

1/.....  
.....  
.....  
2/.....  
.....  
.....  
3/.....  
.....  
.....

**XIII. Suggestion to improve environmental protection and sustainable development in rubber plantation sector**

1/.....  
.....  
.....  
2/.....  
.....  
.....  
3/.....  
.....  
.....

**XIV. Suggestion to improve social protection**

1/.....  
.....  
.....  
.....  
.....  
2/.....  
.....  
.....

.....  
 .....  
 3/.....  
 .....  
 .....  
 .....

**2. Guideline for interviewing agriculture export-import companies**

**I. General information on export-import company**

- Date of establishment:.....(in case of family production, please, describe the date of starting the plantation)
- Kind of company (describe on of the option below).....

1. SOE
2. Lao private enterprise
3. Foreign enterprise, please describe the nation
4. Join venture, please describe the share of capital
  - Lao.....percent
  - Thai.....percent
  - China.....percent
  - Vietnam.....percent
  - Others.....percent
  - Total: 100 percent

**II. Estimated agriculture value (US\$)**

Item	2005	2008	2010	2015	2020
Rubber*	0	0			
Non rubber					
Total					

\*Because rubber plantation in Laos, so, the exporting rubber is not yet possible recently. However, the interviewer is required to discuss with the traders whether they have some interest or plan to export rubber in the future. Please try to discuss and to estimate the export value with him.

**III. Trade relation ship with foreign countries**

Market	Weight, describe in percent
Domestic	
China	
Vietnam	
Thai	
Others	
Total	100

**IV. Export structure in foreign countries**

Trade partner	0=no link 1=link	If 1 describe more how o link and weight (percent)			
		Trade company	Agriculture processing industry	Consumer	Other(describe)

Domestic					
China					
Vietnam					
Thai					
Others					
Total					

**V. Trade structure in the domestic country (agricultural product buying)**

Market	Weight, describe in percent
Own product	
Directly from framers or agriculture companies	
Local traders (informal traders)	
Local trading companies	
Others	
Total	100

**VI. Contract farming with local producers or traders**

Contract partners	0=no 1= Verbal contract 2=Contract in writing	If 1 or 2, describe contract cost (US\$)			
		2008	2009	2010	2011
Farmers					
Agriculture companies					
Local traders					
Others					

**VII. Agriculture product supply contract with partners in domestic or foreign countries**

Contract partners	0=no 1= Verbal contract 2=Contract in writing	If 1 or 2 describe resident of CP 1=Lao, 2=China 3=Vietnam, 4=Thai 5= others	If 1 or 2, describe contract cost (US\$)			
			2008	2009	2010	2011
Export-import company						
Agriculture processing factory						
Individual trader						
Others						

**VIII. Demand for rubber in the trade partner countries**

Market	0=no link 1=link	if 1, describe one level and tell the reason				
		reducing	same	increasing	High increasing	What are the reasons?
China						
Vietnam						

Thai						
Others						
Total						

**IX. Market for agriculture products in the provinces**

- Number of agriculture product buying companies
- Is there some cooperation among the companies?
- Number of agriculture product supplier
- Is there some cooperation among the supplier?
- Price mechanism?
- Is there some intervention policy from the government site?

**X. Constrains for agriculture trade/export, especially for rubber export**

-Access to credit, yes or no.....if yes, describe the details:.....

.....  
 .....  
 .....  
 .....

-Export license, yes/no.....if yes, describe details:.....

.....  
 .....  
 .....  
 .....

-Export procedure, yes/no.....if yes describe details:.....

.....  
 .....  
 .....

-Officers related to export process, yes/no.....if yes describe details:.....

.....  
 .....  
 .....

-Producers, yes/no.....if yes describe details:.....

.....  
 .....  
 .....

-Barriers in the destination country, yes/no.....if yes describe details.....

.....  
.....  
.....  
.....

-Completion, yes/no.....if yes describe details:.....

.....  
.....  
.....

-Quality of products, yes/no.....if yes describe details:.....

.....  
.....  
.....

-Other constrains, describe details:.....

.....  
.....  
.....  
.....

**XI. Suggestion to improve your investment climate (Basically, this should be based on investment constrains discussed above)**

1/.....  
.....

2/.....  
.....

3/.....  
.....

**XII. Suggestion to improve environmental protection and sustainable development in rubber plantation sector**

1/.....  
.....

2/.....  
.....

3/.....  
.....

**XIII. Suggestion to improve social protection**



- 1/.....
- .....
- .....
- 2/.....
- .....
- .....
- 3/.....
- .....
- .....
- .....

**3. Guideline for interviewing government officers/policy makers who are responsible for function related to rubber plantation**

- I. Plantation project promotion policies and mechanism
  - 1.1. Access to land for plantation project
    - Institutions
    - Regulation
    - Mechanism
  - 1.2. Access to credit for rubber plantation project
    - Financial institutions providing credit for plantation project
    - Procedure to access the credit
    - Specific promotion policy
- II. Plantation project approval process
  - Institutions involving in the process
  - Regulations and laws related plantation (don't forget to discuss about implementation of 2+3 policy)
  - Approval mechanism.
  - EIA process
- III. Market for agriculture products in the provinces
  - Number of agriculture product buying companies
  - Is there some cooperation among the companies?
  - Number of agriculture product supplier
  - Is there some cooperation among the supplier?
  - Price mechanism?
  - Is there some intervention policy from the government site?
- IV. Agriculture products/rubber export process
  - Institutions involving in the process
  - Regulation, laws and trade agreement with concerning countries
  - Export mechanism
- V. Statistical data related to rubber plantation

<b>Issues</b>	2004	2005	2006	2007	2008
Number of rubber plantation companies					
Number of rubber plantation HH					
Number of agriculture product exported companies					
Number of plantation project					
Plantation areas (ha)					
<b>Investment cost (US\$)</b>					

-Domestic(US\$)					
-China(US\$)					
-Vietnam(US\$)					
-Thailand(US\$)					
-Other(US\$)					
Sum of credit for plantation project (US\$)					

**VI. Expected investment trend (select one of possible option below)**

1. Rapid increasing.....

.....  
.....  
.....

2. Increasing:.....

.....  
.....  
.....

3. Remaining the same:.....

.....  
.....  
.....

4. Declining:.....

.....  
.....  
.....

**VII. Suggestion to improve environmental protection and sustainable development in rubber plantation sector**

1/.....  
.....  
.....

2/.....  
.....  
.....

3/.....  
.....  
.....

**VIII. Suggestion to improve social protection**

1/.....  
.....  
.....

2/.....  
.....  
.....  
3/.....  
.....

**Annex 2: Key informant interview guidelines for China field research component, carried out by Weiyi Shi, Guifeng Zhong and Lei Sun.**

**1. Data collection guidelines for governmental departments**

1. How many officially registered Chinese companies are currently working in Lao PDR? How many are in rubber (obtain location in Lao PDR, years of entry, investment amounts, and contracted hAs)? How much rubber has been planted by Chinese companies in Lao PDR so far? How much rubber is being planted (or how many rubber companies are planting) in other countries (particularly GMS countries)?

2. What minimum requirements must businesses satisfy in order to invest in Lao PDR (e.g. current and past capital requirements, established records in foreign trade, supporting documents from the Lao government)? How have these requirements changed in the past years? What are the motivations for such changes?

3. What approval process must businesses go through to invest in Lao PDR? How long does the process usually take?

4. What additional requirements must businesses satisfy to qualify for poppy replacement development subsidies (e.g. Must the business have already signed a contract with the Lao government)? How much subsidy is allocated to rubber companies versus companies in cash crops or other industries? What percentage of rubber companies receives subsidies versus companies in cash crops or other industries?

5. Poppy replacement development subsidies used to be called poppy replacement plantation subsidies and were only given to companies working in commercial agriculture and tree plantations. Since 2007 the policy has broadened to all economic development projects with an impact on the local economy. Has the broadened coverage changed what types of businesses and what industries are receiving the most subsidies and most eager to invest in Lao PDR?

6. Relevant policy documents suggest a wide range of subsidy amounts/percentages a business may qualify for. In practice, who is responsible for administering the subsidies, how are they allocated, based on what criteria?

7. What is the funding source of these subsidies? From your experience, are these subsidies under-funded? Are there plans for increase or decrease in the future? For a business to go from applying for subsidies to receiving the funds, how long does it take? Many businesses we talked to in the field appear to be frustrated with delays in subsidy distribution interfering with their operations.
8. In addition to poppy replacement subsidies, what other incentives are in place to encourage businesses to invest abroad (low interest or interest free loans, tax breaks, relaxed labor restrictions etc.)?
9. How much latex does China import from Lao PDR every year (if possible, collect quantity and price over time) and typically in what form? Who are the major importers? What tariffs and quotas is Lao latex subject to and how do these tariffs and quotas compare to those imposed on Thai or Malaysian latex?
10. How much latex has been sold to China under poppy replacement programs? Compared to rubber investors who do not qualify for poppy replacement (typically small individual investors) and Lao farmers, what advantages do poppy replacement companies have in selling latex back to the Chinese market? Are they always guaranteed sufficient quota to import their latex production back to China? How are these quotas decided and granted?
11. What oversight mechanisms are in place or planned to monitor Chinese rubber companies in Lao PDR? Is there physical surveillance of plantation areas? If so, what main purposes do the physical surveillance data serve? In practice, are there measurable standards in quality assurance, technology, labor conditions, social protection, land use, and environmental protection? What are these standards? Are they similar to corresponding standards governing domestic rubber plantations in China? What suggestions do you have for fostering more sustainable development of rubber in Lao PDR?
12. What protection and support do Chinese companies receive if they were treated unfairly overseas? Are services available to support Chinese businesses in navigating the economic and bureaucratic systems in the Lao PDR?
13. From your perspective, what changes could be made to Lao policies to be more attractive to foreign investors? Are you aware of any inconsistencies and conflicts between the regulatory environments in China and in Lao PDR?
14. We observe there are sizable informal rubber investments by individual investors, unregistered with the Lao or Chinese authorities, in the border

areas of northern Lao PDR. Some argue this makes Lao rubber development difficult to pace and monitor. Are there plans to impose stricter oversights on the informal investors?

## **2. Data collection guidelines for Chinese rubber companies\***

1. What motivated you (your company) to plant rubber in Lao PDR? Have you considered or experimented with other possibilities (e.g. Myanmar, Cambodia)? If so, why did you choose Lao PDR over other options?
2. How big is your company (or partnership)? How long has your company been in existence and how is it organized? Are you a subsidiary of a bigger enterprise? Are you a joint venture or sole foreign investor in Lao PDR? Even if you are not officially a “joint venture”, do you have a cooperative counterpart in Lao PDR (e.g. some companies cooperate with the Lao army to work in border areas)?
3. How long have you planted rubber in Lao PDR? In which province(s) and location(s)? Covering how many villages? How many hAs have you planted so far? What’s your total planned investment amount in Lao rubber, over how many years? How much have you injected so far?
4. Have you had experience developing rubber plantations prior to your rubber investments in Lao PDR? In addition to rubber, what other crops or industries are you engaged in Lao PDR?
5. What process did you go through in China to gain permission to invest in Lao PDR? Please describe. What governmental offices did you work with at various levels? How long did it take?
6. What process did you go through in Lao PDR to gain permission to invest? Please describe. What governmental offices did you work with at various levels, national, provincial, and district (xian)? How long did it take you to gain permission? When did you officially register with Lao authorities?
7. What levels of the Lao government, if any, have you signed a contract with? Have you also signed contracts with individual villages or villagers? Do you feel secure in your contracts? Why or why not? (If possible, ask to see the contract).
8. What’s the duration of the contract? Is there possibility for extension?
9. Are you operating on concessioned land (zheng di)? Which Lao authority do you pay for the land? How much? (relevant only to companies) Do you compensate villagers for land? If so, how much? (Most companies do not pay villagers for land, although some individual investors may lease or

buy land). Have you experienced or do you expect to experience land shortage?

10. How would you describe the land on which you are establishing the plantation (degraded forest, former swidden etc.)? What was the land used for before rubber? How have you come to choose the current location? What feasibility and environmental studies did you undertake?

11. Do you hire Lao villagers as employees? How much and how often do you pay? What other incentives/compensations or social protection do you offer them (e.g. rice)? Do you share profits/trees with Lao villagers? If so, at what percentage? When are the shares divided (pre-tapping, after tapping)? Do you guarantee a minimum collection price for the villagers?

12. From your perspective, what's the general attitude of Lao villagers toward Chinese rubber investors? Have you experienced disputes with Lao villagers? If so, over what issues?

13. Do you bring laborers from China? Do you face restrictions, from the Chinese as well as Lao side, on how many laborers you can bring? How much do you typically pay Chinese laborers? Have you faced a labor shortage? Do you expect labor shortage to arise in the future or worsen?

14. According to the contract, what's the plantation area? Realized over how many years? Is your actual progress ahead or behind your contract plans? If you are behind, why? Realistically, do you think you will be able to plant as much as specified in the contract?

15. How do you assure the quality of the plantations? Do you give Lao villagers lessons in planting techniques?

16. If applicable, what supporting infrastructure are you building (roads, power lines etc.) to develop the plantation?

17. Have you built or will you build latex processing facilities in Lao PDR?

18. Do you receive subsidies from the Chinese government? If so, roughly what percent of your investments in Lao PDR are financed by subsidies? How is the rest financed (own investment, loans etc.)? What other policies do you benefit from (low or interest free loans, interest reimbursement, tax breaks etc)? Would your investment be viable if there were no subsidies?

19. Do you currently sell latex to China under the poppy replacement program? If you have qualified for the program, how do you obtain latex quota? If you have not qualified for the program, how do you obtain quota? Are you concerned that you may not be able to obtain sufficient quota to cover

your production? What tariffs and taxes are you subject to in your latex sales on the Lao side as well as the Chinese side?

20. Who do you sell or plan to sell your latex to (intermediary import/export companies, processing factories, etc)? What's your outlook on the latex market in China? With many Chinese companies investing in rubber abroad, are you concerned there will be oversupply? How do you think Lao rubber will compete against rubber produced in China, Thailand, Malaysia etc.? Have you considered any "hedging" options in case there is an oversupply?

21. How have the Lao and Chinese governments monitored your investment activities in Lao PDR?

22. What are the biggest difficulties you face in investing in the Lao rubber sector (from both the Lao and Chinese sides)? If you feel that you have been experienced unjust during your investment process, do you have authorities to turn to for protection?

23. In your opinion, if policymakers were to try to improve the cross-border investment climate, what should they consider as their top three priorities (e.g. infrastructure, corruption, bureaucracy, etc.)?

24. Promoting sustainable development is a priority for both the Lao and Chinese people. What would motivate and help you to adhere to higher environmental standards (e.g. financial incentives, provision of technical support and education etc.)?

\*

- Annex 2 will need to be modified slightly to adapt to the situation of informal investors (questions regarding experience with dealing with authorities and qualifying for subsidies are less relevant. It is more important to explore why informal investors have chosen to avoid the official route. Information should also be gathered on the dynamics of forming partnership with Lao border residents through kinship and clan relations).

- Field researchers may also engage rubber import and export businesses that are not directly involved in rubber planting in Laos. For those, the relevant questions in Annex 2 are 19, 20.

- The annex is structured as discussion guidelines instead of formal questionnaires based on the understanding that semi-structured interviews are often the most effective method in collecting case-based data. It may be adapted to a questionnaire if the research team decides later to also survey a broader base of investors not reached by face-to-face discussions.

## **Annex 3: Key informant interview guidelines for Vietnam field research component, as carried out by CODE.**

### **1. Questionnaire for policy-maker interview**

#### ***I. Questions of development of rubber plantation in Vietnam***

1. What are positive and negative results of development of rubber sector and rubber plantation in Vietnam in the last thirty years?
2. What are main causes of such positive and negative results?
3. What are main targets of Vietnam's rubber sector in 2015 or further?
4. What are main advantages and disadvantages for achieving the targets?
5. Who are investors of Vietnam's rubber sector?
6. Who are prior investors in Vietnam's rubber sector?
7. Who are major consumers of Vietnam's rubber?
8. Who will be the most important consumers of Vietnam's rubber in near future?

#### ***II. Questions of Vietnamese investments in rubber sector in Lao***

9. What are main motivations for Vietnamese investments into rubber plantation in Lao?
10. What are main advantages and disadvantages or obstacles for Vietnamese investment into Lao's rubber sector?
11. What are main targets of Vietnamese investments into Lao's rubber sector?
12. How do you analyze such main targets?
13. What are state's policies that have been established for Vietnamese investors to open rubber plantation in Lao?
14. Who are current Vietnamese investors of rubber plantation in Lao?
15. What is future plan of those investors?
16. What are positive and negative impacts of Vietnamese investments in Lao rubber sector?
17. How can the negative impacts be solved?
18. How can Vietnamese investors work better in terms of environmental protection, poverty alleviation, forest conservation?



## **2. Questionnaire for investor's interview**

### **I. Questions of capital, labors and local linkages of the investor**

1. When is your company established?
2. What are sources of financial capital of your company?
3. Number of labour of your company?
4. Number of local households that have contracts with your company?
5. How do you work with local households?

### **II. Questions of the land and rubber plantation**

6. Total land area of your company in Vietnam at the beginning time?
7. How can you get the land?
8. There is any change of land area in comparison with
9. Total area of rubber plantation of your company?
10. Annual volume of rubber produced by your company?
11. Where does your company sell produced rubber?
12. What are current positive and negative impacts of your rubber plantation in Vietnam?
13. What is future plan of rubber development of your company in Vietnam?
14. How do you evaluate such as plan?

### **III. Questions of Company's investment into Lao's rubber sector**

15. What are motivations that have promote your company to develop rubber plantation in Lao?
16. What are sources of finance of your investment?
17. What kind of support activities did you receive when you invest into rubber plantation in Lao? And from who?
18. Total area that your company has got in Lao? And where is location of this plan?
19. How did you get that area?
20. How does your company operate in Lao?
21. How do you work with local people in Lao?
22. What main advantages and disadvantages or obstacles of your business activities in Lao?
23. What are positive and negative impacts of your rubber plantation for Lao?

24. What is the future plan of your company in Lao?
25. How can you achieve the plan?
26. How can your company contribute environmental protection, poverty alleviation, forest conservation in Lao?
26. Other comments and suggestions?