In Search of Sustainable Plantation Forestry, Pulp and Paper in ASEAN: Political Ecology Analyses on Stakeholders

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Dr. Herman Hidayat**

Abstract

The monographic report is entitled: "In Search of Sustainable Plantation Forestry, Pulp and Paper in ASEAN: Political Ecology Analyses on Stakeholders". Actually the word "Sustainable" is not as new to the forestry profession. In simple word "sustainability" involves ensuring opportunities for a desirable "quality of life" for future generations as well as or the present one. Human's quality life of life includes not only the economic dimension but also covers the ecological and the social. In line with this definition, related to sustainable plantation forestry is a process and include economic, social and ecological. The conceptual operation of 'sustainable forestry' is means to analyses the stakeholders role (the government, private sector, academics, NGOs, local communities/ farmers) manage and interact each other to provide timber as raw material of pulp and paper industries among ASEAN countries (Indonesia, Philippines, Thailand and Vietnam). To supply timber sustainability among private companies cooperate with farmers based on 'contract farming' and plant trees by their own self. As a result, Indonesia is the largest pulp and paper producer among ASEAN countries.

Among ASEAN countries, based on the field work findings, do not integrated practice of sustainable forestry. Even most private companies highlight economic benefit than ecological and social dimension. The ecological dimension, which emphasizes forest conservation and maintaining bio-diversity, the government, international donors, NGOs and local communities in respective ASEAN countries more responsible.

The paper focused how stakeholders movement on managing timber plantation and pulp and paper as raw material to supply industries; how government provides economic incentive and the response among private companies , NGOs, cooperative sector officers, and local communities to response the government's policy.

Key words: sustainable forestry, forest policy, stakeholders, ASEAN countries (Indonesia, Philippines, Thailand, and Vietnam), pulp and paper industries.

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Preface

The 20th century was the era of fossil resources. Fossil resources were the major driver of economic growth and drastic modernization of our life and society. The huge amount of consumption of fossil resources, however, irreversibly deteriorated the natural environment of our planet, which we recently recognized and against which we are making the maximum efforts to minimize its impacts. We cannot and should not expect the same rate and extent of changes of our society and environment in the 21st century in terms of both the positive and negative senses. One of the major reasons is that available fossil resources are going to be exhausted. Fossil resources have been accumulated on the planet in the geological time scale and are, fortunately or unfortunately, limited resources in the human history time scale.

Then, what society should we target in the 21st century? I believe that it is a sustainable society rather than an disorderly expanding society, a more or less steady society rather than an unexpectedly dynamic society, and, of course, a much more environment-friendly society rather than an environment-destructive society. What can be the major driving force of the 21st century? Although we do not know the answer to this question, recyclable energy and material sources are expected to play much more important roles, and the biomass in the tropics is one of such resources.

The tropics are located in Central America, Central Africa and Southeast Asia. The former two areas are parts of the continent, while Southeast Asia consists of islands or the mixture of the sea and lands. This combination provides richer environments particularly in terms of heat and water circulation and biomass production. Southeast Asia in the mid-20th century was covered with forest, 64% in Indonesia (1958), 59% in the Philippines (1947), 72% in Thailand (1958) and 44% in Vietnam (1953) in terms of the proportion of forest area to the total land area. These forests fostered rich biodiversity and supported livelihood and cultural diversity of local people. Non-timber forest products were collected and traded in domestic and international markets.

In the latter half of the 20th century, forests in Southeast Asia suffered seriously. Some were replaced by farm lands and others were degraded. The proportion of forest areas sharply decreased to 49% in Indonesia (2005), 24% in the Philippines, 28% in Thailand (2005) and 29% in Vietnam (1990). This decreasing trend is, however, going to be stopped. We can see it clearly in Vietnam which proportion of forest area recovered to 40% in 2005. The major cause of this recovery is the expansion of plantation forestry combined with the advanced technology of tree plantation and wood processing. Wood production and processing in the tropics in general and in Southeast Asia in particular

emerged as a highly profitable business for domestic and international entrepreneurs as well as local people.

This book highlights the development of plantation forestry and wood-based industry in Southeast Asian countries. Although this development trend is sure to be promising, the development mechanism is not well established yet. Southeast Asian countries have been experienced a wide range of institutional and technical trials and errors during the last several decades. The major concerns include land conflicts and concessions, rights of indigenous people and new entrepreneurs, share of profit among the stakeholders and environmental pollution and protection. The author, Dr. Herman Hidayat, carried out field survey not only at his home country, Indonesia, but also at other Southeast Asian countries, interviewed various stakeholders including government officers, entrepreneurs, farmers, scientists and NGOs, collected successful as well as failure cases and discussed the development mechanism suitable to Southeast Asian societies. Actually, four countries taken in this book have diverse environmental, social and economic conditions though all are in Southeast Asia. I sincerely appreciate the author's' efforts to integrate their experiences and to propose a sort of Southeast Asian model of plantation forestry and wood-based industry development.

Dr. Herman Hidayat stayed with us for two years (November 2008-November 2010) under the Post-doctoral Program of the Japanese Society for the Promotion of Science (JSPS). Through daily conversations at Kyoto, I truly understood his enthusiasm to learn the experiences of his neighboring countries, the Philippines, Thailand and Vietnam. This strong intension promoted him to write this challenging book. Southeast Asian studies were initiated by non-Southeast Asian scholars and followed by Southeast Asian scholars studying his/her own country. Now it is the time for Southeast Asian scholars to learn each other beyond the national boundaries and create the common knowledge basis for sustainable development of Southeast Asia.

November 2010

Kono Yasuyuki
Center for Southeast Asian Studies
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I am grateful to many people who have supported me during field work and the work of this book. First, I would like to thank to JSPS Post-doctoral Fellowship for providing me fundraising and facilities during 24 months (2 years) a range time from November 2008-November 2010 carrying out research in Center for Southeast Asian Studies (CSEAS)-Kyoto University and field work to interview informants who actively involve stakeholders of plantation forestry and pulp and paper industries in ASEAN countries, such as in Thailand, Philippines, Vietnam and Indonesia. Second, I am deeply thankful to Prof. KONO Yasuyuki as host scientist and give me critical comments upon my progress report throughout presentation and discussion. In particular I would like to appreciate the G-COE project "In Search of Sustainable Humanosphere in Asia and Africa" to provide an opportunity to print this working paper. My best colleague Dr. Satoru Kobayashi and others who encourage me to publish this report, I am also very thankful. Besides, Ms.IDE Michiyo, Secretary of Prof. KONO and our colleagues who support and attend in monthly seminar of Human-Nature Dynamic Area Studies in CSEAS. Special thanks to Director of CSEAS, officers staff, CSEAS library officers, and all staff who make me very convenient in staying and sharing ideas through intensive discussion and collecting and data gathering using its facilities and library. I am really indebted to Ms. Jordan Hoffmann (from Canberra-Australia), who supports me as English editor for better performance of the Working papers.

Actually The Working Papers is entitled: "In Search of Sustainable Plantation Forestry in ASEAN: Political Ecology Analyses on Stakeholders" as an original topic was proposed in the JSPS Postdoctoral Fellowship. I do hope these Working Papers based on field work and book literature review between November 2008-November 2010 in ASEAN countries (Indonesia, Philippines, Thailand, and Vietnam) and in CSEAS, Kyoto University, Japan-eventually led a great academic contribution to the field of forest policy and political ecology as well and also among readers who actively read and give comments.

Contents

CHAPTER 1 INTRODUCTION

1. Introduction

Currently, global society is aware that 'climate change' is having a negative environmental impact on such aspects of the environment as the global warming and the tides of sea water. Climate change impacts 'forests' through the increased intensity and frequency of extreme weather events (*storms, floods, droughts*) and it may lead to an increase in forest fires and outbreaks of pests and diseases. As an illustration in Japan was registered 170 died and 54,216 suffered sickness in hospital in summer (July-August 2010) (*Gatra* 14-20 October 2010). It was also happened in 2003, Europe suffered one of its hottest summers ever. Across the continent, temperatures soared; in France, the thermometer hovered around 40 degree Celsius for a fortnight. The victim of this critical condition recorded more than 52,000 Europeans died from heat in the summer of 2003.[1]

The International Conference among world leaders on 'climate change' which was held in Bali on December 3-15, 2007; on December 24-30, 2008, in Poznan, Poland; and December 26-31, 2009 in Copenhagen, Denmark-that aims to shape a new global agreement to fight 'global warming'. Based on the critical impact of climate change above, world leaders, include previous Prime Minister of Japan Yukio Hatoyama had highly commitment to reduce down 25 percent until 2020 on pushing factors of climate change based on the agreement of Protocol Kyoto 1997 (*Gatra* 14-20 October 2010). In line with the condition, scientists and environmentalists want mechanisms to reward the developing world for saving its forests incorporated into any such treaty. Forests and jungles absorb carbon dioxide, the main greenhouse gas, which is stored in trees. Cutting trees down releases CO2 and triggers the emission of additional greenhouse gases from denuded soils. Forest loss and land degradation could be responsible for 20 percent of the planet warming gases attributable to human activities, some expert suggest (*World Growth*, December 4, 2008).

As is known, deforestation in tropical countries, forest fires, forest land conversion for agricultural farm (oil palm, coffee, cacao, etc.), and industrial activities in developing and advanced countries as well in consuming oil, LNG, coal and other energy sources that eventually produce gas emission (CO2). One of the positive decisions of the United

[1] For better understanding about the impact of "Global Warming already kills 150,000 people every year" see Jessica Williams, *50 facts that should Change the World*, UK; Icon Books,2007, pp. 109-111. Further information see article of Janet Larsen, "Setting the Record Straight: More than 52,000 European Died from Heat in summer 2003," July 28, 2006. See in http://www.earth-policy.org.

Nations regarding 'climate change' is to present scheme for 'Reducing Emission from Deforestation and Forest Degradation' that so called *R.E.D.D.* Many Western governments and environmental activist groups like WWF, Conservation on Nature, and Friends of the Earth (FOE) have launched critiques on 'deforestation'. For instance, they are now proposing that all deforestation be halted in tropical zones-a move that would undoubtedly increase poverty in developing countries (*World Growth, Media Released, December 2, 2008*). In contrast, a growing number of experts in climate and development are calling for expansion of 'sustainable forestry' (cultivating, maintaining, and developing forests), as a cost-effective way to reduce carbon emissions and combat the current global recession, while environmental activists are continuing to campaign for absolute restrictions. It is accordingly to the statement of Alan Oxley, Head of World Growth group says:" If forests are managed in sustainable ways, their cultivation can both raise living standards and reduce greenhouse gases."

Wulf Killmann, Director of FAO's forest products and Industries Division, says 'plantation forestry' is playing a useful role in counterbalancing deforestation and forest loss. They harbor less biodiversity than natural forests, but provide not only timber but they also protect water resources and soils. By sequestering carbon dioxide plantation forests help mitigate climate change (*http://www.metsabotnia.com*). Many North American and European, including Finnish and Swedish, and Japan companies have invested in 'forest plantations' and pulp and paper production in South America and Southeast Asia. From the global forest perspective this development is beneficial.

It is widely recognized that pulp and paper industries in Japan and ASEAN are very strategic. A previous research (2007) entitled:" Pulp and Paper Industries in Japan and Indonesia: From the Viewpoint of Political Ecology" revealed that thirteen private companies of these industries occupy a rank in top 41 largest manufacturing in Japan, which contributed about 6.8 trillion Yen and absorbed 34,839 workers (*Japan Pulp and Paper, 2005*). Also in Indonesia, as a member of ASEAN countries, currently pulp and paper industries categorized as strategic industries which contributed about US$ 2,1 billion in 2005 and rapidly increased US$ 3,3 billion in 2007 and create huge employment about 1,7 million workers in 2007.[2] This research highlights the role of 'stakeholders' such as the role of government, private sectors, local people, academics, and NGOs domestic and international as well, such as Green activist groups like WWF, Greenpeace, Friends of the Earth (FOEI),etc. Japan and Indonesia could be categorized as 12 major countries for producing paper and paperboard. For example, Japan produced 30,889 million tons (number three after USA and China) and Indonesia number twelve

[2] *Statistic Indonesia*: Economic Indicators, successive issues, 2007.

with total production 7,678 million tons (*Japan Pulp and Paper, 2005*). The need of raw material such wood demand is quite big for both countries. For example, Indonesia absorbs wood demand reached 20 million m3 in 2000 and rapidly increased into 28.9 million m3 in 2005 and increased 37 million m3 in 2008.[3] Japan also reached 87 million m3 in 2003 and slightly increased 89 million m3 in 2004, which provided by domestic supply about 16 million m3 and import 71 million m3.[4] As an illustration, in 1993, 38 percent of Japan's chip wood came from North America, 30 percent from Australia and New Zealand, 15 percent from Latin America, 8 percent from other Asian countries (Southeast Asia), and over 1 percent from Fiji and Papua New Guinea. Over the next decade, hardwood supplies from Southeast Asian plantations are likely to replace a significant portion of imports from more distant regions such as Chile or the southeastern US.[5]

Unfortunately, huge numbers of these productions do not inherently accompanied by properly planned on 'plantation forestry". As a result, the forestry industries facing "critical" problems on procuring timber and chip wood as raw materials in Japan and ASEAN countries.

Hence, 'plantation forestry and forest conservation' are one of the key issues at the 1992 Earth Summit. In other words, between profitability and environmental conservation regarding in upland area that competition arises in land use between agriculture and forest.[6] Although countries adopted Agenda 21, which called for actions to prevent 'deforestation', and the Forest Principles, the Earth Summit failed to conclude with the creation of a Forest Convention. After the Earth Summit, a number of international initiatives emerged, such as the *Intergovernmental Panel on Forests* (IPF), the *World Commission of Forest and Sustainable Development* (WCFSD), and others, in order to find ways to halt worldwide deforestation and degradation of all types of forestlands.

The paper aims to discuss the dynamic process of 'plantation forestry' from the viewpoint of 'stakeholders' movement. Meanwhile, focusing sustainability level analyses will be studied on economic: soft loan, technical innovation,[7] subsidiary, training manpower;

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[3] *Indonesian Pulp and Paper Association* (APKI) for 1988-2000; Jaakko Poyry (1998) for 2005-2010 projection.
[4] See Yoshiyai Iwai (2002), *Forestry and the Forest Industry in Japan*, Canada: UBC Press, pp. 245-246; Forestry Agency, 2000.
[5] Ricardo Carrere & Larry Lohmann, *Pulping the South: Industrial Tree Plantations*, London: Zed Books Ltd, 1996, pp. 57.
[6] See Kono, Yasuyuki, at.all. 1994, "Dynamic of Upland and Forest Land Management," in *Southeast Asian Studies, Vol.* 32, No. 1, June, pp. 4.
[7] Selecting of seeds and developing of new species of (Acasia mangium, Eucalyptus, etc)

social: people's participation[8], rule, network, etc. And ecological issue: to protect biodiversity, water and soil.

2. Plantation Forestry

The initial title uses "in search of sustainable plantation forestry". This hypothesis means that plantation forestry in developing countries (**ASEAN**: *Indonesia*, *Malaysia*, *Philippines*, *Thailand*, *Vietnam*, etc.) do not sustainable yet from viewpoint of economics: the lack of economic incentive, low production, etc; social: lack of participation, land dispute; and ecological that plantation eventually affects to ecological damage such lost of biodiversity, soil erosion, lack of water catchment, etc. To explain in terms of 'participation' in the plantation forestry is significant. In the context of development plans and programs, participation can be defined as "the process through which stakeholders influence and take part in decision-making in the planning, implementation, monitoring and evaluation of programs and projects". The issue of participation and its forms, potential and problems raises the question of the optimal level of involvement of *local people*. If participation were maximized, local people would have complete control over the natural resources. Thus, the aim of participation may not necessarily be to transfer the decision-making power completely to local communities, but rather to initiate a process of negotiation among stakeholders, integrating individual, communal and national interests in balanced way.[9]

From this description, therefore, the question is how to transform from not sustainable to be sustainable. The appropriate answer how to actively involve 'stakeholders' on planting trees in terms of economic, social and ecological issues are significant for carrying out sustainable plantation forestry.

2. 1. Sustainable Plantation

The word 'sustainable" is not as new to the forestry profession, including forest economists, as it may be to some mainstream economists. The Faustmann Formula, one

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for fast growing trees whether in planting and harvesting as well. See: The project of Humanosphere Professor KAWAI, Shunichi, "Study on Nature-inspired technologies and institutions". Interviewed with Prof. KONO Yasuyuki, in CSEAS, Kyoto University, on December 29, 2008.

[8] Makoto Inoue, "Participatory Forest Management Policy in South and Southeast Asia", in M. Inoue and H.Isozaki (ed.). 2003. *People and Forest-Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan*. Netherlands: Kluwer Academic Publishers, pp. 50.

[9] See Helene Heyd and Andreas Neef, "Public participation in water management in northern Thai Highlands," in *Water Policy* 8 (2006), pp. 396-398.

of the main pillars of conventional forest economics, is based on the idea of a sustained supply of timber for an infinite number of rotations. However, the recent concerns about 'sustainability', which were signaled by the publication of "The Limits to Growth" by Meadows *et.al*.(1972) and "Our Common Future" by WECD (1978), are not limited to a specific product but include all natural systems and human life. In simple words, 'sustainability' involves ensuring opportunities for a desirable "quality of life" for all future generations as well as for the present one. Human's quality of life includes not only the economic dimension but at least two others-the ecological and the social.[10] In line with this definition, according to Fikret Berkes and Carl Folke, 'sustainability', as used here, is a process and includes ecological, social and economic dimensions. The term *ecological system* (ecosystem) is used in the conventional ecological sense to refer to the natural environment. We hold the view that social and ecological systems are in fact linked. Therefore, when we wish to emphasize the integrated concept of humans-in-nature, we use the term *social-ecological system* and *social-ecological linkages* (Berkes, &Folke 2000:4). The implementation of social-ecological system based on the opinion of (John Norberg and Graeme S. Cunming 2008:155) needs a complex adaptive systems (CAS) requires societies to: 1) to learn to live with change and uncertainty; 2) combine different types of knowledge throughout the learning process; 3) create opportunities for self organization toward social-ecological resilience; and 4) Training the development of capacity for renewal and reorganization.[11]

In the effort of implementation economic theory of 'sustainability', forest ecosystems can be of enormous use due to numerous reasons. First, forest ecosystems are important components of all the international agreements related to sustainability-convention for climate change, biodiversity convention, and Agenda 21. Second, interactions between human system and forest ecosystems can provide an experimental setting to study interactions between ecological, social, and economic dimension of human welfare. Third, the concept of sustainability, even though in a limited sense (related *timber)*, has existed for about 150 years in the thinking about forestry, including forest economics.[12]

It is widely accepted that 'forest resources' should be managed to meet the economic, ecological and social needs of present and future generations. Therefore 'plantation forestry' must respond to *economic, environmental and social* issues. This requires

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[10] Shashi Kant and R.Albert Berry (ed.). *Economics, Sustainability, and Natural Resources: Economics of Sustainable Forest Management,* The Netherland: Springer Press,2005, pp. 1-4.

[11] For more information 'Living in a Complex World', see Brian Walker and David Salt. 2006. *Resilience Thinking: Sustaining Ecosystems and people in Changing World*. Washington: Island Pres.

[12] *Ibid*. pp. 4.

feedback of relevant information between planning, implementation, control and impacts of forest management.

The concept of criteria and indicators (C&I) which was designed to be used in assessing the sustainable 'plantation forestry' has been evolving since 1995 when this issue gained recognition by the Intergovernmental Panel on Forest (IPF). Several international institutions have developed guidelines and C&I for sustainable plantation forestry.[13] For example, ITTO launched criteria for assessment of sustainable plantation forestry (ITTO 1993); WWF and IUCN developed guidelines for timber plantation, environmental, social and cultural issues relating to commercial afforestation (*WWF and IUCN* 1997); *LEI (Lembaga Ekolabel Indonesia* 1999) also developed C&I for SFM of natural and plantation forests in Indonesia. CIFOR has developed a generic process for the development and evaluation of C&I for natural forests (Prabu et.al. 1999).

Clearly a more holistic approach to plantation development and management is required with due consideration to not just wood production but also *environmental, social and economic* factors. Long-term sustainability will only be achieved by taking into account: the ecological capability of the site; intensity of management; soil, water and other environmental values, economic benefits; and social goals (Nambiar and Brown 1997). In general, C&I can be formulated to serve at various levels of scale, namely global, regional, national and sub national or at Forest Management Unit (FMU) level.

The teams of CIFOR agreed that sustainable development of plantations must improve the socio-economic condition and well-being of the local community. The criteria proposed for the principle of human well-being addressed the following issues:

a) security of land tenure and land use;
b) participation in forest management;
c) sharing of social and economic benefits;
d) industrial relations and responsibilities of stakeholders;[14]

2.2. Economic benefits and rural development

Plantation forestry in the tropics can significantly aid economic development, especially through earning, foreign exchange from exports of forest products or import substitution. The highly successful use of government incentives in Chile and Brazil to encourage

[13] See Dwi R. Muhtaman, Chairil Anwar Siregar and Peter Hopmans, *Criteria and Indicators for Sustainable Plantation Forestry in Indonesia*, CIFOR and ACIAR, 2000, pp. 1-2.
[14] Ibid, pp. 12.

plantations[15]has made these countries become leading exporters of wood pulp. While governments may support plantations for financial benefits alone, more often it is for broader economic reasons and to generate social and environmental benefits. For instance employment opportunities through developing new forest industries, watershed protection, enhanced landscape amenity values, recreational opportunities, and land rehabilitations are some of the justifications used for the government involvement in plantation development, either through state, forestry companies or the provision of a range of incentives.

Meanwhile for ecological protection, industrial plantations of Acacia mangium are managed primarily for wood production but the intensity of management varies considerably between companies responsible for the various concession areas. Long-term sustainability of this plantation resource requires management to take into account not only wood production but also 'ecological and environmental values (e.g. *stabilizing soil, prevention erosion, controlling water runoff in catchment areas, biodiversity, etc.*) as well as socio-economic issues. It is therefore important to evaluate the impact of plantation development on the structure, function and resilience of the entire ecosystem of the FMU.

On the other hand, on elaborating of economic issues, Inoue Makoto pointed out some guided principles such as: the role of central and local government is very significant to contribute soft loan, subsidiary (seedling, fertilizer, etc.), benefit sharing of advantages, training man power (to maintain plantation forestry), and technical innovation (to provide seeds to bolster production)[16] to private sector and local community. Furthermore on social issues Inoue highlights such as participation, rule, and network. Meanwhile, ecological issues the role of government is necessary to protect and evaluate bio-diversity, soil quality, water catchment, flood and drought.[17]

3. Why Plantations?

It must be highlighted that overall there is a worldwide 'shortage' of timber. Several studies have addressed global supply and demand for wood. Sedjo and Lyon (1996) indicated that average annual demand for industrial roundwood would increase from 1700 million m3 in 1995 to about 2300 million m3 in 2045. Sohngen *et al*. (1997)

[15] Julian Evans & John Turnbull, *Plantation Forestry in the Tropics*. Oxford University Press. 2004. pp. 21.
[16] Interview with INOUE Makoto, Professor from Department of Global Agricultural Sciences, Graduate School of Agricultural and Life Sciences, The University of Tokyo, on January 16, 2009 in Tokyo.
[17] Interview with Abdullah, Oekan S, Visiting Scholar in CSEAS, on January 25, 2009 in Shugakuin Koryu Kaikan, Kyoto,

assumed regional supply indicated from existing forest resources and the potential role of plantations were expanded and FAO (1998) has estimated consumption, production and trade in forest products globally to 2010 (Table 1.). By 2010, Asia, enhanced by increasing population growth and economic development, Europe and the former Soviet Union are expected to increase their share of global industrial roundwood consumption while the North and Central American region is expected to decrease its share (FAO 1998). Therefore consumption of pulpwood for wood-based panels and paper is expected to approximately double to 1330 million m3 in 2045. In 1996, 70% of industrial roundwood was used in developed countries (FAO 1999a) (Evans&Turnbull 2004:13).

Table 1-1 Current and future forecast global forest production and estimate consumption by products, 1996-2010

Products	**Production**	**estimate consumption**	**Growth 96-2000**
	1996	**2010**	
	(mil.m3)	**(mil.m3)**	**%**
Industrial roundwood	1490	1872	26
Sawn wood	430	501	17
Wood-based panels	149	180	20
Wood Pulp	179	208	16
Paper and Paperboard	248	394	39
Fuelwood and Charcoal	1860	2210	27

Source: FAO (1998, 1999a); Evans& Turnbull (2004).

Abbreviation: mil: Million.

Actually there were some studies - FAO (2001a), Evans and Turnbull (2004), Jiang and Zhang (2003), Guizoi and A.L.P. Aruan (2006), and Forest Inventory and Planning Institute, Vietnam (2005).,etc - that highlighted the necessity of expanding plantation forestry, especially Eucalyptus and Acacia trees, as raw materials to overcome timber shortages for pulp and paper industries. FAO (2001a) reported that plantation forestry has increased in the last two decades (1980-2000). Globally, FAO resource inventory data suggests that plantation estates have increased from 17.8 million ha in 1980 and 43.6 million ha in 1990 to 187 million ha in 2000 (Evans&Turnbull 2004:30) and rapidly developed to become 271 million hectares in the year 2005.[18]

3.1. Plantation in other countries

[18] See "Wood from planted forest: a global outlook 2005-2030" (http://www.entrepreneur.com/tradejournals/article/191954507.html).

In line with the FAO (2001a) report, the findings are that in China plantation forestry also appeared as a significant policy taken by the government. Therefore, protecting natural forests and expanding the plantation forests has become a national priority in China.[19] There are two rationales behind this scenario. Firstly, the environmental issues that have been raised from ecological disasters in recent years (e.g. flooding, soil erosion, decrease of biological species, shortage of water resources etc.), resulting in hundreds of billions of dollars in losses and un-measurable long-term environmental, social and economic impacts. Secondly, the increasing economic demand, as world population and consumption of wood products increased. The official statistical data shows that China imported 1.12 billion US dollars of wood and wood products in 1981, 2.6 billion USD worth in 1992, and 5.3 billion USD worth in 1996, rapidly growing to become 6.3 billion US dollars in 1998.To overcome this 'shortage of timber', the government took the policy of expanding plantation forestry. Today, China has the world's largest plantation resources. The National Forest Resources Survey shows that plantation areas in China have reached 46.67 million hectares in 1999, which accounts for about 20% of the entire world forest plantations. It is estimated that China's plantation forests can annually provide 130 million m3 by 2015, which can meet domestic needs. Thus, the imbalance between demand and supply in this country can be resolved (Jiang& Zhang 2003).

Indonesia launched a policy to boost plantation forestry which mostly highlighted conservation and economic aims. The forestry industries (plywood, sawmill pulp and paper mills) needed a substantial amount of timber in this country, which eventually lead to large scale extraction in primary forests, causing massive deforestation. Current annual log supply shortage is 35 million m3, i.e. between log supply from primary and plantation forests 15 million m3 and log demand is 50 million m3.[20] Therefore, to mitigate the negative impacts of timber exploitation and generate alternative timber supplies, the government set up a reforestation fund and promoted large scale industrial timber and plantations of fast growing plants (*Acacia and Eucalyptus trees*) which actively engage private companies, cooperative, forest state enterprise (Inhutani) and farmers. The official aim of promoting HTIs (timber plantation forestry) was to create wood resources on unproductive forest lands located in 'productive forests'. However, in practice because of a lack of control and collusion, it triggered, in many places, clear-cutting of rich natural forests. During *Repelita* V (Fiver years Planning) (1990-1994), 900,000 ha of large scale plantations were planted, amounting to 60 percent of the 1.5 million ha target. Overall, it was a period of rapid HTI expansion, although the annual target of 300,000 ha planted

[19] See Zehui JIANG and S.Y.ZHANG (2003) "China's Plantation Forests for Sustainable Wood Supply and Development" in (http://www.fao.org).
[20] See Aulia L.P. Aruan (2005) "The Future Role of Plantation Forests and Forest-Based Industry" (http://www.fao.org).

was only met in one year that was 1993. [21]

The main target of the plantation forestry which started in the mid 1980s-2000s and actively engages stakeholders in primary forests (*protection, conservation forest and production forest*) was economic aims and conservation in order to recover forest coverage. In line with this aims, the Minister of Forestry had launched five priority programmes for 'forestry development' during the period 2001-2004, namely (i) combating illegal logging; (ii) controlling forest fire; (iii) restructuring the forestry sector; (iv) establishment of plantation forest and reforestation and (v) decentralization of forestry activities (*Ibid*). Therefore, in case of item 4 which mostly emphasizes conducting plantation forestry and reforestation, is aimed at providing forest conservation and timber for forest industries. In 1990 plantation forestry registered 3.7 million ha and increased to become 9.8 million ha in 2000 (FAO 2001a). The main species is Acacias spp. and Eucalyptus plants, composing 80 percent of the pulp plantation inputs.

In case of Vietnam is more emphasize on economic and conservation aims on plantation forestry. As registered 600,000 ha total plantation forestry in 1990 and increased to become 1.7 million ha in 2000 (FAO 2001a). The driving factors on rapid plantation are: 1) Economic reform is in force in Vietnam shifting centrally planned systems to a market oriented economy. The main portrait in the forestry sector has been the application of a policy of "land and forest allocation" to persons and entities effectively involved in forest land farming and plantations; and 2) the government has encouraged domestic and foreign investors as well to become involved in a wide range of plantation activities. This policy has attracted investors, cooperative sectors, farmers, NGOs to tree planting in Vietnam. Today eucalypt planting has reached a climax rate; however the State and many scientists, express caution and are of the opinion that Eucalyptus plantation programmes will not be affective unless there is suitable choice of species, sites and appropriate management of concentrated plantations, are adopted. [22]

From intra regional illustration, what does the Thailand case mean at a macro level in terms of plantation forestry? In case of Thailand, how does the country to overcome timber shortage and extend plantation forestry? As a consequence of the rapid growth of pulp and paper, sawmill plywood and furniture industries at the end of 1990s to the

[21] For further information see P.H. Guizol and A.L.P. Aruan, (2006) "Impact of Incentives on the development of forest plantation resources in Indonesia', in (http://www.fao.org).

[22] for further information see Tran Xuan Thiep (2005) "Eucalyptus Plantations in Vietnam: Their History and Development Process", Forest Inventory and Planning Institute, Ministry of Forestry, Vietnam in (http://www.fao.org/docrep/005).

beginning of the 2000s, wood demand reached 17.2 million m3 in 1999 and rapidly developed to become 20.1 million m3 in 2006. There are two ways in which the Thai government is overcoming the shortage of timber. Firstly, the Thai government invites *stakeholders* such as private companies, academics and local farmers to be actively involved in planting and developing 'plantation forestry' (*Eucalyptus camaldulensis*) for commercial trees. Secondly, the government launched 'economic incentive' policies, providing accessibility to credit, tax relief on machineries import and other goods for paper factories and *infrastructure* (*highways and port facilities*). These policies taken by the government eventually led to widely expanded plantation estates throughout the whole country and highlighted how significant *plantation forestry* could be for providing the raw material for pulp and paper industries in the future. Thailand and her people welcomed plantation forestry, especially Eucalyptus trees. According to some studies, Bunvong Thaiutsa *et.al*., (2003), Forestry Research Center of Kasetsart University (1989), Thailand Development Research Institute (1991), and Forest Research Center for Royal Forest Department's paper (2008), it was recommended that *Eucalyptus camaldulensis* was a suitable plant according to soil and climate conditions and promoted as 'commercial trees' for Thai people. These findings have raised questions as to what the 'specialties' are of Thailand compared with other countries? For instance, China's specialty that plantation forestry mostly highlighted aiming to boost greening areas, because of highly polluted air. In the case of Vietnam and Indonesia, it has mostly been emphasized on the balance of economic and environmental issues, aiming to recover natural forest and to boost wood production for domestic wood demand and to expand 'forest coverage'. These conditions lead to preventing ecological disasters such as floods, soil erosion and drought.

There were two arguments to support Thailand's specialty. Firstly, the Thai government adopted and legitimized plantation forestry for 'economic' benefit rather than environmental issues. Therefore, focusing on Eucalyptus trees was adopted for their commercial value for farmers and private companies, aiming to boost production, provide income generation and jobs for rural communities. Secondly, the government encouraged easier procedures to obtain timber concession areas, gave subsidies to farmers, access to credit, tax holidays and provided infrastructure to private companies and farmers who wished to plant and develop plantations. The government supported private companies creating synergic cooperation with local farmers under the scheme of 'contract farming'. This contract requires the company to give seedlings, fertilizers, accessibility to credit from banks and a guarantee of market at harvest time for timber products from the farmers. The schemes provide a win-win solution for both parties (company and local farmers). As a result, plantation forestry in Thailand was rapidly grown from 560,000 ha in 1990 to become 4.9 million ha in 2000 (FAO 2001a). Therefore in order to deal with

these policies, it is significant to understand general policy and its impact of Thai government on plantation forestry.

Most problems in plantation forest development are *policy*-related and institutional in nature-caused by human actions (ITTO, 2001). Relevant *stakeholders* critically examine the following problems such as:

a. Lack of updated statistical data and information about existing types of plantation forest resources in Indonesia and other ASEAN countries covering: (i) amount; (ii) age; (iii) species; (iv) location; (v) site quality; (vi) schemes; (vii) present protection condition; (viii) existence and nature of claims/conflicts, community interest and involvement. These important basic data needed for better long-term policy analysis in the forestry sector including management plans.
b. Inadequate capability at decentralization level is apparent, among others, in (i) poor state of forest management; (ii) low status of human resources development, and (iii) lack of planning capability. Moreover, change over to a decentralized management system is a challenge and simultaneously an opportunity for potential improvement.
c. Other constraining factors are: (i) lack of adequate access to financial sources for potential plantation investors and revenue sources for local governments; (ii) lack of dialogues between relevant stakeholders, i.e. local communities, local and central governments, private sector, NGOs, etc. More than 20 years after the IX World Forestry Congress 1978 in Jakarta this "forest for people" philosophy finally being promoted (1999) in the decentralization context.[23]

Those problems have particular possible solutions such as practical supports and development of regional innovative mechanisms and relevant legislative frameworks. Then, it is very clear, that plantation forest development is one of the central agenda for degraded production forest areas. This urgently needs applicable incentives.

4. Purpose

The study focuses on 'plantation forestry' and the scope of period is limited other ASEAN countries from the 1980s until 2000s, because they began to promote forest rehabilitation program and plantation forestry in these periods.

To fulfill these scopes, ***research purposes*** are mentioned below:

1) to clarify the role of stakeholders especially government and private sectors in the

[23] See Aulia L.P. Aruan, "The Future Role of Plantation Forests and Forest-based Industry," in (http://www.fao.org/), January 29, 2009.

implementation of sustainable "plantation forestry" programs;

2) to examine local people "participation and subsidiary" in plantation forestry under the program of social forestry in the region;
3) to discuss the critiques of NGOs, academics and local people toward implication on sustainable of plantation forestry;
4) to explore the implication of plantation forestry program management on environmental spheres.

5. Methodology

5.1. Theoretical Framework

The study uses "political ecology" as an analytical framework. We must define political ecology. Many scientists (Paterson, 2000; Bryant, 1997, Vayda, 1983, Blaikie and Brookfield, 1987, Abe Ken-ichi, 2003) define it differently. Paterson (2000) notes that, "political ecology as an approach that combines the concerns of ecology and political economy to represent an ever-changing dynamic tension between ecological and human change, and between diverse groups within society at scales from the local individual to transnational as a whole." Other scientists define it as, "political ecology" a framework to understand the complex interrelations between local people, national and global political economies, and ecosystems" (Blaikie and Brookfield, 1987). The concept has been adapted in a variety of ways, such as Third-World political ecology, where (Bryant, 1997) notes that: "political ecology may be defined as the attempt to understand the political sources, conditions and ramifications of environmental change." Most current political ecology tends to overlook ecological dynamics and focus upon the structure of human systems (Rocheleau et al., 1994). Abe Ken-ichi (2003) defines political ecology, as "a collective name for all intellectual efforts to critically analyze the problems of natural resource appropriation and political economic origins of resource degradation, be they for the purpose of academic study or practical applications".[24] In other words, political ecology is concerned with the political dimensions of natural resource use and subtleties of those politics. Apparently, the scope of political ecology has been referred to as ' a method of analysis', rather than a unified scientific discipline or sub-discipline, which is usually characterized by a set of related ideas, premises, and theories.

Meanwhile, (Vayda, 1983) commented: political ecology is similar to a method applied by human ecologists analyzing policy-relevant environmental questions that is 'progressive contextualization'. This approach starts with actors, in this case direct

[24] Abe, Kei-ichi (et al.), *The Political Ecology of Tropical Forests in Southeast Asia : Historical Perspectives,* Kyoto University Press, Japan, 2003, pp. 3-4

resource users, and considers the contexts within which they act or do not act in a particular way towards a resource. This approach also intends to explain why people use the environment in particular ways, sometimes causing resource decline or degradation detrimental to their own and others' uses of the resources (Peluso, 1992).

From the above definitions, apparently, Bryant's definition, which emphasizes 'putting politics first' on the political ecology of sustainable development aspects is more operational on 'In Search of Sustainable Plantation Forestry: Political Ecology Analyses on Stakeholders". There are three reasons for this condition. First, that 'demand for plantation forestry' to supply as raw materials for pulp and paper industries in Japan and ASEAN countries are rapidly increased from the beginning 2000s. Second, the implementation of sustainable plantation forestry to bolster trees production could be evaluated from viewpoint of regulation, economic incentive, people's participation, technical innovation and linkage of institutional interaction. Third, is the impact on environmental condition such as, flood, soil erosion, forest fire, depletion of biological species, etc.

'Political ecology' is a framework to approach to the subjects mentioned. It is a generic term used for this research connecting two levels of study. This study highlights viewpoint politics into the study of ecological condition. It includes a small-scaled study centered on how local communities carry out plantation forestry with other stakeholders in their villages (e.g., using approach *cultural anthropology, applied anthropology)*. Besides, focusing on a large-scaled study from local, national, and regional standpoint such as how plantation forestry products distribution in ASEAN and Japan (e.g., political economy) and eventually utilize the products as raw material of pulp and paper industries. After reviewing of existing studies, I decided to adopt the framework focused on the movement and *logic of stakeholders* (actor analysis) among other frameworks of political ecology in this study (Figure 2).

5. 2. Actors' Movements

The paper would like to concentrate on actors' movements for two issues namely identification of actors and the role of actors. Observing above description, there are two critical reasons to be identified actors' movements of plantation forestry. Firstly, is to clarify on direct actors can be categorized as the state,[25] (Table 2), (Figure 1), private

[25] I might now be in a better position to describe the actual role of the modern state. It can be argued (see Carter 1993) that those who enjoy a dominant position within the relations of political control (ordinarily *state actors*) select or stabilize relations of economic control that are in their interests. For further information, see Alan Carter "Towards a Green Political Theory", in Andrew Dobson and Paul Lucardie (ed.).1993.

sector, and local community. Secondly, is to review on launching critiques from indirect actors such as grass root movements, local government, academics, and NGOs.

Table 1-2 Political and Economics forces and relations

Issues	**Relations**	**Forces**
Political	Relations of political control	Forces of defence
Economic	Relations of economic control	Forces of production

Source:Alan Carter (1993).

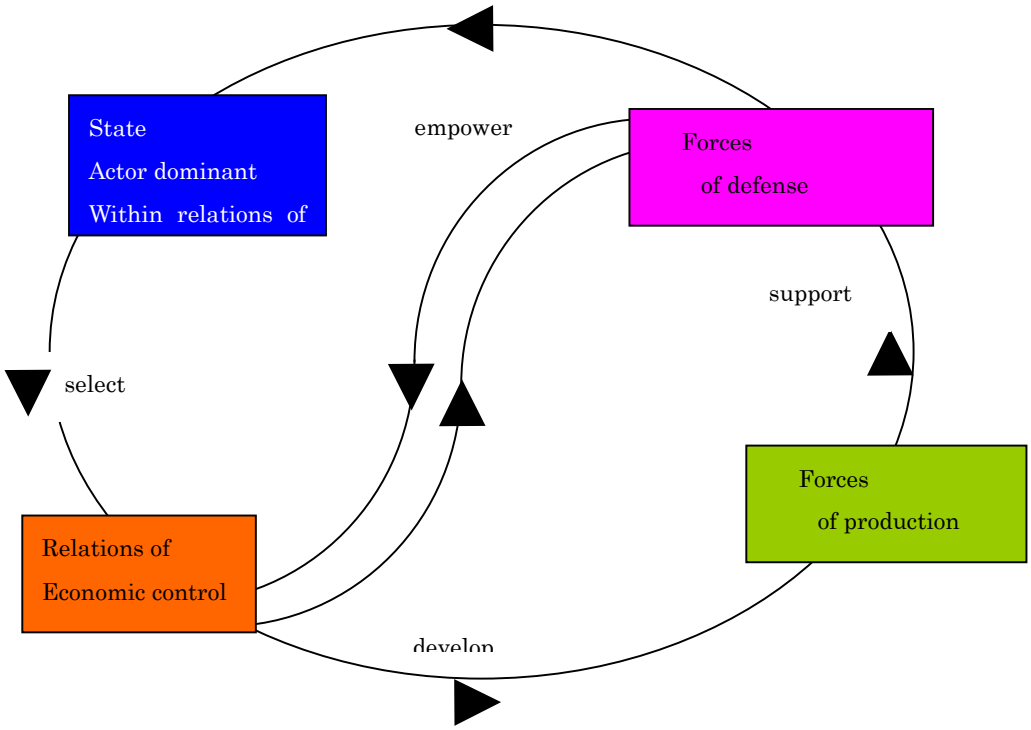

Figure 1-1. An Interrelational model that modified by Alan Carter (1993)

The Politics of Nature: Explorations in green political theory. London: Routledge Press, pp.43-44. There is new 'interdisciplinary' approaches necessitated by environmental and related issued for social sciences (political and economic aspects). See Peter Dickens.1992. *Society and Nature: Towards a Green Social Theory*. Philadelphia: Temple University Press, pp. 1-16.

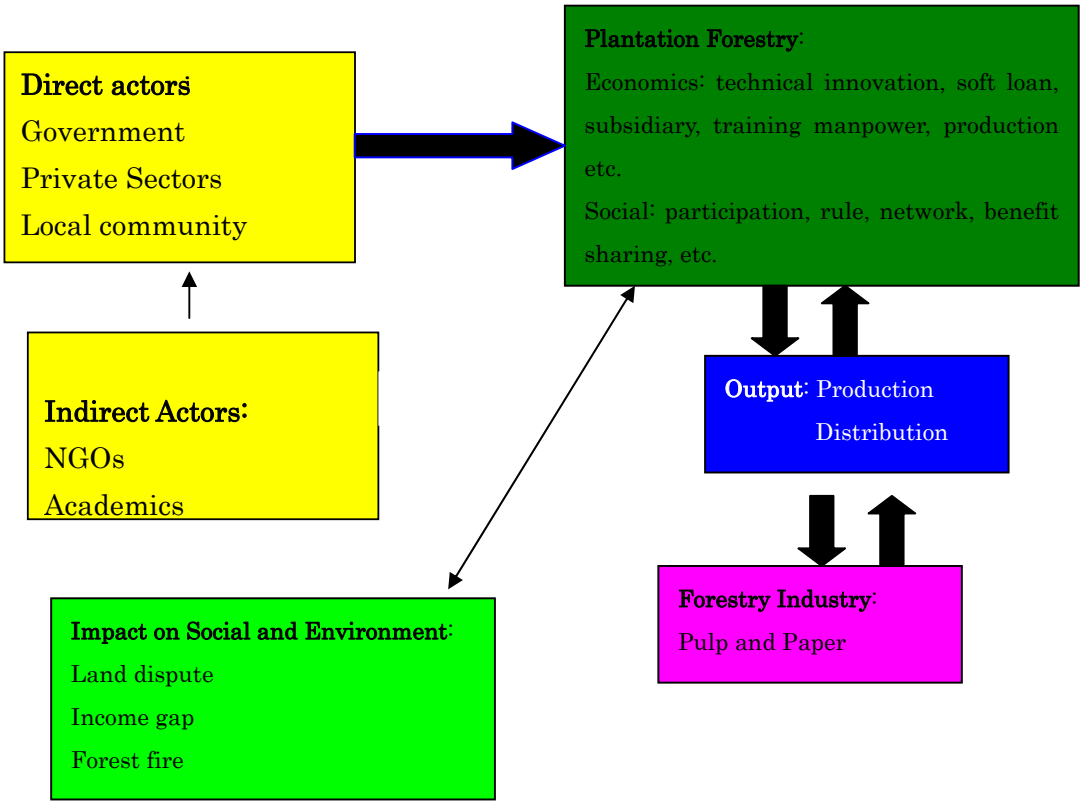

Figure 1-2 Conceptual Framework of Political Ecology of Plantation Forestry

The government (jointly perform between executive and legislative board) as an actor on "plantation forestry" policy is represented by launching in making legislation and to issue permission, monitoring and give sanctions among the plantation forestry industries. On the other hand, businessmen represent private sector and also local people independently own-which have legal concessions with the time limit of (7-8 years) on operating plantation forestry, industrial timber plantation (HTI), and implement the replanting of trees in the state or private *production forests*, based on the law, regulation, economic incentive, participation, technical innovation, and institutional cooperation. The operational mechanisms carry out on the logging, timber, plantation forestry production and the paying of taxes for government income in the Department of Forestry. In contrast, the governments through Department of Forestry apparatus are responsible for controlling all these operations and sanctions.

Seemingly, indeed there is a relationship between both roles, whether direct or indirect actors on plantation forestry industries. If both parties truly cooperated and created symbiotic relations in the near future based on a sustainable plantation forestry, the effect of deforestation will be prevented and reforestation (plantation forestry) program to provide raw materials for forestry industries such as plywood, sawmill, pulp and paper industries, etc., will be continuously occurred in ASEAN.

5.3. Method for data collection

The main part of data and information are available through three techniques:

1) Literature reviews on many books, journals and newspapers;
2) Making 'guided interview' and conducting 'in depth interviews' with *stakeholders* of plantation forestry programs such as government officers, private sectors officers, academics, NGOs and local people;
3) Field observation of plantation forestry programs in ASEAN countries (Indonesia, Philippines, Thailand and Vietnam) from the perspective of economic, social and ecological issues.

6. Research Sites

The focus of the study is highlighting the role of stakeholders on plantation forestry from viewpoint of 'political ecology' analyses. To achieve this, the research sites appealing case study on plantation forestry carried out in ASEAN countries (Indonesia, Philippines, Thailand and Vietnam) on the fiscal year 2009 until 2010. The initial field research in summer 2009 in July carried out in Thailand such as Bangkok, Khon Kaen province, Mancha Kiri sub-district and in August 2009 in Philippines: Manila, Caraga Region (Mindanao), Butuan City, Talacogon-Agusan Del Sur. And in fiscal year 2010 in March carried out field work in Vietnam such as in Hanoi, Phu Tho province and Phu Ninh district. Meanwhile, field research in Indonesia was conducted in April and May 2010 in Jakarta and Riau Province. The rationale of chosen those countries, based on two arguments. First, currently ASEAN forestry which is focusing on Indonesia, Thailand, Philippines and Vietnam are facing forest degradation and deforestation in many areas. Second, the rapid development of pulp and paper industries in ASEAN urgently needs huge timber supply to maintain operational industries. To overcome the critical condition the government and other stakeholders such as private companies, state forest enterprises, local farmers, etc. are carrying out planting trees in production forest to provide raw material of timber for pulp and paper industries. On the other hand government, international agencies (World Bank, ADB, JICA, SIDA, CIAR), etc. and NGOs launched affirmative action by carrying out reforestation and rehabilitation forest in protected and

conservation forest to prevent from soil erosion and flood in respective countries.

7. Expected results

This research will make a great academic contribution to the field of forest policy and conservation, because there have been no research to explore the development of *plantation forestry* in ASEAN comparatively in terms of *political ecology* analyses. The recommendations for the actors will also make a certain contribution to affect their future activities and forest policy making process.

CHAPTER 2 THAILAND

A. Discourse on Thailand's Plantation Forestry (*Eucalyptus camaldulensis*)

A.1. Introduction

The initial question rises in terms of plantation forestry. In case of Thailand, how does the country to overcome timber shortage and extend plantation forestry? As a consequence of the rapid growth of pulp and paper, sawmill, plywood and furniture industries at the end of 1990s to the beginning of the 2000s, wood demand reached 17.2 million m^3 in 1999 and rapidly developed to become 20.1 million m^3 in 2006. There are two ways in which the Thai government is overcoming the shortage of timber. Firstly, the Thai government invites *stakeholders* such as private companies, academics and local farmers to be actively involved in planting and developing 'plantation forestry' (*Eucalyptus camaldulensis*) for commercial trees. Secondly, the government launched 'economic incentive' policies, providing accessibility to credit, tax relief on machineries import and other goods for paper factories and *infrastructure* (*highways and port facilities*). These policies taken by the government eventually led to widely expanded plantation estates throughout the whole country and highlighted how significant *plantation forestry* could be for providing the raw material for pulp and paper industries in the future. Thailand and her people subsequently welcomed plantation forestry, especially Eucalyptus trees. According to some studies, Bunvong Thaiutsa *et.al*. (2003), Forestry Research Center of Kasetsart University (1989), Thailand Development Research Institute (1991), and Forest Research Center for Royal Forest Department's Paper (2008), it was recommended that *Eucalyptus camaldulensis* was a suitable plant according to soil and climate conditions and promoted as 'commercial trees' for Thai people. These findings have raised questions as to what the 'specialties' are of Thailand compared with other countries? For instance, China's specialty that plantation forestry mostly highlighted aiming to boost greening areas, because of highly polluted air. In the case of Vietnam, Philippines and Indonesia, it has mostly been emphasized on the balance of economic and environmental issues, aiming to recover natural forest and to boost wood production in the production forest for domestic wood demand and to expand 'forest coverage' by launching reforestation and forest rehabilitation program in protected and conservation forest These conditions lead to preventing ecological disasters such as floods, soil erosion and drought.

There were two arguments to support Thailand's specialty. Firstly, the Thai government adopted and legitimized plantation forestry for 'economic' benefit rather than environmental issues. Therefore, focusing on Eucalyptus trees was adopted for their commercial value for farmers and private companies, aiming to boost production, provide

income generation and jobs for rural communities. Secondly, the government encouraged easier procedures to obtain timber concession areas, gave subsidies to farmers, access to credit, tax holidays and provided infrastructure to private companies and farmers who wished to plant and develop plantations. The government supported private companies creating synergic cooperation with local farmers under the scheme of 'contract farming'. This contract requires the company to give seedlings, fertilizers, accessibility to credit from banks and a guarantee of market at harvest time for timber products from the farmers. The schemes provide a win-win solution for both parties (company and local farmers). As a result, plantation forestry in Thailand was rapidly grown from 560,000 ha in 1990 to become 4.9 million ha in 2000 (FAO 2001a). Therefore in order to deal with these policies, it is significant to understand general policy and its impact of Thai government on plantation forestry.

Hence, the objective of this paper is to examine three research objectives as follow: (1) to examine the impact of the *Royal Forest Department* (*RFD's)* policy on plantation forestry on private companies and local farmers; (2) to discuss how private companies and local farmers responded to forest plantations and the economic incentives provided by the government; and (3) to investigate the debates from academic and NGOs on ecological damages.

A.2. Study Sites

A.2.1. Study Sites

The study sites were located in Khon Kaen Province, Hua Naklang village, Tusala sub-district, Mancha Khiri district, 50 km from Khon Kaen city and in Samchan village, about 10 km from Khon Kaen city (figure 2.1 Map of Khon Kaen). Geographically, Khon Kaen province is located in Northeast Thailand and about 449 km from Bangkok (Figure 2). There are two rationales to select this province. First, the Khon Kaen province is mostly covered in forest plantations (*Eucalyptus camaldulensis*) planted by the local farmers and private companies, based on field surveys that indicated that soil and climate conditions were appropriate for these plantation trees. Second, the villages were selected could be categorized as dependent farmers or so called 'contract farming' with Siam Cement Group (SCG) Company for instance in Hua Naklang village, Tusala and Mancha Khiri.

Figure 2-1 Map of Khon Khaen area among Thailand
Source: From Google, Khon Khaen in Thailand, 2008.

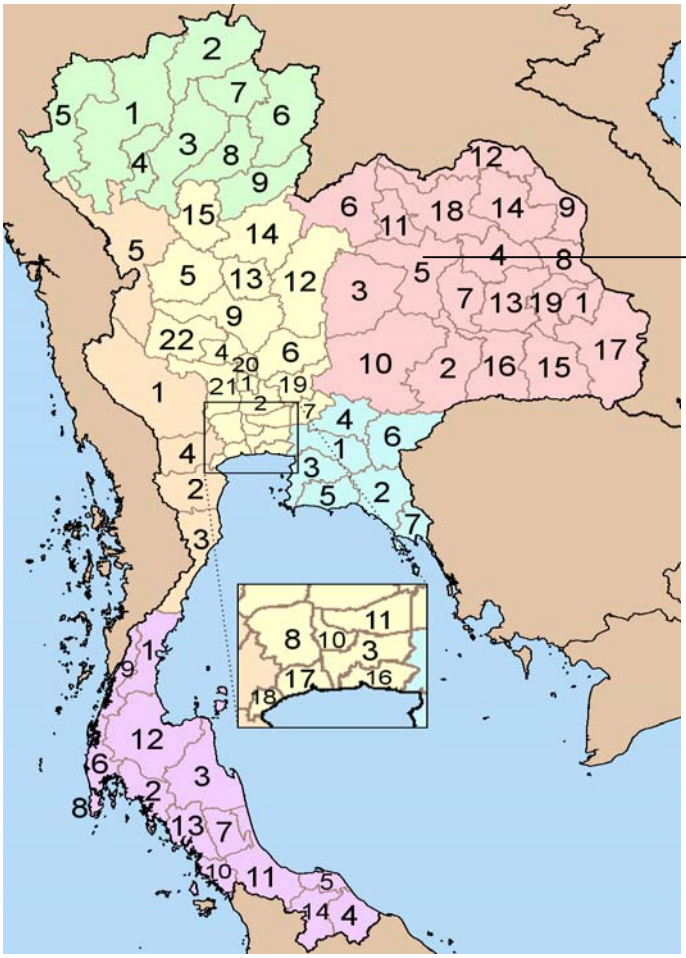

Figure 2-2: Khon Kaen Province is located in the Northeast of Thailand (number 5).
Source: Google

A.2.2. Method for data collection

The majority of data and information was collected through three techniques. First, literature reviews of books, forestry statistics of Thailand (2007), the internet and journals about Thailand's forest policy, plantation forestry and the development of pulp and paper industries. Second, fieldwork was carried out in July 2009 in Bangkok and Khon Kaen province. Using guided interview questionnaires to conduct in-depth-interviews with stakeholders (*Royal Forest Department* officer; Forestry Research and Development officer; academics in the Faculty of Forestry of Kasetsart and Khon Kaen Universities; private company officers, local NGOs and local farmers-purposive sampling) to obtain information on forestry plantations. Third, field observations were made of forest plantation programs in Thailand.

A.3. Royal Forest Department Policies

The Royal Forest Department (RFD) plays a significant role in policy development for plantation forestry. As mentioned in the first research objective, it was the RFD's policy on plantation forestry that led to commercial tree plantations for Eucalyptus *camaldulensis*. There are four main issues to be discussed, namely an overview of forest policy, plantation forestry, the progress of plantations and foreign agency support.

A.3.1. Overview of Forestry Policy

Thailand was covered by 158,652 km^2 or 30.92% forest in 2006 (*Forestry Statistics of Thailand 2007*). In the first phase forests were brought under state ownership and management. The Royal Forestry Department (RFD) was authorized to classify the allocation of forest use and issued concessions. As part of the policy implementation, the institutional structure was built up and adjusted, and various government programs were implemented. The legal status of the permanent forest areas was established either as protected areas or forest reserves. In the latter phase, 'timber concession' was given to private companies and the state-owned FIO[1] which were eventually cancelled when the logging ban was issued. In 1985 the government issued adoption of National Forest Policy in an attempt to consolidate sectoral policy in the country and to place forestry within the context of overall national development for instance: (1) promoting shared forest management between government and private sector; (2) specifying the target forest areas at 40% of the country's area (15 conservation forests and 25% commercial forests); (3) reducing forest destruction by improving agricultural technology; (4) intensification of private forest plantations to meet the needs of forest industries; (5) creating incentives for private forest plantations, etc. (*ITTO Objective 2000:81*).

While the government issued a logging ban on natural forests in 1989 to prevent deforestation and forest degradation that eventually affect to soil erosion and flood, reforestation and afforestation program were highlighted as significant strategies to supply wood demand and protect forests and land. As a result, a reforestation program was encouraged by the government (RFD) in 1991 aimed at encouraging the private sector, FIO and farmers, to engage in tree planting. The tree planting identified the need for

[1] *Forestry Industry Organization (FIO*) is a Government Forestry Enterprise Company. It was originally established on July 25, 1956 by RFD (*Royal Forest Department*). The main task of FAO is to carry out tree plantation forestry in concession area, logging in non-concession of the state's project areas (*dam and reservoir sites*), and the use or sale of confiscated wood either illegally cut or illegally imported into Thailand.

partnerships between the public and (*commercial*) private sectors. Forest laws and regulations were reviewed and revised. For instance, in 1992, the government issued the Forest Master Plan with a focus on 'rural development' and 'community forestry' (*Ibid*: 81). Hence, RFD was directed to encourage local communities to participate in tree planting and cooperate with the private sector.

A.3.2. Plantation Forestry

Since logging in natural forests was banned in 1989, timber production in Thailand has shifted from *natural forests to planted forests*, particularly teak and rubber wood and non-forest sources supplemented by imports. Tree plantations are an integral part of the reforestation program. RFD has the authority to issue 'timber concession' areas to government agencies (FIO) and private companies. The government's farm program (1994 to 2001) was a response to the deteriorating wood supply situation with a target area of 1.28 million ha. The program subsidized the private sector and farmers to plant trees (*ITTO Objective 2000: 8*). The program encouraged the private sector and farmers to plant specified economic tree species on their lands at 1,250 seedlings/ha. The government gave seedlings and fertilizer to farmers. The aim was to make use of all unutilized marginal farmland and areas for environmental benefit, and to reduce rural poverty. Planting was subsidized by the government with US$ 469/ha and the farmers were free to harvest the trees at the beginning of year six. The program absorbed about 80,167 farmers and the planted areas covered 169,400 ha, mostly located in the northeast and central regions. Unfortunately, the program only reached 13 percent of the target, with the main reason provided being that more attractive subsidies were offered for rubber, but the inherent obstacles to investing in tree crops below have obviously been important as well. Because Thailand's farmers have been accustomed to attaining a lucrative business from rubber plantations, the risks from trying Eucalyptus trees were too great (*ITTO Objective 2000: 41-42*).

Unfortunately, planting of timber species has progressed slowly due to a series of constraints. Initially farmers did not respond well to the timber plantations because of the following reasons: (1) no proper credit facility was available; (2) no guaranteed market at harvest; (3) forestry species were competing with other cash crops such as cassava, sugar cane, etc., which were also being actively promoted and (4) the registration problem of reserved species at the time of harvesting represents a source of uncertainty (Ibid: 40) (Interview, July 11, 2009). But, these constraints could be overcome when the RFD (*Royal Forestry Department*) officers invited private companies to conduct synergic cooperation with local farmers. The impact of the policy indicates that in the early 2000s the pulp and paper in Thailand increased profitability and engaged many stakeholders. As a result of the cooperation among parties, plantations are growing and the total extent of planted forests in

2000 (Table 2-1) was estimated at 2.81 million hectares of rubber and teak, while other plantations, such as *Acacia mangium, Eucalyptus camaldulensis, Pinus mercussii* and other *conifers* reached 2.0 million hectares (*Ibid*: 8).

Table 2-1 **Plantation Area by Species in 2000**

Species	1,000 ha
Rubber	2,019
Teak	836
Eucalyptus spp	**443**
Acacia mangium and other A.spp	**148**
Other broadleaved species	**541**
Pinus merkusii and other P.spp	**689**
Other conifers	148
Total	**4,824**

Source: FAO (2001).

Estimates of the actual area of commercial tree plantations vary considerably. According to RFD statistics, by 1981, 2.6 million *rai* had been reforested, with another 1.125 million *rai* reforested between 1987 and 1990. Some scholars predicted reforestation as follows: Hurst (1990) put the area of timber plantation planted by the RFD by 1982 at 2.5 million *rai*, by the FIO at 312,000 *rai*, and by the Thai Plywood company at 18,750 rai, but they estimated the survival rates at a third to 10%, which would give an actual area under state sector tree plantations of 280,000-930,000 *rai.* Apichai Puntasen *et.al* (1992) gave an estimate of 500,000 ha of eucalyptus plantations nationwide for 1987 (Carrere&Lohmann 1996: 91), while FAO (2000) estimated around 443,000 ha (ITTO 2000). Notwithstanding these discrepancies, it was clear that the area under eucalyptus plantation had to be increased significantly.

Therefore, to achieve this aim, a close system of collaboration between the Thai government and multi-national conglomerates emerged and an ambitious state programme of reforestation were developed. The Fifth National Economic and Social Development Plan (1982-1987) also included the reforestation target of 300,000 rai per year by the private sector. Accordingly, the 1985 National Forest Policy suggested not only represents a general shift in policy but also a specifically new role for the RFD. In recognition that the future of administering logging was limited, the RFD was then charged with organizing the setting up of large-scale plantations. First, in Article 4 of the document, 25% of the country's total area is set aside as production forest, with 15% as protected forest. Given the degraded state of most areas, this could only mean building up industrial tree plantations. Secondly, the document specifically priorities the pulp and paper industry in Article 13: "the state shall encourage integrate wood using and pulp and paper industries to realize the whole-tree

utilization concept." Thirdly, articles 5, 12, and 19 emphasize the role of private plantations (Ibid: 92).

In order to advocate plantation forestry among locals and the private sector, the RFD set up a special Office for the Promotion of Private Forestry Plantations, which formulated the long-term goal of 30,000 km^2 of private plantations. The National Forestry Policy resolution also set up a National Forestry Policy Committee, which served as a joint think-tank of the RFD and private forestry enterprises. This committee set the goal of 41,600 km^2 plantations by corporations and an additional 20,000 km^2 to be planted by villagers. To this aim, various state programmes were initiated to create public support for reforestation. These included the USAID-support Village Woodlot Programme, initiated in 1981, which hoped to set up plantations in 1,560 villages between 1987 and 1991. A Thai-Japanese joint venture, the Forest Plantation and Wood Industry, won a contract to supply 10 million eucalyptus seedlings to this project. Eucalyptus plantations were awarded similar promotion as pulp production (Oliver 2005: 72).

Table 2-2 **BOI-Promoted Eucalyptus Plantation**

Name of Company	**Year approved**	**Area (rai)**	**Export (%)**	**Investment (mil.baht)**
Kian Chunprasert	1988	1,500	0	55.0
Suan Siam Kitti Reforestation	1988	20,000	80	120.0
N.R.Eucalyptus Agr, Co.,Ltd	1987	15,000	0	110.0
Siam Forestry Industrial Ltd	1986	3,000	0	23.15
Siam Vana Forestry Industrial	1986	3,000		
Suan Siam Kitti Reforestation	1986	10,000	20	70
Rich Forest Co.,Ltd	1984	10,000	0	200.0
Siam Agrotex Co., Ltd	1984	5,200	0	97.0
Vanapan Co.,Ltd	1984	3,000	0	46.0
Vanapan Forestry Co.,Ltd	na	3,000	0	46.0
Total		**73,700**		**767.15**

Source: Oliver 2005.

It was claimed that the end of 1989 established 100 forest protection units and 46 forest villages established, with 500,000 *rai* of forest plantations planted and additional areas under fruit tree and rubber plantations. Most forest plantations were in private hands, with Rom Klao Oil, Philpittiwat, Treethip, Phoenix Pulp and Paper and the FIA among the companies reported to have especially close links with the projects.

A.3.3. Progress of Plantations

The government functionalized research centers to produce the best alternative trees to be planted for commercial aims. Two surveys were published in 1989, one by the *Forestry Research Center of Kasetsart University* and submitted exclusively to South-East Pulp Co.

Ltd., the other conducted by the *Thailand Development Research Institute* and entitled "Potential of Commercial Fast Growing Tree Plantations in Thailand", followed by Forest Research Center for Royal Forest Department's paper (2008). These centers' findings recommended large-scale eucalyptus plantations as the best solution to the industry's raw material problem (Oliver 2005: 91). These valuable findings were adopted by the RFD, where they then issued the National Forest Policy that declared the need for 'commercial tree' plantations of fast-growing species, such as E*ucalyptus camaldulensis*, to supply the raw material for the pulp and paper industry. Thai forestry academics believed that tree plantations would revive and improve the negative impact on existing forests from cultivation and illegal logging, as well as "the village people's encroachment on the forest for farming and the shifting cultivation by the hill tribes." They also believed that tree plantations would contribute to economic production and generate local and national income and employment (Kuaycharoen 2004: 9).

Due to developing wood demand over the last decade, fast growing tree plantations have been promoted. There are about 26 tree species, such as *pine, persian lilac, eucalyptus, leucaena, casuarina acacia, duabanga, acrocarpus and mahogany*.[2] *Eucalyptus* is a genus of tree originally derived from Australia and neighboring islands and was introduced to Thailand years ago as an ornamental tree. This genus consists of almost six hundred species, but only *Eucalyptus camaldulensis* shows promising growth performances in commercial plantations and plays a significant role in the wood chip and wood pulp industries in Thailand. The domestic demand for logs for the wood chip industry, estimated at 6,395,000 tons/year (over 90% (Figure 2-3) of the total demand for logs, is provided by *Eucalyptus camaldulensis.*[3] According to a study of the possibilities of changing land use to Eucalyptus plantations in five (5) provinces in Thailand, in Khon Kaen, Eucalyptus could constitute a total area of about 295,915 ha, in Chauyapkum, 341,663 ha, in Nakorn Racha Srima, 1,498,667 ha, in Buri Rum, 815,750 ha and in Maha Sarakham, 3,159,942 ha (Table 2-3). The findings recorded that the suitability of changing from existing land uses to *eucalyptus plantations* was categorized into three levels: high suitability, moderate suitability and low suitability. Based on such land use factors, it was found that *986,480 ha are highly suitable for growing eucalyptus*, including the areas of existing eucalypt plantations, cassava fields

[2] For further information see Anat, Arbhabhirama,*et.al.* 1998. *Thailand Natural Resources Profile*. London: Oxford University Press, pp. 168.

[3] See Thaiutsa, Bunvong *et al.*, *Complete Report of Site Potentials for Growing Eucalyptus* (Executive Summary). Forestry Research Center, Faculty of Forestry, Kasetsart University, May 2003, pp. (i).

and degraded forests, and the most suitable areas were in Khon Kaen province.[4] The areas considered as moderately suitable are 201,108 ha, currently covered by sugar cane and maize, while 1,575,100 ha of land covered by paddy rice and secondary forests were considered as low suitability.[5]

Table 2-3 **The Possibilities for changing Existing Land Use to Eucalyptus Planting**

Province	Total Rai	Total Hectares (ha)
Khon Kaen	1,849,470	295,915
Chayapkum	2,135,391	341,663
Nakorn Racha Srima	9,366,665	1,498,667
Buri Rum	5,098,437	815,750
Maha Sarakham	19,749,633	3,159,942

Source: Thaiutsa, Bunvong *et al*., *(2003).*

Thailand's account for land use is widely called "*rai*". 1 ha = 6.25 *rai* or 1 *rai*= 0.16 ha.

Figure 2-3 Eucalyptus *camaldulensis* trees in Northeast region, Khon Kaen.
Source: Individual photo collection, July, 2009

Private companies, such as Advance Agro and Siam Cement Company, are actively engaged in eucalyptus plantations. The first group, Advance Agro Alliance Company, planted 40,000 hectares and farmer contracted 60,000 ha, mostly located in the central and eastern regions of Thailand. Siam Cement Company, in paper and packaging, planted 25,600 hectares by the

[4] Interview with informant on July 3, 2009 in Bangkok. Khon Kaen area is widely used for farm holding land, and Eucalyptus trees could grow well.

[5] Bunvong Thaiutsa. *Loc Cit.*

contract farming system, mostly located in the northeast and through non-members residing within a radius of 150 km around the factory (more than 50,000 hectares (Table 2-4). The pulpwood, 3-5 years old, is harvested and sent to the factories with an average price of approximately US$ 30 per ton depending on log diameter class (Laemsak 2008:118). In 2004-2006, the Ministry of Agriculture and Cooperatives promoted farmers intensively planting Eucalyptus by agro forestry systems.

Table 2-4 **Eucalyptus plantation in 1994-1996 (1,000 ha)**

Actor	Area (ha)
Planted by the Government	108,8
Planted by the Private Sector:	
Advance Agro (AA)	100
Siam Cement Group (SCG)	75,6
Total	**284,4**

Source: *Journal of Forest Management* (2008).

A.3.4. Foreign Agency support

The planting of eucalyptus eventually encouraged foreign donor countries to extend funds such as Japan, Canada, the United States and Finland to provide investment in this activity. They benefit, either from sales of machinery and consultancies and the cheaper import costs of Thai furniture, particle boards and veneer. In 1981, the *Japan International Cooperation Agency* (*JICA)* set up a trial eucalyptus plantation in northeast Thailand to foster research and training in the field, and in the early 1990s funded **a nursery project**, growing 20 million trees seedlings per year. Japanese taxpayers' money has also been channeled through the Overseas Economic Cooperation Fund to support farmers' participation in the Thai-Japan Reforestation and Wood Industry Co., which was designed to supply raw materials to a consortium of Japanese papermakers. *CIDA,* the Canadian government aid body, has helped finance the Canadian consultant firm H.A. Simons' work with Soon Hua Seng as well as plantation research by the Thai Development Research Institute. Meanwhile, the Finnish government has pumped millions of dollars of its taxpayers' money not only into export credits for Finnish forestry and pulp and paper equipment, but also into a political lobbying exercise known as the Thai Forestry Sector Master Plan, which was conducted by the Jaakko Poyry consulting firm between 1990 and 1994 (Carrere & Lohmann 1999: 233-234).

A.4. Private Sector responses to Forest Plantations

The private sector, including private companies (SCG, Advance Agro, Phoenix etc.), FIO (*Forestry Industry Organization*), and wood traders, launched strategies to get raw

material (timber), to boost production and access to the market, cooperating with individual farmers and members of cooperatives.

A.4.1 SCG Company responses to the government's policy

The appointment of SCG Company to be respondent of the field work based on the reason. The significant role of SCG Company is the single actor who actively engages on contract farming with farmers in Khon Kaen district.

The Siam Cement Group (SCG) responded positively toward the RFD's (*Royal Forest Department*) policy of plantation forestry concession because the investment atmosphere was good for investors and SCG Company in particular as well. The study focuses on SCG Company. SCG staff highlighted response to the policy such as lower taxes, credit provided for the Company and local farmers, simple procedures for obtaining land tenure, timber concession areas and the provision of good *infrastructure* (road and port facilities) as their reasons. Credit availability from the bank for the private company depends on rationality of the feasibility study. In case of SCG Company looked for bank as partner, with The Farmers Bank[6] for tree plantation and factory mill establishment. Because of his close relationship between The Farmers Bank and SCG Company could obtain a hundred million US$ dollar credit to invest in plantation forestry, pulp and paper mills and others.[7] The Company searches for raw materials (timber) with other parties. For example, the Company looks for cooperation with government agency such as FIO (*Forest Industry Organization*) for planting trees in the district of Khon Khaen and surroundings and with local farmers to procure timber through *MOUs* (*Memorandum of Understanding*) with the scheme of "Contract Farming". The paper products of SCG Company are 65 percent sold in the domestic market and the remaining 35 percent is for overseas markets in Southeast Asia, Hong Kong, Japan, USA and Europe (Interview, on July 9, 2009).

A.4.2 Private Company (SCG) with Government Enterprises (FIO)

SCG Company conducted a joint venture in 2003 with FIO, one of the state enterprise forestry businesses belonging to the RFD, planting eucalyptus trees on 12,000 Rai of land in Khon Kaen area. The SCG Company provided the capital, in the form of seeds and

[6] The Farmers Bank is categorized among the fifth biggest financial conglomerate in Thailand such as Bangkok Bank, Bank of Ayudhya, Bangkok Metropolitant Bank and Bank of Asia. The major share holder of The Farmers Bank is Royal Family Group. For further information see Akira, Suehiro, *Capital Accumulation in Thailand 1855-1985*, 1989:247.

[7] The close relationship between SCG Company and The Farmers Bank occurred because the majority shareholder of SCG is the Thai King (Bumibol). The data is based on an interview with Kriangsak Salee, a Promotion Department Manager of SCG (*Siam Cement Group*) Company on July 9, 2009 in Khon Kaen.

maintenance until harvest, while FIO provided the land, counseling, guidance and inspection of plants until harvest. The SCG Company provided capital from land clearing, weeding, planting, maintaining to harvesting the plantation per rai 4,000 Baht x 12,000 rai= 48,000,000 Baht. The harvest after six years of one rai produced 14 ton x 12,000 rai=168,000 ton. The price in 2009 reached 900 Baht/ton x 168,000 ton=151,200,000 Baht.

The profit after six year reached 151,200,000-48,000,000 Baht=103,200,000 Baht. Then the profit each year reached 103,200,000: (12,000x 6) = 1,433.3 Baht/per rai. The profit at harvesting time (after six years) for the SCG Company received 60 percent (0.6 x 103,200,000) = 61,920,000 Baht. Meanwhile FIO received 40 percent (after six years) (0.4 x 103,200,000) = 41,280,000 Baht.

The profit at harvest time, after tax, was distributed 60/40 to SCG and FIO respectively. According to Salee, an SCG staff member, this cooperation provided a profit for both parties. For instance, FIO could develop management and networking. On the other hand, SCG as the investor could obtain bank credit and conduct contract farming with local farmers, thereby creating jobs and increasing the socio-economic strength of the rural areas.

The target of SCG for pulp production was about 414,000 tons (37% of the total national target) and for paper about 1.7 million m^3 (40% of the total national target) in 2008 (Table 2-5).[8] This target was reached by the company launching cooperation with other actors (*FIO, Oji Paper, and Local farmers)* for providing raw materials (*Eucalyptus trees).* For instance, in 2010, the SCG cooperated with *Oji Paper* from Japan to carry out plantation concessions of around 22,000 ha in Laos, because forest land in Thailand is very limited. So far, fundraising and technical preparation have been conducted by both parties (Oji and SCG Company), while the Laos government has provided state forests and approved for plantation concessions to plant Eucalyptus *camaldulensis.*

Table 2-5 **Production of Pulp and Paper in Thailand Year 2006-2008 (1,000 tons)**

Product	**Domestic Production**			**SCG**	**% of share in**
	2006	**2007**	**2008**	**Prod in 2008**	**Domestic Prod**
Pulp	**1,129**	**1,169**	**1,106**	**414**	**37%**
Paper	**4,308**	**4,322**	**4,235**	**1,687**	**40%**
-Printing Writing	1,221	1,108	1,014	390	38%
- Paper and board	239	348	369	147	40%
- Kraft Paper	2,600	2,625	2,604	1,150	44%
-Others (Newsprint & Sanitary Paper)	248	241	248	-	-

[8] For further information, see *Sustainable Report of SCG Company in 2008*, pp. 26.

Total	**5,437**	**5,491**	**5,341**	**2,101**	**39%**

Source: Sustainable Report of SCG Company, 2008.

A.4.3 Private Company (SCG) with Local Farmers

SCG conducts strategic 'partnerships' with local farmers for securing raw material. The guarantee of providing raw material (Eucalyptus *camaldulensis*) is significant to the company. Therefore, the company holds contracts with local farmers in order to ensure the provision of raw material. Within these contracts, SCG is obliged to provide seedlings of eucalyptus, fertilizer and guarantee a market at harvesting time for famers and the farmers are required to sell their product to SCG at the agreed price. Independent local farmers not contracted by SCG can sell to other traders if the price is agreeable between the two parties.

In this context, SCG likes to support local communities where it operates by sustaining their economic growth and increasing income generation. Farmers as suppliers of timber are considered the first priority for purchasing their products. The SCG policy supports *job creation* in rural areas that decreases migration to urban areas, such as Bangkok, by villagers.

Major examples in 2007-2008 programs of contract farming through local hiring are as follows: 1) Promotion of converting cash crop to eucalyptus planting for farmers at the village level and establishing centers for seed distribution in the provinces of Kanchanaburi and Khon Kaen[9] in order to produce raw material for pulp production. The advantages include increasing income for farmers and providing alternative sources of raw material for SCG Paper. As an illustration, raw material produced from the company's plantation is around 75 percent and 25 percent from contract farming (Table 5).

2) Establishment of a *Community Occupational Training Center* which has programs such as traditional Thai Massage, and production of handicrafts produced by housewives and the unemployed in the nearby community of Phoenix Pulp and Paper Mill [10]and SCG. In

[9] The field survey was carried out on July 7-18, 2009 in Khon Khaen area. The province of Khon Kaen such as Mancha Khiri, Tusala, Shamchan, etc., are located in northeast of Thailand. Some areas could produce paddy rice based on rainfall, irrigation system is very little, and the land is infertile. But, some of land areas are very suitable for *eucalyptus plantation* that these trees no much need the water. This information based on interview among scholars in Khon Kaen University, July 9, 2009.

[10] Actually some shares of Phoenix Pulp and Paper had been made an acquisition by SCG Company in 2001. Then a part of management is controlled by SCG Company.

addition, the Company provides the market for the communities by inviting them to sell their products and services in SCG Paper exhibitions held in every mill as well as purchasing their products to be souvenirs for special guests and customers.

SCG established some **nursery centers** in the northeast, such as in Chum Phae, Ban Phai, Mancha Khiri, Nong Song Hong and Nong Ruea. The aims of these centers were as follows: 1) to provide best seedlings for farmers; 2) to provide an opportunity for SCG staff to explain how to intensify eucalyptus planting production as follows:

2-1) to explain what is suitable land for planting;
2-2) to teach people how to maintain plants from planting until harvest;
2-3) to teach people how to realize first cutting of plants (after 4-5 years);
2-4) to show people how to manage stumps, in order to grow just 3 plants, no more.

In Mancha Khiri sub-district, where a research site is located, about 80 percent of local farmers who own land are categorized as members of contract farming with SCG. The remaining 20 percent of local farmers are categorized as independent farmers.

The *benefits* of contract farming for farmers are: 1) they receive free fertilizer from SCG in the first two years (2004-2005); 2) they received discounts of almost 40-50 percent for seedlings in 2006; 3) they have access to credit from the local bank as a member of the village cooperative; 4) they are guaranteed a market of logs at harvesting time (with spot price). In contrast, the *losses* for farmers are in terms of the 'spot price' at harvesting time, which is often 'lower' with the company compared with independent traders. For example, in 2009 SCG determined on a price of 900 Baht/per ton, while the general market value was 1000 Baht/per ton. From this point of view, farmers under 'contract farming' lost 100 Baht/per ton in selling at harvest time. Also, the provision of people to assist in maintaining and harvesting timber (*Eucalyptus*) in rural areas since the beginning of the 2000s has been difficult, because they prefer to work in the big cities such as Bangkok, Chiang Mae and Khon Kaen, where the salaries provided are greater than in rural areas (interview with Bualai, July 7, 2009).

There are many local farmers actively engaged in plantation forestry, irrespective of whether they are individual contract farmers, independent farmers or members of village cooperatives. As a member of a cooperative, they receive access to credit from agricultural banks and free seedlings from the local government. Below is a picture of an individual contract farmer called Bualai Yenchai. Bualai is 59 years old and has three children, while

her 63 year old husband is called Thon Puan.[11] Bualai owns a gasoline station and shop for daily necessities such as rice, cakes and drinking water for local people. She owns about 110 *rai* of land, some inherited from her parents and most bought from other local farmers. The remaining 10 rai is reserved for paddy fields (figure 2- 4).

This woman is Bualai, in her shop in Mancha Khiri sub-district, speaking with the SCG officer, acting as guide and translator.
Figure 2-4: individual photo document, July, 2009.

Bualai initially knew about SCG Company from company staff who visited her home explaining about Eucalyptus as an alternative commodity tree. She became an individual contract farmer in 2004. Previously she planted cassava and sugar cane, but these crops did not attain much profit and required a great deal of effort and time to maintain. She explains that it is currently difficult to find labor in rural areas, because most people go to the cities for greater amounts of money, such as Bangkok, Chiang Mae and Khon-Kaen. Therefore, she chose Eucalyptus trees to plant for the following benefits: (1) the Eucalyptus is fast growing and produces greater profit; 2) not much time is required to manage the crop; 3) no extra labor is required for maintenance and harvest; 4) an ensured price at harvest time; 5) free fertilizer from company in 2004-2005 as a promotion; 6) cheaper prices for seedlings and fertilizer and 7) a guaranteed market at harvest time.

[11] The interview with Ms. Bualai Yenchai was carried out on July 9, 2009 in Manca Khiri district, about 50 Km from Khon-Kaen city

Farmers' strategies to boost production

Production depends on many factors, such as quality of land, quality of seedlings, maintenance, fertilizers and sufficiency of capital for a successful harvest. Although the SCG provides seedlings and organic fertilizers, the company also must improve seedlings and fertilizers in order for farmers to boost production. Currently, 250-270 trees with a spacing of 3x3 meter and 4 bags (50 kg/bag) of fertilizer (200 kg) are required for one rai. This produces 10-14 ton per rai after 6 years (*first harvest*). In contrast, if farmers do not use fertilizer, the production declines to just around 7-8 tons per rai. The price per ton was 1,200 Baht in 2007, which declined to 900 Baht/per ton in 2009.

Mostly farmers who own land in Mancha Khiri sub-district are individual contract farmers and members of cooperatives. The benefits they obtain as members are: discount prices for fertilizer and seedlings, credit from the agricultural bank and life insurance. They pay an annual fee of 2,000 baht. If a member dies, the family receives 150,000 Baht from the life insurance.

Bualai informed us that 3,200 Baht[12] per *rai* is needed for clearing land, weeding, planting, maintaining to harvesting the plantation. She planted eucalyptus trees in 2004 and will harvest them in 2010. Bualai owns 100 rai, therefore needing to invest 320,000 Baht. As an individual contract farmer and member of the cooperative, she borrowed 300,000 Baht from local agricultural bank, using her land as collateral. She must repay about 30,000 Baht annually over the next 10 years and is so far able to make repayments each month. The estimated harvest of one *rai* should produce 10 tons, and at a price of 1,000 Baht (estimated price in 2010), total profit should be 1,000 tons x 1,000 Baht/per ton= 1,000,000 Baht, or 1,000,000 - 320,000 Baht = 680,000 Baht (after six years). The profit in each year should be about 680,000 Baht: 600 (100 *rai* x 6) = 1,133 Baht/per rai. She would like to use this profit to expand her shop, buy more land and pay education fees for her children and possible large medical expenses.

A.4.4. Private Company (SCG) with member Cooperative Sector

Most farmers who live in Tusala sub-district are involved of contract farming and village cooperatives. I interviewed with members of a cooperative: Showaeng, 57 years old, and Kaseem, 51 years old. Kaseem owns 50 rai and Showaeng owns 100 rai of land, mostly

[12] The breakdown cost per *rai* composes many activities such as buying seedling, fertilizer, paying workers for clearing land and planting seedling and distribute fertilizer, and for cutting trees at harvesting time (see at Showaeng's cost per *rai*).

bought from other farmers. Both farmers live in Hua Naklang village, Tusala sub-district.[13] Showaeng has two daughters and one son and also has a shop that sells daily necessities for local people (figure 2-5).

The farmer Showaeng (middle) with his wife (Thonsa) and grandchild in Hua Naklang village, Mancha Khiri sub district. The guide and translator is on the left.

Figure 2-5: individual Photo document, July, 2009.

These two farmers initially learned of SCG Company when SCG staff visited their homes to explain the benefits of eucalyptus tree plantations and becoming a member of the cooperative. They were interested to become contract farmers because: 1) they would learn how to intensively plant eucalyptus commercially, 2) a guaranteed market at harvest time and 3) they would receive discount prices on quality seedlings and fertilizer. For instance, as members, they could pay 3 Baht per seedling, whilst non members paid 4 Baht, whereas they received fertilizer for free from the company in 2004-2005 and normally they would pay 200 Baht for one bag (50 Kg), while a non-member would pay 250 Baht.

To optimize production

The eucalyptus trees planted from seedling require 6 years before the first harvest. Showaeng planted eucalyptus trees in 2005, and has been fertilizing, maintaining and weeding the plantation since.

[13] The interview with informant was carried out on July 11, 2009 in Hua Naklang village.

4 year-old eucalyptus trees in Hua Naklang Village
Figure 2- 6: Individual photo collection, July, 2009.

Although he could, Showaeng did not obtain credit from the agricultural bank and instead planted in parts: 50 *rai* in the first year and 50 *rai* in the second year, using his own savings of about 220,000 Baht. He used this money to buy seedlings, fertilizer and maintain the plantation, cleaning weeds and harvesting, with only himself and his family laboring on the plantation. The investment needed is 3,218 Baht per *rai* from planting until harvesting: 6 years. The total money could be spent as follows:

1) for buying seedlings: 256 x 3 Baht/ seedling = 768 Baht;[14]
2) for buying fertilizer: 4 bags (50 kg/bag) x 200 Baht = 800 Baht;
3) for paying workers land clearing and weeding: 150 Baht/per-day x 1 worker x 3 days = 450 Baht;
4) for paying worker for planting seedling and distribute fertilizer: 150 Baht x 2 workers x 2 days = 600 Baht;
5) for cutting trees at harvesting time: 150 Baht x 2 workers x 2 days = 600 Baht;

Then Showaeng needs capital for 50 *rai* x 3,218 Baht = 160,900 Baht.

Currently, his eucalyptus trees are about 4 years old and planned to be harvested in 2011 (Figure 6). Harvesting will produce 11 tons/*rai* and with 50 *rai*, the estimated total will be 550 tons in 2011. At a price of 1,000 Baht/ton in 2011, he will receive 550 tons x 1,000

[14] I ha usually need 1,600 seedling. 1 ha = 6.25 rai; 1 *rai* = 0.16 ha (1,600 meters). The respondent owns land 50 *rai* means 50 *rai* x 0.16 ha = 8 ha. 1 *rai* = 0.16 X 1,600 seedling = 256 seedlings.

Baht/ton = 550,000 Baht, leaving him with a profit of 550,000 – 160,900 Baht = 389,100 Baht. Then, annual profit of 389,100: 300 (50 *rai* x 6) = 1,297 Baht/per rai.

He plans to use the profits to increase his savings, buy more land, pay educational fees for his children, buy life insurance and open a shop and plant eucalyptus trees again.

A.5. Critiques of Academics and NGOs

In this section I highlight what some academics and NGO feel towards changes in the political ecology in the region. I would like focusing in what extend academics and NGOs criticize the ecological damage impact throughout environmental issues.

A.5.1. Environmental impact

Actually there are some activist NGOs such as Kuaycharoen, Khemchalerm and scientists Ubukata, Colchester, Sawaeng, and Lohman who actively launched critiques on ecological damage impact that affect by Eucalyptus plantation.

Kuaycharoen is a famous and advocator of NGO reported that local people had to bear the brunt of the social and environmental costs when their cultivation land and community way of life were damaged by the large stands of monoculture tree plantations and the operations of pulp and paper industry. For instance, communities living around the Phoenix Pulp and Paper mill located near the Phong River in Khon Kaen province suffered the impacts of the *toxic pollution* of the river and farmlands while farmers lost large areas of farmlands and village commons to the Suan Kitti plantation company as it aggressively expanded its eucalyptus plantations in the eastern region (Kuaycharoen 2004: 13).

Besides, huge protests occurred in 1995 and village networks in the Northern Province attempted to eliminate *eucalyptus* from the areas altogether, forcing the RFD to suspend its eucalyptus operations over a wide area. Responsibility for existing plantations, meanwhile, was passed to other authorities, whom villagers pressured to cut the eucalyptus and distribute the profits locally. Throughout their intensive campaigns, northeastern villagers and their NGO allies researched and publicized multi-purpose native alternatives to eucalyptus which are responsive to the diversity of food, construction, medicinal and ecological needs of different localities; launched supplementary plantings of native trees on degraded sites and posted new areas as community forests (Carrere& Lohmann 1996:238).

Wiboon Khemchalerm, a former senator, NGOs activist and well-known organic farmer from Chachoengsao Province, explained that “after the existence of eucalyptus plantations

in nearby areas, underground water has dried up. Small-scale farmers could not survive by planting eucalyptus. Obviously there was no guarantee that those who had left the land would not encroach on other forests and cause further problems". In addition, there was no guarantee that a *monoculture* tree plantation covering a huge area would not inflict unexpected impacts on the *environment* in the long run (Kuaycharoen 2004:17).

In line with Wibon's statement that Eucalyptus trees absorb much water and negatively affect surrounding cash crops, such as cassava (with the distance 3-10 meters), causing dry and infertile land, is in accordance with my field observations with Dr. Sawaeng Ruaysoongnern, lecturer from Faculty Agriculture, Khon Kaen University, Thailand in Samchan village, about 10 Km from Khon Kaen (Figure 2-7). Sawaeng proposed that local farmers should try other options by carrying out planting of local tree species (shift from *monoculture to multicultural* trees) in their forest commons and farmland. The aim of planting local tree species is to ensure conservation, to prevent soil erosion and recovery of soil fertility in the near future (an interview, on July 8, 2009).

Figure 2-7 Dr. Sawaeng next to Eucalyptus and Cassava trees. The picture shows that eucalyptus *camaldulensis* absorbs much water and its surrounding cassava trees subsequently become dry and infertile.

Ubukata has said that "the negative aspects of eucalyptus production to ordinary villagers may be exacerbated by their persisting perceptions of agro-ecological impacts. In fact, planting eucalyptus did not mean that the villagers came to hold positive perceptions on these aspects. As mentioned in the section of anti-movements, many villagers felt that

eucalyptus damages water and nutrients in the soil, despite the state's continuous efforts to emphasize its harmless nature" (Ubukata 2009:23).

Colchester and Lohmann criticized that *eucalyptus plantations* alone threaten to dispose millions of peasants, as the RFD, the military and other bureaucratic and business interests have promoted plans to lease as much as 40,000 square kilometers of so-called *degraded forest* (consisting mainly of farmland, pasture and community woodlands) to commercial planters to feed foreign and domestic wood-chip and paper-pulp demand while supposedly reforesting the country. Even so, eucalyptus operations have received loans from the *Asian Development Bank* (ADB), *United Nations Development Programme* (UNDP), the Japanese, Australian, Canadian and Finnish aid agencies, Britain's Commonwealth Development Corporation as well the army-initiated Green North-East Programme (Colchester&Lohmann 1995: 210-211).

A.6. Concluding Remarks

Plantation forestry in Thailand is positive impact in terms of providing cash flow of money, raw material for pulp and paper industry and strengthening the socio-economic capacity of farmers in rural areas. The rationale for this success is explained as follows: The Thai government adopted and legitimized policies on plantation forestry of 'commercial trees', highlighting economic benefits rather than the environmental impact of plantation forestry. The economic facilities provided by the government include easy accessibility to timber concession areas, credit, tax breaks on import of machineries and other goods for pulp and paper factories.

The Royal Forest Department (RFD) actively invited research centers in universities and the government to carry out studies on trees that are most suitable for plantation forestry. According to some studies such as that of the Forestry Research Center of Kasetsart University (1989), Thailand Development Research Institute (1991) and the Forest Research Center for Royal Forest Department (2008), Eucalyptus *camaldulensis* is the most suitable plant based on soil and climate condition and it was promoted as a 'commercial tree' for Thailand.

The policies adopted by the government subsequently lead to a wide expansion of plantation estates by private companies, FIO (*Forestry Industry Organization*) and farmers in provinces and districts and a significant growth of plantation forestry of Eucalyptus *camaldulensis* as a raw material for pulp and paper industries. The response from private companies, such as SCG (*Siam Cement Group*) and Advance Agro were positive and they conducted a joint venture with FIO in 2003 by planting about 12,000 *rai* of Eucalyptus

trees in Khon Kaen area. The company provided the capital, seedlings, fertilizer and maintenance cost of plants until harvesting. Meanwhile, the FIO provided land, counseling, guidance and conducting inspections of plants. SCG also made an agreement to expand plantation forestry from about 22,000 ha in 2010 in Laos with OJI Paper from Japan. The Laos government agreed to provide state forest land for a three parties' joint venture. In order to ensure the provision of raw material for the future, the private companies such as SCG Company and Advance Agro carried out 'contract farming' with local farmers. The companies have obligations to provide seedlings, fertilizer and to guarantee a market at the time of harvest. In line with contract farming scheme, farmers can easily access credit from the local agricultural bank and guarantee their products in the market. This type of agreement between companies and farmers is called a 'strategic partnership' of the spirit, providing win-win results and eventually leading to job creation and economic and social growth in rural areas. As a result, the stakeholders actively participated in plantation forestry (including *Eucalyptus camaldulensis*) and it was subsequently expanded in Thailand from 284,000 ha in 1996 to 4.8 million ha in 2000, consisting of about 2 million ha of rubber trees, 836,000 ha of teak trees and the remainder a mix of several types of tree species, such as Eucalyptus spp, Acacia mangium, Pinus mercussi and Conifers. On the other hand, academics and NGOs criticized the ecological damage caused by monoculture plantations of Eucalyptus *camaldulensis*, which absorbs more water than native trees, affecting cash crops surrounding the plantations. From this perspective, academics and NGOs made recommendations to reduce the monoculture setup of plantations and adopt mixed plantations with local tree species in order to improve conservation and soil fertility recovery. In this case local farmers who own common forest land and farmland should plant local tree species. The villagers get more economic benefit from mixed plantations in the longer term as they will still attain the economic benefits of their plantations, but also reduce the strain on their land, allowing for continuous use of their land for a longer time.

B. Review on Emerging Pulp and Paper Industry

B.1. Introduction

Thailand is the second largest producer (4.5 million m^3 ton) after Indonesia (7.6 million m^3 tons) [15] of paper production in ASEAN countries in 2007. The last two decades (1980s-2000s) have seen an acceleration of emerging pulp and paper industries in Thailand. There are two main driving factors highlight these emerging industries. Firstly, the government ready welcomed *foreign direct investment* (*FDI*) in many fields, including forest industries (pulp and paper) and approved joint ventures and even 100 percent ownership by foreign companies of domestic ventures. Secondly, the Thai government actively supported the development of the industry through easy access to credit, *infrastructure* (port and highway) construction, and subsidies to plantation owners, tax relief and favorable import duties on machinery.

These policies encouraged a positive response from domestic and foreign private companies to invest their capital in establishing pulp and paper factories and plantations for the raw material in Thailand in the 1980s. Among those investing were some famous companies, such as Siam Cement Group (SCG), who established Siam Pulp and Paper; Soon Hua Seng Group (SHS) with Advance Agro (AA); The Phoenix Pulp and Paper Company, owned by the European Overseas Development Corporation (EODC); Ballarpus industries, an Indian Industrial conglomerate; Suan Kitti Corporation, Hi-tech Paper; Shin Ho Paper Co; from South Korean conglomerate, Thai Cane Paper Co, etc (Soonenfeld, 1996; Carrere and Lohmann, 1996).

As a result, the pulp and paper, plywood, veneer, sawmill and furniture industries were expanded and demand for timber significantly increased. The question that then arose was how to maintain a sustainable supply of wood? In order to answer this, the government and private sector carried out two separate activities. First, the government invited other stakeholders (private companies, local farmers, FIO (*Forest Industry Organizations*)) to manage forest plantations. About 4.8 million hectares of plantations, or about 38 percent of total forest cover (16.2 million ha), were managed in Thailand in 2000, consisting of rubber (2 million ha), Eucalyptus (1.9 million ha) and others (FAO, 2001). Second, they carried out importing of log and sawn timber from overseas. The positive impact of plantation forestry by the private sector and under contract farming between private sector companies and local farmers contributed to job creation in rural communities and empowering local farmers socio-economically. Although some academicians and NGOs criticize the impact of plantations on the ecology, through soil erosion and too much water absorption that subsequently adversely affects surrounding crops, generally farmers and private

[15] *The Japanese Pulp and Paper Industry in Charts and Figures* (2005), published by Japan Pulp and Paper Co., Ltd, pp. 45.

companies were accepted and rapidly developed 'Eucalyptus camaldulensis' as commercial trees for farmers in Thailand.

Hence, this paper aims to clarify the dynamic process of emerging pulp and paper industry in Thailand by examining government's policy on economic development (*macro economics policy*), the impact's of policy toward development of pulp and paper industry, appealing two companies Advance Agro (AA) and Siam Cement Group (SCG) as case studies how they developed and managed their companies, and conclusion as noted major findings.

B.2. Government's Policy on Economic Development

B.2.1 Capital accumulation

The attitude of the Thai government toward F*oreign Direct Investment* (FDI) has been generally positive, though it has varied somewhat over time. For instance, in the early 1960s, the government welcomed foreign direct investment in the manufacturing industry and approved even 100 percent ownership in the import substitution industry. However, usually the government encouraged foreign investors to enter into joint ventures with domestic partners; FDI also became part of this process (Pasuk and Baker, 2000: 19). In the 1980s, Thailand also invited more investments from East Asian countries such as Japan, Taiwan and Hong Kong. Taiwanese companies, mostly producing labor-intensive products, invested in Thailand for reasons similar to that of the Japanese, whereas Hong Kong companies were there because of uncertainty regarding the future of the territory. The then political instability of the country had been overcome, by the early 1980s. The unstable democratic period was ended by the military coup of October 1976 and a system of government established, in which the military and politicians shared power, which lasted until the late 1980s, although the balance of power was in favor of the former.[16]

During the 1980s, the Thai economy experienced massive expansion and restructuring that profoundly impacted on the strategies and influence of the leading strategic groups. By the end of the 1970s, agro-industry-led economic growth began to enhance products, partly because of substantial drops in the world market prices of such goods due to overproduction. After a slump in the Thai economy in 1984, a period of unprecedented boom based on the export of *manufactured goods* occurred. Between 1985 and 1995, GDP rose from 1,191 to 2,912 billion Baht, an annual growth rate of 9.4%. The proportion of manufactured exports, already at 39% in 1984, rose to 67% in 1987 and to 84% of total

[16] See "Foreign Direct Investment (FDI) in Thailand, in Yoshihara KUNIO, *the Nation and Economic Growth: Korea and Thailand*, Kyoto University Press. 1999, pp. 32-33.

exports by 1995. If in 1980, the big export earners were rice and cassava, by the late 1980s they were textiles and cheap-labor manufactures and by the early 1990s computer parts and electronics (Pasuk and Baker, 1996). Hence, until the early 1990s, there were two main sources of capital formation: the Thai commercial banks and foreign direct investment.

The expansion of *agro-industry* had already led to a massive accumulation of capital and to the formation of powerful corporate conglomerates that were increasingly economically independent of the state. This concentration can be seen by the fact that in 1985, the 641 companies with over 200 employees (representing 1.6% of the total number of companies) employed 41% of the workforce and held 54% of fixed assets. Ninety percent of capital of the top seventy Thai financial firms was held by sixteen conglomerates, which controlled fifty of these firms (Suehiro, 1989: 218-219). This trend increased after 1985. Gross Capital Formation rose from 346 to 1,215 billion Baht, that is, from 29% to 42% of GDP between 1985 and 1995. The Thai economy became dominated by groups of companies, which incorporated finance capital, agro-industry and manufacturing.

The following discussion focusing on agro industry which consist of plantation forestry and lead to the pulp and paper industry, driving factors of emerging, and how the government's policy to encourage and accessibility other facilities for investors

B.2.2. Development of the Pulp and Paper

The forestry sector was associated with agro industry and mainly covered plantation forestry such as *Eucalyptus, Acasia mangium* and *local tree species*. This sector grew in 1980s and was predominantly occupied by government agency (FIO: *Forestry Industry Organization*) and big paper companies such as Siam Cement Group (SCG), Advance Agro (AA), Phoenix, etc. In forestry, the old state-dominated *timber industries* declined as forest resources were depleted. During the period from 1980-1984, export revenue from logs and sawn wood dropped to an annual average of 22 million Baht whereas imports rose to over 2 billion Baht a year (Oliver, 2005:81-82). This trend was finally completed by the end of the decade with the general ban of logging in 1989. However, a new corporate group within forestry emerged in the form of conglomerates interested in *pulp and paper* production. The increase of manufacturing and the export boom led to a huge increase in the demand for paper for communications, printing, writings, administration and packaging.

The discussion focuses on the development of pulp and paper companies in Thailand by exploring case studies in terms of strategy to obtain capital, procurement of raw material, production and market of two emerging companies: Advance Agro and Siam Pulp and Paper. The Thai pulp and paper industries can be looked at in terms of the economic and

political analyses of power relationships, capital movement and institutional structures and regulations, stressing the dynamic interaction between states and markets on national, regional, and global levels.[17]. In this sense, Siam Cement Group (SCG) is closely linked with the royal family, political elites and high-level banking officers. Also, within Advance Agro, the chairman of the company was the former advisor to the Bangkok Bank, Virabongsa, and had close ties with the Prime Minister, General Chavalit Yongchaiyudh. The company has received loans to a total of US$ 850 million from the government bank.

B.2.3. The Impact of Government's Engagement

The Thai government actively supports the development of industry, through credit, subsidies, pro-cash crop and plantation policies, tax relief and favorable import duties on machinery imports. The *Royal Forest Department* (RFD) issued a policy on the provision of subsidies for seedlings and fertilizers to tree plantation farmers. In the period from 1981-1984, the government invited local farmers to plant *eucalyptus* on their land, providing subsidies of approximately 1,500-2,000 baht per Rai.[18] The response from farmers was positive, however, the unstable political condition in the country led to inconstancy in the provision of subsidies during the 1990s. Hence, in order to continue sustainable plantation forestry and to empower the socio-economic strength of farmers, the government requested large companies such as Advance Agro, Siam Cement Group (SCG), Phoenix, Panjapol, etc., to create contracts with farmers under the scheme "Contract farming", thus providing the seedlings, fertilizers and a guaranteed market through private companies that would profit from this scheme themselves at harvest time. This program eventually categorized success achievements to provide 'raw material' (timber supply) to the company. Besides farmers could earn income generating to lift up their socio-economic condition and provide job creation for rural communities

B.2.3.1 Domestic Capacity of Pulp

Total production capacity for short fibre pulp increased by 86 percent from 331,000 to 615,000 dry tons per year in 1996. The additional capacities were from two new pulp producers, Advance Agro Company Ltd, with 175,000 tons per year and Panjapol Paper Company, with 99,000 tons per year. Meanwhile, Phoenix Pulp and Paper Ltd increased to its full production capacity of 210,000 tons. The existing three pulp mills, Siam Pulp and

[17] For further information, see Takashi Shiraishi, "Introduction: States, Markets and Societies after the Asian Crisis", in SHIRAISHI, Takashi & Patricio N. ABINALES (ed.) *After the Crisis: Hegemony, Technocracy and Governance in Southeast Asia*. Kyoto University Press and Trans Pacific Press, 2005, pp. 1.

[18] An interview with Veirapol Suthiponpalangkul, Royal Forest Department (RFD Officer) on July 3, 2009 in Bangkok.

Paper, Siam Cellulose Co and Bang Pa-in Pulp and Paper Mill still maintained their capacities of 68,000, 60,000 and 3,000 tons per year, respectively (Table 2-6).

Table 2-6 **Pulp Companies' Production Capacity (1,000 tons)**

Company	Year	Year
	1995	**1996**
Phoenix Pulp and Paper	200	210
Advance Agro	-	175
Panjapol Pulp Industry	-	99
Siam Pulp and Paper	68	68
Siam Cellulose	60	60
Bang Pa-in Pulp and Paper	3	3
Total	**331**	**615**

Source: FAO (2004).

In contrast, from the first to the third quarter of 1996, Thailand imported 282,000 tons of short fibre and long fibre pulp, mainly from USA, Canada, Chile, Brazil, New Zealand, Sweden and Indonesia. At the same time, Thailand also imported 464,000 tons of wastepaper during the same period from USA, Singapore, Germany, the Netherlands, and New Zealand. The major kinds of imported wastepaper were old corrugated containers (OCC), representing 65 percent of the total imported amount. But in the same period, 88,000 tons of pulps were exported. The main destinations were mostly in Asia, in particular, India, China, South Korea, Indonesia, Taiwan, Japan and Italy (FAO, 2004).

B.2.3.2. Domestic Capacity of Paper

In 1996 there were 47 paper mills registered, with a combined annual capacity of 2,842,000 tons, a 16.3 percent increase compared to the 2,444,500 tons in 1995, including the new pulp and paper mill, namely, Advance Agro Company Ltd, with 217,000 tons per year. The total paper capacities in 1996 could be categorized into 1,625,000 tons for kraft paper, 631,000 tons for printings and writings paper, 264,000 tons for paperboard, 110,000 tons for newsprint paper, 132,000 tons for household and sanitary paper and 80,000 tons for gypsum plaster board liner (other papers) (Table 2-8).

When the economic crisis hit Asia in 1997, there was a reduction in domestic consumption of paper and board in Thailand. Consumption fell from 2,042,000 tons in 1997, to 1,604,000 tons in 1998. Domestic pulp consumption also fell from 802,000 tons to 644,000 tons (FAO,1998). Meanwhile imports of pulp and paper in 1998 decreased to 43 percent of 1997 levels. At the same time, production capacity increased. Exports increased, partly because of the surplus created by reduced domestic demand, but also because companies were desperate to earn hard currency in order to repay foreign loans after the collapse of the

value of the Baht. In 1997, around 525,000 tons of pulp and paper was exported, while the 1998 figure almost doubled to 971,000 tons.[19] Advance Agro and Phoenix currently have ambitious plans to increase capacity, driven by their needs to repay debt and by the demand for cheap pulp price internationally.

Table 2-8 **Paper Production Capacity (1,000 tons)**

Various Paper	**Year**	**Year**	**Percentage**
	1995	**1996**	**%**
Kraft paper	1,416	1,625	57
Printing&Writing Paper	465	631	22
Paperboard	264	264	9
Household and Sanitary	110	132	5
Newsprint paper	110	110	4
Other papers	80	80	3
Total	**2,445**	**2,842**	**100**

Source: FAO, 1996.

B.2.3.3. Other Pulp and Paper Companies

Six companies with production capacities of over 100,000 tons controlled another 37% of production. These were: Phoenix Pulp and Paper Company, owned by the European Overseas Development Corporation (EODC); Ballarpur Industries, an Indian Industrial conglomerate, the largest producer of bleached virgin pulp; Soon Hua Seng (SHS) Group, the largest rice-exporting and agro-industry conglomerate in the country, which moved into the industry in the late 1980s with its plantation company Suan Kitti Corporation and Hi-tech Paper Co.Ltd (33,000 tons of printing and writing paper) and Advance Agro (175,000 tons of pulp and 217,000 tons of paper) in 1994, with major shareholders being the Japanese multi-national New Oji paper and Shin Ho Paper Co.Ltd from a Korean conglomerate (100,000 tons newsprint); Thai Cane paper Co., Ltd (100,000 tons kraft paper) and United Paper Co., Ltd (99,000 tons kraft paper) (Sonnenfeld, 1996; Suehiro, 1989; Carrere and Lohmann, 1996). From this description, the growth of the pulp and paper industry can be seen in Table 2-9.

Table 2-9 **Production, Export, and Import of Pulp and Paper 1979-1994** (1,000 tons)

Year	**Production**		**Export**		**Import**	
	Paper	**Pulp**	**Paper**	**Pulp**	**Paper**	**Pulp**
1975-79	275.2	30.8	8	-	115.2	94.2

[19] For more information, see Paperloop (2000). *Country Spotlight: Thailand. Economic growth fuels rise in demand.* Web-site: http://www.paperloop.com/newsinfo/regional/asia_australia/thailand_spotlight.shtml accessed 12 January 2001.

1980-84	374.8	45.2	8.2	0.8	171.6	96.0
1985-89	574.4	131.8	44.2	17	234.4	118.1
1990-94	1,221.0	202.2	94,6	30	470.8	289.8

Sources: TDRI(Thailand Development Research Institute),1989; RFD 1986; 1990; TPPIA (Thai Pulp and Paper Industries Association), 1987, 1997.

The development of paper production was increased by an annual 10% between 1976 and 1984, and pulp production by an annual 27%. Between 1980 and 1984, pulp production rose by a remarkable 45%. Throughout the 1980s, production expanded, with paper production in the early 1990s over three times the volume of the early 1980s, and pulp production over four times larger. However, this increase did not satisfy domestic demand. In the early 1980s, paper imports were at around 46% of production and pulp imports were more than double domestic production.

During the 1980s, a concerted effort was made to increase supply. As Sonnenfeld (1996) puts it:" expanded pulp and paper production was a national development objective, to lessen dependency on outside suppliers, decrease imports, and provide intermediate goods to growing, export-oriented industries". The stated aim was to gain self-sufficiency but also to expand into export markets and this was apparent in the policies for the paper and pulp industry. Although 70% of the Thai industry's fibre requirements are supplied by *wastepaper* (in particular, for products like kraft paper for export packaging), virgin pulp is a necessary ingredient and high pulp price increases in the 1980s made dependence on imports especially painful. Therefore, a growing international market for pulp and woodchips (for pulp production) made it attractive for Thai conglomerates to produce pulp for export (Table 4). Multi-national firms also started taking an interest in Thailand as a possible producer of eucalyptus pulp.

The government promoted the nascent Thai pulp industry through the following means:

1) Increasing the import duty for pulp from 1-10% in 1982;
2) Placing four annual levies of an extra surcharge of 20% for imported pulp during 1982-1986;
3) Providing exemptions from corporate income tax for three to eight years after a company starts earning income. Losses occurring during the exemption period could be deducted from revenue for five years after the exemption period (TDRI 1989) (Oliver, 2005:88).

Several companies were given preferential treatment by the BOI (*Board of Investment*) (item 3) (Table 2-10).

Table 2-10 **BOI-Promoted Pulp Manufactures by 1988**

Company	Year Approved	Capacity (tons)	Investment (ml. baht)
Kimberley-Clark	1984	5,952	18.00
Panjapol Pulp&Paper	1978	50,000	235.00
Pech Paisal Industry	1984	5,952	50.00
Phoenix Pulp&Paper	1982	50,000	735.00
Siam Pulp&Paper	1979	na	500.00

Source: Charit 1989; Oliver, 2005: 88.

BOI (Board of Investment).

Table 2-11 **Firms with BOI Privileges for Wood Chips Production**

Name of Company	Year appr.	Capacity (tons)	Export (%)	Investment (ml baht)
Siam Vana Forestry Co	1986	510,000	100	70.02
Siam Agrotex Co.,Ltd	1986	561,000	100	77.94
Thai Wittawat Corp	1988	65,280	100	65.00
N.R.Eucalyptus Agr Co	1987	65,000	80	50.00
Thai United Chip wood	1988	100,000	100	53.26
C.Nakon International	1986	150,000	100	29.25
Siam Forestry Industrial	1986	255,000	100	40.02
Thai Wood and Pulp	1988	46,000	100	15.44
Kitti Garden Co	na	65,000	na	70.00
V.P. Eucalyptus Chip wood	1987	240,000	na	185.00
Total		**2,057,280**		**655.93**

Source: Charit 1989; Oliver, 2005: 89.

Abbreviation: appr: approved;

Government policy sought to protect the infant pulp industry in order to establish a competitive domestic basis from which it could then to begin export as well as in the promotion of wood chip production. Projections were made by the pulp and paper industry itself in 1989 showing confidence in an increasing demand and capacity (Table 2-12). Domestic demand of pulp was expected to reach 426,000 tons in 1993, 487,000 in 1995, 548,000 in 1996 and estimated reach 712,000 in 2004, and slightly developed to become 780,000 in 2006. Production capacity was expected to reach 152,000 tons in 1990 and rapidly developed to become 717,000 tons in 1996, 1,180 million tons in 2003 and 1,169 million in 2007 (Table 2-13). Meanwhile, domestic production of paper reached 2,698 million tons in 2001, 3,795 million tons in 2004 and rapidly developed 4,516 million tons

in 2007.[20] To fulfill the demand for wood-chips, about 482,000 ha of plantations was required in 1990, rapidly growing to 4,920 million ha in 2000 (FAO 2001). However, the projected rise in production capacity could only be met if a sufficient supply of raw material for wood chips and pulp was made available. For this reason, the industry stepped up its efforts to achieve a substantial increase in the area of fast-growing tree plantations.

Table 2-13 **Projected Development of Pulp Demand, Production Capacity, and Plantation Area Required in Thailand (1,000 tons)**

Year	Domestic pulp demand (TDRI)	Domestic pulp demand (TPPIA)	Pulp Capacity (TPPIA)	Plantation area required (TDRI) 1000 rai
1988	-	185.50	110.50	389.25
1989	-	196.30	140.50	437.69
1990	118.00	268.00	152.00	482.84
1991	133.60	303.00	153.00	533.62
1992	149.20	340.00	203.00	590.02
1993	164.80	426.00	253.00	652.05
1994	180.40	480.00	552.00	719.69
1995	196.00	487.00	717.00	792.96
1996	214.40	548.00	717.00	879.11
1997	232.80	-	-	978.15
1998	351.20	-	-	1,090.06
1999	269.60	-	-	1,214.86
2000	288.00	-	-	1,352.54

Sources TDRI 1989; TPPIA 1989, 1990a,1990b; 1991.
TPPIA 1987; TPPIA 1990.

Table 2-14 **Domestic Production of Paper and Pulp (1,000 ton)**

Year	**Paper**	**Pulp**
2001	2,698	919
2002	2,517	953
2003	3,598	1180
2004	3,795	1000
2005	4,308	1,061
2006	4,308	1,129
2007	4,516	1,169

Source: *Forestry Statistics of Thailand*, 2007.

[20] Regarding total paper production comprises such as newsprint, printing and writing paper, kraft paper, paper board and packaging paper, and household and sanitary paper (see *Forestry Statistics of Thailand*, 2007, pp.28.

B.2.4. Two Emerging Paper Companies

The discussion focuses on two emerging paper companies namely *Advance Agro and Siam Cement Group (SCG).* There are two main rationales both companies eventually become progress. Firstly is relating that both company officers actively engage with political elites in the government by making "political collusion" in order for accessibility to facilities such as credit and loan. Secondly, the Thai's government launched 'affirmative policy' for attraction the investors such as tax holidays, relief of tax for machinery import, provide good infrastructure (port and high way), easy access of getting raw material (timber) for company, etc.

B.2.4.1. Profile of Advance Agro

Advance Agro (AA) in the branch of Soon Hua Seng Group (SHS). The company is the biggest fully integrated pulp and paper manufacture in Thailand. Advance Agro's mill opened in 1996, and the second in 1998, at Tha Toom in Pachinburi province, 120 kilometers from Bangkok. The Company has two pulp mills with a total production capacity of 580,000 tons a year and three paper plants with a total capacity of 600,000 tons a year. All short-fibre wood comes from eucalyptus trees grown in a 150-kilometers radius of Tha Toom mills. **Soon Hua Seng (SHS**) Company established a laboratory for carrying out research into *Eucalyptus camaldulensis* and other fast-growing tree in 1982. Today, SHS Group's 67 hectares complex of greenhouse and **nursery plots** churns out 65 million hybrid clone seedlings every year. The company distributes pulp and printing and writing paper in Thailand and exports to Europe, Asia, USA, Africa and in the Middle East. Seventy per cent (75%) of the company's production of paper is exported to overseas, the two largest markets being China and Japan (Woranuj, 2000).

The company is part of the agribusiness **Soon Hua Seng (SHS**) **Group**, which was founded in the 1950s by members of the *Dumnernchanavit family*. SHS started growing *eucalyptus on a commercial* scale in the late 1980s. Advance Agro's and SHS Group's management are well connected with Thailand's political elite. Virabongsa Rmangkura, chairman of the company, acted as an economic advisor to General Prem Tinsulanonda, Thailand's prime minister in 1980s. In the mid-1990s, he was finance minister during General Chatichai Choonhaven's administration and was deputy premier in charge of economic affairs under Prime Minister General Chavalit Yongchaiyudh (Chris Lang, 2002). Virabongsa is an advisor of Bangkok Bank, which has outstanding loans US$ 850 million with the SHS Group (AA www 1).[21] Advance Agro was incorporated in 1989, and listed on the *Stock Exchange* of Thailand in February 1995. The major share holders are Soon Hua Seng Group (47.1 per cent), officers and directors of Advance Agro (8.9 percent),

[21] See AA (www 1) in Advance Agro web-site: http://www.advanceagro.com accessed 8 July 2000.

Stora Enso, Finland (19.9 percent), Oji Paper (5.5 percent) and the Commonwealth Development Corporation (1.1 per cent) (AA www 2).[22]

Hence, among the companies recently making large new investments in pulp and paper have been seen the *Soon Hua Seng Group*, one of Thailand's leading rice traders. In late 1995 the firm's subsidiary Advance Agro brought a new 217,000 tonne per year Mitsubishi-Beloit paper machine on stream in east Thailand, with an integrated 175,000 tonne-per year Defibrator eucalyptus kraft pulp mill following shortly thereafter. The Siam Cement Group, a company associated with the Crown Property Bureau and which holds eleven companies producing paper and pulp, has been recently boosted its production capacity to around one million tones per year of pulp, paper and converted products, with three new machines slated to come on line by 1997. Hiang Seng and Panjapol have also added new capacity.[23]

Advance Agro was hard hit by the *1997 economic crisis*, when the value of the Thai Baht collapsed. Advance was left with debts of 22.6 billion baht, only 7 billion of which was baht-denominated debt. Advance subsequently breached the financial covenants on its loans. In November 1997, the company became the first Thai company to issue high-yield bonds with a US$ 111.35 million bond offering on US markets. The company raised more money by selling 19.9 percent (US$ 82 million) of its shares to *ENSO (which merger with Stora in 1998 to become Stora Enso) and 5.5 per cent* (US$ 22 million) *to Japan's Oji Paper*. Through the deal Oji Paper won the exclusive rights to sell Advance Agro paper in Japan. In May 1999, Masahiko Ohkuni of Oji Paper became a board member of Advance Agro (*Bangkok Post*, 7 May 1999). The company exports 60 per cent of its paper products to Hong Kong, China, Australia, and Europe.[24] In 2003, Advance Agro used 50 per cent of its pulp to produce paper. Five per cent was sold in Thailand and the remainder exported to Australia, China, South Korea, and Malaysia among others.

B.2.4.2. Response from Local People

Villagers living near Advance Agro's pulp mill complain of ash from factory chimneys being deposited in their gardens. Some villagers have developed itchy skin and the pulp mill often smells. In August 2000, black, stinking water from piles of wood and charcoal in

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[22] AA (www 2) Advance Agro Shareholders and Lenders. Website: http://www.advanceagro.com/company/shareholders.html accessed 8 July 2000.

[23] Carrere Ricardo & Lohmann Larry. 1999. *Pulping the South: Industrial Tree Plantations and the World Paper Economy*. London and New Jersey: Zed Books Ltd. Pp. 229-230.

[24] "Thailand's Advance Agro rating raised to 'B', after completion of debt restructuring", Thai Press Reports, 10 June 2004.

Advance Agro's factory compound leaked into a neighboring canal killing a large number of fish. The cause was a collapsed dyke inside the factory compound. The company routinely pours its waste water from pulp mill between the rows of eucalyptus trees. The water is filthy and green and lies in channels in the stony infertile soil. People also supposed that Advance Agro's plantations have been one factor leading to the 'deforestation' of large areas of eastern Thailand. Other factors include road building (partly build during the war in Indochina to link bases for US troops with the port as Chon Buri and also to access Cambodia's forests), and promotion of large-scale industrial agriculture by the government with support from the World Bank. One of the beneficiaries of these policies was Soon Hua Seng, Advance Agro's parent company.[25]

The company responses to minimize water pollution by buying water treatment equipment and installed it factory operation. The company launched policy on 'Eco-friendly products' by implementing sustainable forest management with attention three elements namely economics, social and ecological aspects in realizing timber plantation.

B.2.4.3. Company's Procurement of Raw Material

Advance Agro does not actually own any of its own plantations, instead purchasing the wood from Agro Lines, another member of the SHS Group. Agro Lines obtains its wood from four sources: 1) from its own plantations (which in 1997 covered 31,000 hectares); 2) from plantations owned by the SHS Group; 3) from local farmers under "contract farming" with Agro Lines (in 1887, 46,000 hectares), and 4) from individual farmers.

As one of the largest pulp and paper industries, the company needs sustainable supply of raw material (*eucalyptus*). To provide this need, Advance Agro planted timber plantation in some districts and launched policy to have 'contract farming' about 46,000 ha also with local people. The concentration area is located in East region of Thailand such as: Pacinburi, Sakei, Chunbury, Cucunsaw, etc. Besides, the company had plantation concession around 40,000 ha from Royal Forest Department (RFD) to be planted eucalyptus trees.[26] In harvesting time, the logs are transported to the mill either by farmers

[25] Chris Lang (2003) "Thailand: Eucalyptus, encroachment, deforestation and pollution linked to pulp and paper company", World Rainforest Movement Bulletin No. 70, May 2003. http://chrislang.org/2003/05/10/thailand-eucalyptus-encroachment-deforestation-and pollution-linked-to-pulp-and paper company/.

[26] The discussion about procurement of raw material of Advance Agro in eastern region of Thailand had been interviewed on July 3, 2009 with Dr. Pasuta Sunthornhao, lecturer of Department of Forest Management, Faculty of Forestry, Kasetsart University.

or by a truck of company which is also part of the SHS Group, working under subcontract to Agro Lines.

When Advance Agro's subsidiary Agro Lines started establishing its *eucalyptus plantations*, villagers found they could no longer grow rice in neighboring fields. The company bought villagers' farmland in Prachinburi to convert the land to plantations. Allegations of intimidation of villagers surrounded the company's plantation in eastern Thailand throughout the 1990s. Canadian academic Keith Barney notes that "Thai NGOs have organized in opposition to the land displacement resulting from eucalyptus farming in eastern Thailand associated with the mill".[27] Obviously, because of rising huge protest from Thai's NGO, one possible source to obtain of new raw material for Advance Agro namely in overseas. Laos and Cambodia are neighboring countries, one of the options for expanding eucalyptus plantation in the near future.

B.2.5. Development of Siam Pulp and Paper

Siam Pulp and Paper (SPP) is one of holding company of the **Siam Cement Group (SCG**). The SCG Company is very well-know in Thailand, which was established by Royal decree in 1913 and is today one of Thailand's largest industrial conglomerate. The SCG included more than 16 branches of companies. One of them is Siam Pulp and Paper. In the line of SCG, Siam Pulp and Paper is categorized the third largest division of Siam Cement, after Cement and construction materials. In 1993, Siam Pulp and Paper produced half of all the packaging paper sold in Thailand, and around 40 percent of all printing and writing paper (Chris Lang, 2002).

The SCG Company is closely related to *Kingdom family* among the greatest part of share holders[28]. Because of this environment, the company has great accessibility in obtaining credit from national bank, cash capital in stock exchange market in Bangkok and eventually could expands other businesses. Currently, SCG develops business such as pulp and paper, cement, construction, container for packaging, polyester, chemical, distribution,

[27] Keith Barney (2005) "At the Supply Edge: Thailand's Forest Policies, Plantation Sector, and Commodity Export Links with China", *Forest Trends, Center for International Forestry Research*, The York Center for Asian Research, pp. 2. http://www.forest-trend.org/documents/publications/Thailand.

[28] The King Bhumibol Abdulyadej which currently reaches age 84 years old is the world's largest-reigning monarch in Thailand. He is the central figure of beyond Thailand politics and widely respect- ed by Thai people and political elite. Therefore the role of Kingdom is very strategic position, SCG Company that most share holders own by Kingdom family has great accessibility to obtain cash 'credit' from bank institution and could expand easily her holding business in many leading sectors (interview with SCG Officer, July 9, 2009).

etc. Focusing on pulp and paper, this business sector consists of the Siam Forestry Co, pulp and printing & writing paper, containerboard, corrugated containers and paperboard. As an illustration, SCG paper in 2008 increased sales from 2007 by 7.3% to 47,110 million baht, while net profit after tax declined by 30.1% to 1,454 million baht (Figure 1) (*The profile of SCG Group, 2008*). But, it is very optimistic of paper business development in the future as told by Promotion Department Manager, because paper is one the necessary items of daily life, and the people consumption will be rapidly increased in the future. In spite of consumption amounts to an annual average of 58 kilograms per capita, and will be boosted double based on the economic development. Paper, consequently, may be considered an index of prosperity. Table 8 shows the contribution of SPP Company to total production of Thai pulp reached 414,000 tons (37 percent) and paper products 1.6 million MT in 2008 or equivalent with 40 percent of whole domestic production about 4.2 million MT.

Historically, the SCG moved into pulp and paper almost accidentally. In the 1970s, Siam Kraft Paper produced sack kraft for Siam Cement in its 25,000 tons per year mill in Ratchaburi province. Siam kraft was Thailand's first modern pulp mill, established in the late 1960s. Raw material for the mill came from *baggase*, the residue from sugar case processing. Because Siam Cement is dependent on regular supply of *cement sacks* products. Therefore Siam Cement loaned money to Siam Kraft Paper to maintain the operation to produce cement sacks. In 1976, Siam Cement took over Siam Kraft Paper, which at that time had 50,000 tons a year mill at Ratchaburi. Siam Cement discovered that producing kraft paper from waste paper was cheaper than using *baggase*. Then the company continued to produce baggase pulp, but with a new bleaching line so that the pulp could be sold. *Yuen Foong Yu*, a Taiwanese Company has experience in producing and selling baggase pulp. So Siam Cement made cooperation with Yuen Foong Company to sell it. In 1982, Siam Cement, Siam Pulp and Paper and Yuen Foong Yu established a new company, Thai Paper. In 1983, the three companies bought a 51 per cent share in Thai Union Paper, one of Thailand's oldest paper makers (Chris Lang, 2002). Siam Pulp and Paper in November 1992 officially opened three new affiliated pulp and paper in Kanchanaburi:1) Siam Cellulose (capacity 50,000 tons of bleached pulp per year; 2) Thai Kraft Paper (capacity 250,000 tons of kraft paper a year; and 3) Thai Union Paper (capacity 70,000 tons coated paper and gypsum paper per year (*Bangkok Post* 17 November, 1992).

The rapid development of Siam Pulp and Paper was happened in the mid-1990s, the Company has a capacity of more than one million tons a year of pulp, paper and converted products. Industrial paper accounted for 46 percent of 1999 revenues; printing and writing paper, 36 percent; packaging and printing, 18 per cent, and a nominal amount from paper pulp.

B.2.5.1. Its market

The success in domestic market, Siam Pulp and Paper expanded in abroad and approached the Lao government about a possible US$ 250 million project to establish a 150,000 tons-per year pulp mill. The mill was to be supplied from 32,000 ha of plantations in Savannakhet province in central Laos (Carrere and Lohmann 1996: 241). In 1996, Siam Pulp and Paper also bought of 30 percent of Nityasa Prima Company, a proposed US$ 520 million, 350,000 tons a year pulp plant in East Kalimantan, Indonesia. The Indonesian company Suryaraya Wahana, part of the *Astra International Group*, owns 60 percent of the venture, with local investors holding the remaining 10 per cent. For this reason, Chumpol Nalamlieng, Siam Cement's president told the *Financial Times* his company had to buy pulp overseas because Thailand's supply was limited due to deforestation and government restrictions on tree farming. "Indonesia has huge wood resources-biggest than the (*Association of South East Asian Nations*) region combined," Mr. Chumpol said. "Clearly it is going to be cheaper to produce pulp in Indonesia for the foreseeable future" (Barnes, 1996). Unfortunately, a year later, this project was also cancelled (Saragosa, 1997).

Asian economic crisis in 1997 was disadvantage for Siam Cement. The company was caught with US$ 4.2 billion of foreign loans and Siam Cement suffered the biggest ever deficit by a Thai company-recording a loss of US$ 1.3 billion in 1997. The solution only by increasing the valuation of its assets by 75 per cent could the company avoid posting a negative net worth (Pasuk and Baker, 2000: 224). The company responded by hiring Mc Kinsey Consulting, who drew up a plan to sell one-third of Siam Cement's assets (Barnes, 1998). Apparently over the next two years, Siam Cement managed to increase its exports, convert some of its dollar to baht and properly managed to make a profit. The sell off was scaled down to a 13 per cent asset-scale (Pasuk and Baker, 2000: 224). Siam pulp and Paper exports around 50 per cent of its production to more than 40 countries. The amount is one-third of its industrial and packaging products to export to China and Malaysia (Umesh Pandey, 1999).

B.2.5.2 Strategy to Expand Company

The strategy to obtain 'cash capital' in January 2000, that Siam Cement was to issue up to US$ 1.34 billion of domestic bonds. Wongbuddhapitak, Siam Cement's chief financial officer, told Reuters "We have a foreign exposure of about US$ 1.8 billion, while our foreign exchange revenues are about US$ 1 billion. We need to lower this gap to lower the risk of volatility" (Reuters, 2000).

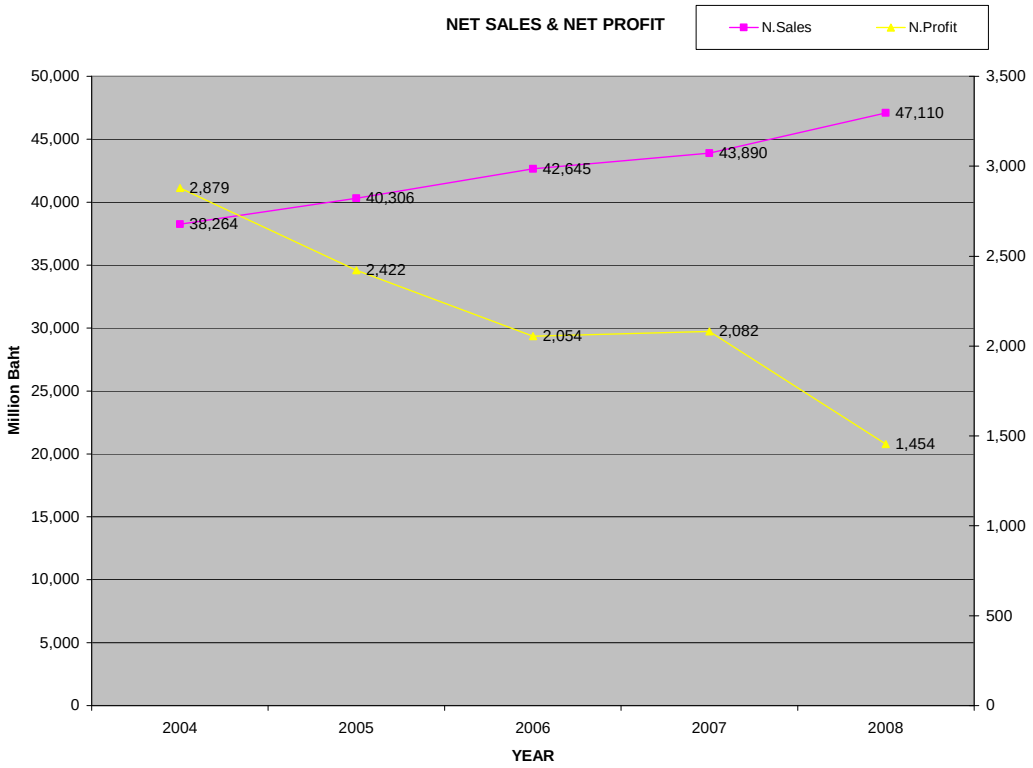
In October 2001, Siam Pulp and Paper bought 24.98 per cent of Phoenix Pulp and Paper from Janpath Investment. In January 2002, Siam Pulp and Paper bought a 20 per cent stake from Thai Farmers Bank raising its holding to 44.98 per cent. After a tender offer, which

finished early in January 2002, Siam Pulp and Paper owned more than 61 per cent of the Phoenix. Siam Pulp and Paper plans to go ahead with planned expansion of Phoenix-including a US$ 30 million upgrade of the pulp mill and US$ 60-80 million on new facilities.[29]

On the other hand, SCG Company has demonstrated leadership and commitment to uphold *sustainable forest management policy*, in keeping with the globally certified standards of *Forest Stewardship Council* (FSC). In this sense, SCG Company could be categorized to be the first Thai paper company to be recognized for the FSC standards, including pulp product that has been certified FSC Chain-of-Custody (Coc); tracking of FSC certified material through the production processes all the way to the store. Apparently, these certifications offer consumers new and better environment-friendly choices.

Figure 2-8 Net Sales and Net Profit after Tax of SCG

[29] See Siam Pulp and Paper takes over Phoenix, Reuters, 4 January 2002, web-site: http://www.pponline.com/inside/stories/wk 12_31_2001/r36,shtml accessed 11 January 2002.



Source: The SCG Company's Profile in 2008, pp. 26.

Abbreviation: N : Net

N. Profit : Net Profit after Tax

Tabel 2-15 **Total Production of Thai Pulp and Paper Industries Year 2007-2008** (Unit: thousand tons).

Products	2007	2008	SCG Paper Prod in 2008	% of share in Domestic Prod
Pulp	**1,169**	**1,106**	**414**	**37%**
Paper	**4,322**	**4,235**	**1,687**	**40%**
Printing Writing & Paper	1,108	1,014	390	38%
Paperboard	348	369	147	40%
Kraft Paper	2,625	2,604	1,150	44%
Others (Newsprints & Sanitary Paper)	241	248	-	-
Total Pulp and Paper	**5,491**	**5,341**	**2,101**	**39%**

Source: The Thai Pulp and Paper Industries Association (*TPPIA*), 2008.

B.2.6 Concluding Remarks

The major findings of this paper are summarized below:
1) The spectacular impact of more than three decades (1970s-2000s) of economic reform in Thailand is impressive. The reform transformed Thailand's foreign economic relations through the implementation of a radical open-door strategy. This development affected an increase in foreign direct investment (FDI) in cooperation with domestic investors in joint ventures and even one hundred percent foreign-owned companies. Also, the Thai government established *infrastructure (ports and highways*) and other facilities for investors: easy accessibility to credit, access to the stock exchange, tax relief and favorable import duties on machinery and so forth. These activities allowed for a great development on many sectors and affect on emerging of the pulp and paper industries in Thailand. For instance, the paper industry's expanded in the end of 1980s, with paper production in the 1990s-2000s over four and five times the volume of early 1980s. As an illustration, paper companies grew from the 21 registered and its produced 574,000 tons in 1985-1989, rapidly developed to become 47 units in 1996 (2.8 million tons) and 58 companies (4.3 million m^3 tons) in 2007.

2) The rapid development of pulp and paper factories and plantation forestry (*Eucalyptus camaludulensis)* as 'commercial trees' was eventually accepted by local farmers and the private sector as a lucrative business to booster income generating and job creation in rural areas of Thailand. Apparently, better socio-economic incomes subsequently affect to strengthen 'purchasing power' among local communities and people at large could affect on domestic 'economic development' of Thailand in 1990s. However, the negative impact on the environment in the form of *toxic pollution* of rivers and *dried land* on cash crops surrounding eucalyptus plantations raised critiques from academics and NGOs. At the end of the 1990s, NGOs and locals in the northeast of Thailand launched a huge protest to close factory operations, requesting water treatment facilities, because Phoenix Pulp and Paper mills disposed of toxic pollution into the Phong River in Khon Kaen province, killing the fish and shell species and contaminating down river agricultural farmland. These NGOs and northeastern locals refused the planting of monocultures and promoted the substitution of multi-tree plantations, with local tree species, providing for a greater bio-diversity, as well as proposing new areas for community forests.

3) The strategies of pulp and paper companies to obtain credit, raw materials, management and marketing vary greatly. There are companies that have access to political elites, such as Advance Agro (AA) and Siam Cement Group (SCG). However, they are more the exception rather than the rule, with the royal family holding major shares in SCG and the president of Advance Agro being Virabongsa Rmangkura. Virabongsa was one of the economic advisors to General Prem Tinsulanonda as Prime Minister in the 1980s. From this point of view, both companies Advance Agro and Siam Cement Group achieved the

progress performance based on two rationale requirements First, the company officer could keep in touch for maintaining ‘power relationship’ with political elites to have accessibility for credit and economic facilities. Second, the companies could manage and ability to keep their leadership, networking, obtains certification such as FSC (*Forest Stewardship Council*) to expand their products for overseas market, especially in Europe, United States, and Japan.

CHAPTER 3 PHILIPPINES

A. Review of Forestry Policy

A.1. Introduction

The Role of the Government in Reforestation

The *Forest Management Bureau* (FMB), a section under DERN (*Department of Environmental and Natural Resources),* is responsible as an institution for the management and monitoring of forest management in The Philippines. FMB issues plantation concessions for production forestry to the private sector, cooperatives and individuals under the IFMA and SIFMA schemes. Also, forest rehabilitation and reforestation programs in protected and conservation forests are under their authority. The 1990 Master Plan for Forestry Development estimated previous forest loss based on available information (DENR 1990) between 1934 and 1990 to an amount of 10.9 million hectares of forest cover for the entire country, equaling an average annual loss of 194,000 hectares (Table 3-1) (Unna Chokkalingam *et al*. 2006: 11-12). Of this area, 10.37 million hectares (95 percent) was converted to other uses, while 0.52 million hectares was damaged from logging. From 1934 onwards, the loss rate increased dramatically until peaking at 300,000 hectares per year over the decade 1965-1975. Therefore, the rate of loss of forest cover gradually declined to 100,000 hectares annually from 1985-1990.

Table 3-1 **Forest Cover Loss** (in 1,000 ha) from 1955-1990

Description	**1955-1965**	**1965-1975**	**1975-1985**	**1985-1990**	**Average annual loss**
Starting cover	13,900	11,600	8,600	6,600	
Less losses due to:					
*Conversion	2,200	2,835	1,880	460	185
**Logging damage	100	165	120	40	9
Total losses	2,300	3,000	2,000	500	194
Final cover	11,600	8,600	6,600	6,100	

Source: Based on secondary data interpretation by *the 1990 Master Plan for Forestry Development;* Cf: Unna Chokkalingam *et al*. 2006: 12.

* Total forest covers loss.

**Damage out of 5.3 million ha logged.

The Philippines forests have degenerated over the years due to massive logging and conversion to agricultural land, including shifting cultivation. This is mostly due to

population growth and the therefore increasing need for more agricultural land.[1] This has reduced forest cover from about 21 million hectares (70 percent of the total land area) at the end of the 19th century (Garrity et *al*. 1993; Liu *et al*.1993), to around 7.2 million hectares or about 23.9 percent of the total land area (FMB, 2004) (Figure 3-1).[2] Of the remaining forest cover, less than one million hectares can be considered primary forest (FMB, 2007). The remainder has been logged at least once or has suffered degradation through other activities (Pulhin *at al*. 2007: 866).

Based on FAO data (2006), the Philippines had the highest deforestation rate in all of South and Southeast Asia during the 1990s, recorded annually at about 2.8 percent. In comparison, Indonesia and Thailand recorded annual rates of 1.7 and 0.7 percent, respectively. In Vietnam, the forest area expanded by 2.3 percent annually. Between 2000 and 2005, the deforestation rate declined only marginally. Vietnam has certainly benefitted from massive investments in reforestation, while China and Thailand, like the Philippines, have very few forest areas left. The nationwide logging ban imposed in 1989 has curtailed uncontrolled forest conversion to some extent.

In the case of the Philippines, the main causes of deforestation have been attributed to broader structural forces such as political patronage by political elites, poverty, inequitable access to forest resources, and corruption in the forestry sector (Porter and Ganapin 1988; Kummer 1992; Broad and Cavanagh 1993; Vitug 1993).

[1] The Philippines population was estimated at 88,574,614 million in 2007 (*National Statistics 2007*), rapidly reaching 97,976,603 million in 2009 (*Wikipedia*). Rural communities still also carry out 'shifting cultivation' (*Kaingin)* in state forest land in the upper regions, which also affect soil erosion, causing flooding.

[2] Forest cover in the Philippines rapidly declined annually from 7.2 million ha in 2004 to 5.5 million ha in 2008, reaching the highest deforestation rate (2.8 percent) of the ASEAN region. This data is based on several discussions with informants in the Philippines on July 31-August 9, 2009.

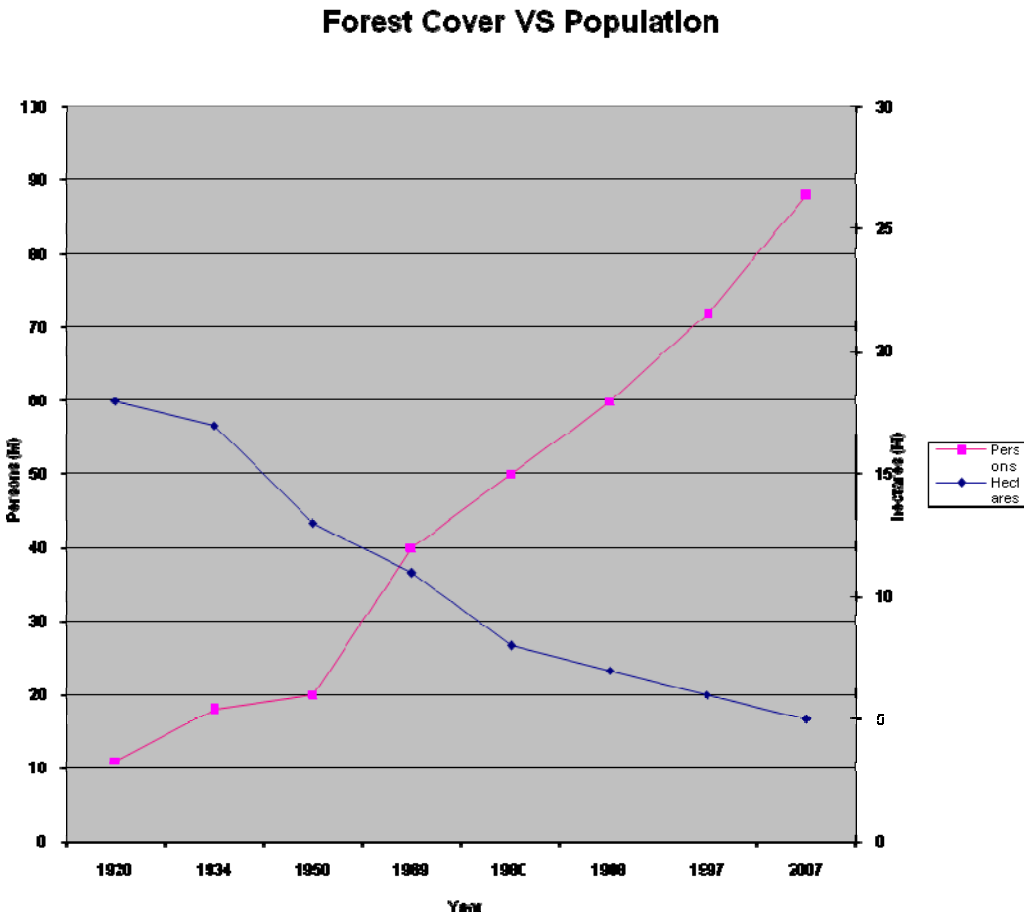


Figure 3-1 **The Philippines: forest covers development and population growth through the years.**
Source: modified data from Cf PCARRD, 2008, pp. 1.

This paper will discuss decision makers in the Philippines over the last two decades and efforts to reverse the downward trend of forest degradation and address the mounting socioeconomic and environmental problems in the Philippine uplands. The paper focuses on land tenure and resource use in the Philippines, while also reviewing the two programs launched by the government to revitalize forest resources management: an affirmative program for *rehabilitation* of degraded forest lands and critical land covers with brush or grass and the *reforestation* of state forests in the upper regions, actively engaging local communities through CBFM (*Community-Based Forest Management*) in the 1980s. The CBFM program is well-known throughout ASEAN countries as 'community forestry'. On the other hand, two programs for timber concessions have been introduced: *IFMA* concessions (*Industrial Forest Management Agreement*), which actively invites the

private sector to conduct logging, and *SIFMA* concessions (*Socialized Industrial Forest management Agreement*) for cooperatives, people organizations (PO) and individuals in state forests. The aim of these programs was to provide 'timber' as a raw material for forestry industries such as plywood, sawn mill, pulp and paper, furniture and construction for real estate and housing.

A.1.1. Study Sites

Interview with stakeholders such as government officer and academics carried out in Manila and Philippines University (UP-Los Banos), Laguna. Meanwhile the study sites were located in in Caraga region, San Jose St, Butuan City; Talagon-Agusan Del Sur (Map). It takes one hour and by airplane from Manila to Butuan City. It was necessary to conduct field work to observe plantation forestry area and in-depth interview with local farmers, local government and private company (**CSDC**:*Casilayan Softwood Development Corp*) for date gathering.

Caraga Region is mostly trees plantation are located.

CSDC owns 20,000 ha.

A.2. Land Tenure and Resource Use

Land ownership in the Philippines before the colonization by Spain was generally communal. Forests were accessible to anybody - whoever cleared and cultivated a piece of land first would own that portion. However, under the colonial rule of Spain, this was

changed to ownership by the government.[3] The state forests were then owned by the national government after independence on 4 July 1946, followed by a radical change in land ownership during the Fidel Ramos regime in 1995, when the government recognized and issued thousands of hectares of 'customary rights forest land' for indigenous tribes. This policy encouraged the 'participation' of indigenous people (tribes) who commonly held customary forests in national economic development.[4] The government also legitimized the rights for allocating, classifying, regulating and managing forests and timberlands, reinforcing massive timber exploitation by the private sector and local communities, through the conversion of lowland forests to pasturelands, agro-forestry and mining. Increased forest exploitation, therefore, marked the post-war period (Borlagdan *et al*. 2001).

To meet the demand of tropical timber, particularly in Japan, Europe and the United States, large-scale logging concessions were given to private sector companies (Boado 1988). As a consequence, logging grew, becoming very profitable and generated even greater revenues for the government (Borlagdan *et at.* 2001). The era of President Ferdinand Marcos was recognized as the zenith of logging. Marcos used *TLAs* (*Timber License Agreement)* to strengthen his political network, dispensing them as rewards to loyal cronies. Used as an arm for political patronage, the number of TLAs soared to as many as 400 during his regime (Vitug 2000; Inoue M & Isozaki 2003) leading to the highest *deforestation* rate ever, amounting to as much as 300,000 hectares per year (Pulhin 1996). From 1971 to 1977, TLAs controlled one-third of the country's total land area of 30 million hectares, however by the late 1980s, TLA areas declined to the present 1.035 million hectares (FMB 1998).

The impacts of *deforestation* eventually grew too great to ignore, with environmental degradation causing flooding, soil erosion, landslides, and more, causing great loss of agricultural production. Finally, a major milestone in the evolution of people-oriented forestry in the Philippines occurred in 1995 with the enactment of Executive Order No. 263, adopting community-based forest management as a national strategy for sustainable forestry and social equity. It unified and integrated the earlier community-oriented forestry program and projects, and provided a comprehensive mechanism for their implementation, thereby institutionalizing CBFM in the country (Pulhin, 1997).

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[3] For better understanding of land tenure under the Spanish until Philippine independence, see Juan M. Pulhin and Perlyn M. Pulhin, "Community-Based Forest Management in the Philippines: Retrospect and Prospects", in Inoue, M and Isozaki, H (ed.). *People and Forest-Policy and Local reality in Southeast Asia, the Russian Far east, and Japan.* Kluwer Academic Publisher 2003. pp. 140-145.

[4] Interview with informant in University of Philippines, College of Forestry, August 2, 2009.

Rehabilitation projects that have been carried out under the CBFM scheme include stakeholders such as DERN, NGOs, communities, private companies, etc. The CBFM program in the Philippines is considered progressive because of its land tenure and resource use rights features (Utting 2000; Pulhin 2007: 876). The issuance of various tenure instruments under CBFM promotes a "win-win" strategy for both the government and local communities, as granting of land tenure terminates the open access nature of forestlands, while devolving the responsibilities of management and protection to the local communities at minimal costs.

A closer analysis of the situation on the ground shows that the potential "win-win" outcome is often not being realized. Local communities continue to experience a strong sense of insecurity over their CBFM areas despite the issuance of rights. This is because of frequent government policy changes regarding timber utilization, such as when more than 1,000 CBFM agreements were cancelled nationwide by the former DERN Secretary because of irregularities in some areas (Miyakawa *et al*. 2006; Pulhin 2006). Moreover, the associated bundles of rights have never been realized in most areas as a result of unstable policies exacerbated by excessive and tedious bureaucracy associated with timber utilization. Instead of providing rights to local people, different land tenure instruments such as CBFMs, have enhanced government control by limiting the devolution of responsibilities towards forest development and protection to local communities. The authority and rights to resources that local communities manage are often undermined, left unclear or even broken, which can leave people worse off instead of better off (Pulhin 2006).

A.3. Political Factors and Funding Availability

In the 1970s, the political landscape in the Philippines changed from forest extraction to a more friendly rehabilitation program. Major changes in political leadership affected both public and private efforts. Plantings usually peaked when new government administrations were implementing major forestry programs (Unna Chokkalingam *et al.* 2006: 23). For example, the declaration of Martial Law in 1972 was followed by the issuance of the Revised Forestry Code of the Philippines (*PD/Presidential Decree* 705) in 1975. This decree required nationwide 'reforestation' activities with private sector participation. P.D. 705 defined forest lands to be reforested as those with barren, grass or shrub cover, denuded areas within forest concessions, reserves and reservations, critical watersheds, national parks and other protected areas, areas covered by pasture leases needing immediate reforestation and miscellaneous areas such as river banks and roadways.

Forest Rehabilitation

The history of national rehabilitation initiatives is divided into three periods: (1) the colonial period (1910-1945), (2) post-war, government initiated projects (1946-mid 1970s), and (3) multi-sectoral efforts (mid 1970s-present).

By the end of the 1970s, the private sector, government agencies other than the Bureau of Forestry, local government units and citizens were actively involved in forest 'rehabilitation' efforts as a result of government proclamations issued since 1975. Generally, rehabilitation programs were the planting of local trees species in critical lands of watersheds, protected forests and conservation forests. The purpose of this program was to conserve water and prevent soil erosion and flooding from upstream to the lowlands. A total of 64,541 hectares of trees were planted in 1981 - 33,834 hectares or 52.42 percent was planted by groups besides the Forestry Bureau. Between 1973 and 1979 three 'people oriented forestry' programs were implemented, namely the *Family Approach to Reforestation* (FAR) Program, *Forest Occupancy Management* (FOM) Program, and the *Communal Tree Farming (*CFP) Program. In 1982, a major program known as *Integrated Social Forestry Program* (ISFP) was established through the issuance of *Presidential Letter of Instruction* 1260 (Pulhin 2007: 808) and the Community Forestry Program in 1987. ISFP consolidated the three earlier programs, while recognizing the vested interests of the forest occupants through the provision of a 25-year tenure security. This tenure security enabled the upland farmers to farm their land and enjoy the benefits of their labor without fear of being ejected from the government-owned forestlands.

Many of the projects were funded by foreign donors such as the *Ford Foundation*, the *World Bank*, United States Agency for International Development (*USAID*), Asian Development Bank *(ADB),* Japanese Bank for International Cooperation *(JBIC)* and the German Technical Cooperation (*GTZ*), and executed by or in collaboration with *DERN.* These projects tended to be small-scale *agro forestry* and *social forestry* projects targeted at meeting the livelihood needs of farmers and communities and addressing environmental degradation in the uplands.

After the end of the Marcos regime in 1986 and the new government of Qory Aquino, the Philippines regained its credibility with international funding institutions, enabling it to access huge financial assistance to conduct forest rehabilitation initiatives (Korten 1994). The major initiatives included the *Forestry Sector Projects* (FSP) I and II established in 1987 and 1995 respectively under the *National Forestation Program* (NFP). The NFP aimed to rehabilitate 1.4 million hectares nationwide from 1987 to 2000, or an average of

100,000 hectares per year (Magno 1994). The long term target was to reforest 6.5 million hectares of denuded lands, including 1.4 million hectares of critical watersheds needing immediate rehabilitation (Umali 1989).

The *FSP* I method replaced traditional government-implemented reforestation with 'contract reforestation' involving families, local communities, NGOs, LGUs (*Local Government Unit*) and the private sector. Under the contract reforestation scheme, contractors were paid a fee for reforesting and maintaining a particular area for three years with an expected survival rate of > 80 percent and an average height of 0.8 m. After the contract period, the area was to be returned to DERN. FSP I was funded by a USD 120 million *Asian Development Bank (ADB)* loan with USD 120 million counterpart funding from the *Overseas Economic Cooperation Fund (OECP*) of Japan and USD 43 million from the *Government of the Philippines (GOP*). FSP II was implemented through Community-Based Forest Management (CBFM). Under the scheme, communities were contracted to reforest and then were given tenure over the areas they developed. E.O. 263 (*Executive Order*) in 1995 adopted CBFM as the national strategy for sustainable forest management and social justice. Actually the CBFM program unified all government people-oriented programs and projects, including those implemented in the early 1980s, entrusting local communities with the responsibility for forest rehabilitation, protection and conservation, with the promise of equitable access to forest benefits. FSP II was funded by a USD 39.7 million ADB loan, USD55 million JBIC loan and USD 44.57 million GOP counterpart funding. Estimated costs of 20,410.06 pesos for establishing, protecting and maintaining a one-hectare plantation over three years were revised to 43,146 pesos per hectare under the Loan II component funded by *JBIC*. The most recent data from the FMB indicates that from 1987 to 2001, a total of 4,927 million pesos (USD 98.54 million)[5] was spent under the comprehensive site development component of the FSP with 299,000 hectares of trees planted.

Reforestation

Reforestation programs were usually carried out in upper lands and previous production forests belonging to logging concession holders which predominantly occupied critical lands. FMB officers cooperated with local farmers in conducting *reforestation* programs in state forests. The *reforestation* scheme eventually became a win-win solution for both parties: the local farmers could improve their 'income generation' by planting, maintaining and harvesting trees, while the government could ensure that critical lands in

[5] This excludes the costs of community organizing which is a separate contract under CBFM normally granted to NGOs or assisting professionals to provide technical and social assistance before a comprehensive site development contract is awarded.

the uplands and former previous logging concessions could recover with proper management. Reforestation efforts in the Philippines reached their peak in the 2000s, where a total of 191,663 hectares of land were reforested (Figure 3-2).The government played a major role in planting 80% of the area and the remaining 20% was replanted by the non-government sector. In 2004, total reforestation efforts reached 15,088 hectares with 61% of the area-planted by the government and the rest by the non-government sector.[6] The gap in attaining the average rate of established plantations is a strong reason for further reforestation efforts and the establishment of new plantations.

[6] For further information about 'reforestation patterns' see The Philippines Recommends for *Reforestation, Tree Farming, and Plantation Development,* PCARRD Philippines Recommends Series No.94. It was published by Department of Science and Technology (DOST), Los Banos, Laguna, 2008, pp. 7.

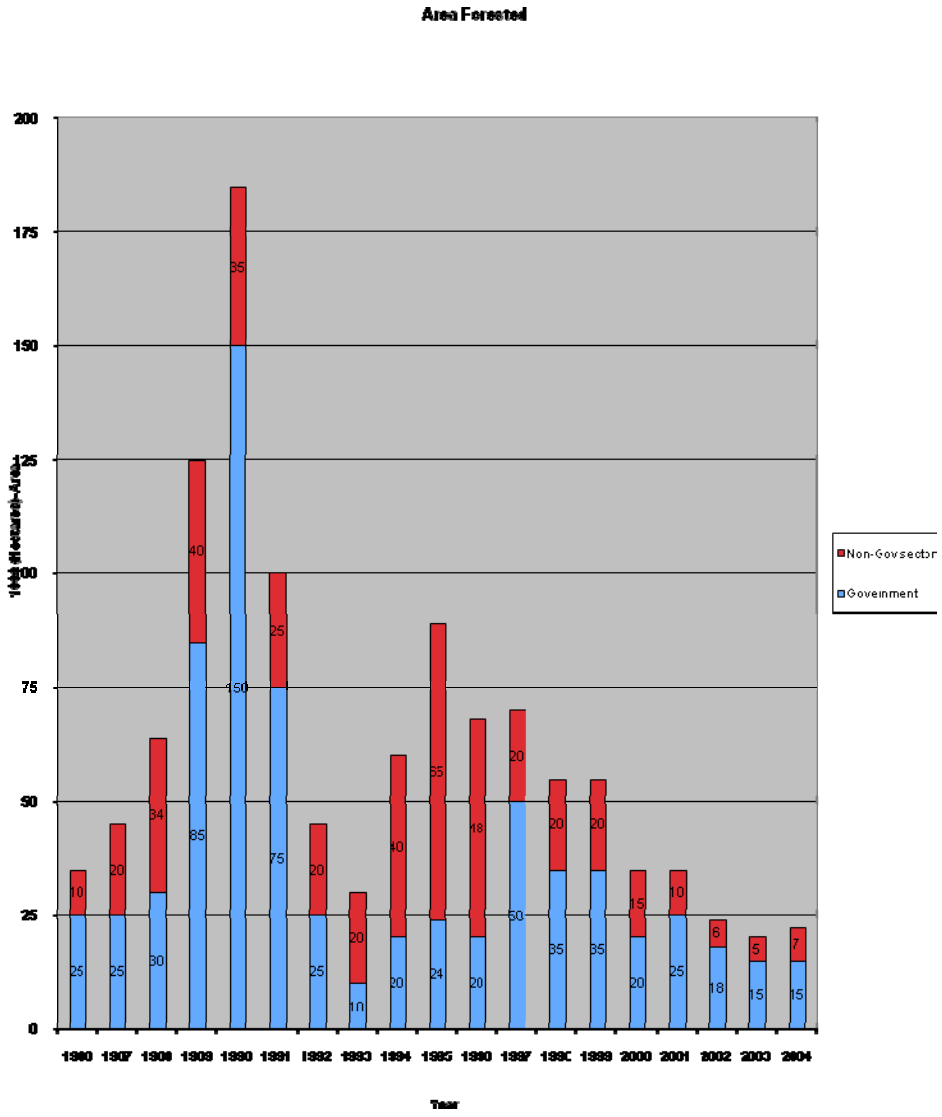

Figure 3-2 **Area Forested by Government and non-government sector, 1986-2004.**
Source: (modified from PCARRD, 2008, pp. 7).

Plantations established under the CBFM program are mainly dominated (80%) by local species such as *Swietenia Macrophylla (Mahogany), Acasia Mangium, Eucalyptus, A.auriculiformis, and Gmelina Arborea.* Agroforestry was also important, while assisted natural regeneration and enrichment planting played a smaller role. The main objectives were to re-green barren lands, produce timber, enhance watershed services and address upland poverty. The total area reported as planted from 1975-2002 was 1,597,472 hectares, with the bulk (920,962 ha) planted by DERN; 100,485 hectares by LGUs (*Local Government Unit*) and OGAs (*Other Government Agencies*); 410,112 hectares by timber

license holders; 93,520 hectares by other private enterprises and leaseholders; and 72,393 hectares by private citizens and civic organizations. FSP I and II contributed to around one-third of the DERN reforestation in this period (Unna Chokkalingam *et al*. 2006: 21).

By the mid 1990s, advocates of CBFM from the government development agencies recognized the need to institutionalize the different people-oriented forestry programs and projects under the one umbrella to ensure their continuity and enhance effectiveness, reach and impact. To effect this institutionalization, President Fidel Ramos issued on 29 July 1995, Executive Order (E.O) No. 263 "Adopting Community-Based Forest Management as the National Strategy to ensure the Sustainable Development of the Country's Forestland Resources and Providing Mechanism for its Implementation". Section 3 of the order stipulates that local communities can obtain long–term tenurial rights to forestland "provided they employ environmentally-friendly, ecologically-sustainable and labor-intensive harvesting methods. Indigenous peoples also known as Indigenous Cultural Communities (ICCs), could also participate in the implementation of CBFM activities in recognition of their rights to their ancestral domains and land rights and claims (Section 4).

In 2004, President Gloria Arroyo issued Executive Order (E.O) No. 318 entitled: "Promoting Sustainable Forest Management in the Philippines", reiterating the government's confidence in CBFM as a means of achieving sustainable forest management. In the same year, DERN Secretary, Elisea Guzon, issued DERN administrative Order No. 29. The order replaced the 1996 rules and regulations for implementing the CBFM strategy and provides more flexibility to participating communities by reducing some bureaucratic requirements. The CBFM program in the Philippines is considered progressive because of its land tenure and resource use rights features (Utting 2000). In theory, the issuance of various tenure instruments under CBFM promotes a "win-win' strategy for both the government and local communities. Granting of tenure to communities terminates the open access nature of forestlands. At the same time, it devolves the responsibilities of management and protection to the local communities at minimal costs (Pulhin 2007: 876).

As mentioned by an informant, the "community forestry" program highlights local farmers as the main actors in reforestation by planting local tree species, with the government, represented by FMB, acting as facilitator of fund rising as well as guarantor for seeds and fertilizer, monitoring and evaluation of the programs. The Philippines, India and Nepal provide excellent models of "community forestry" that actively engage local

farmers and cooperate with other stakeholders (government, academics, NGOs, domestic and foreign funders).[7]

The program shows a great support for the planting of trees, however, farmers face many difficulties in realizing the cutting and transporting of trees, because of the long bureaucratic process from local to central areas and the high cost of transportation. It is often complained by small-scale farmers that if there is no 'timber certificate' issued by the FMB officer in Manila, the truck transporting the timber products will be stopped by the police.[8] The bureaucratic system for obtaining a ´timber certificate´ must be simplified or included into the initial MOU of the reforestation program or every regional DERN office be given the authority to issue the cutting permits.

In summary, from the late 1970s to 2000, a total of US$ 570 million for forest rehabilitation was invested through both large and small projects, and many different actors were involved. The major funding came from public investment, including foreign loans (93%). Foreign grants and private investment made the remainder. DERN records a total of 5,503 registered CBFM communities or POs (Peoples Organization) from 1975 to the present and around 2,200 registered private initiatives (TLAs, TFs, ITPs, IFMA, and SIFMAs) (Unna Chokkalingam *et al*. 2006: 21).

A.4. Major Driving Forces for the Rehabilitation Program

The driving forces for rehabilitation of degraded forest lands were scientific, environmental, institutional and socio-economic:

A.4.1. Scientific Enquiry

By 1914 approximately 120 species had been planted in the Forestry School's nurseries and plantations, increasing to 600 species by 1916. The findings identified a number of species suitable for reforestation in the area. These include Molave, Narra (*Pterocarpus indicus)*, Supa (*Sindora supa*), Para Rubber (*hevea brasiliensis*), Taluto (*Pterocymbium tinctorum*), Kalantas (*Toona calantas*), Malaruhat (*Cleistocalyx operculatus*), Teak (*Tectona grandis*), Mahogany, Ipil (*Intsia bijuga*), Lumbang (*Aleurites moluccana*), Banaba (*Lagerstroemia speciosa*), Agoho (*Casuarina equisetifolia*), Bitaog (*Calophyllum*

[7] Interview with informant in UP, Los Banos, August 2, 2009.

[8] Interview with E.L. Tolentino, JR on July 31, 2009. He is Associate Professor of Silviculture & Resources Rehabilitation Division, Institute of Renewable Natural Resources, College of Forestry & Natural Resources, and University of Philippines (UP) Los Banos.

inophillum), Baguilumbang (*Reutealis trisperma*), Akle (*Albizia acle*), Tindalo (*Afzelia rhomboidea),* Ipil-ipil and Kakaware (*Gliridia sepium*) (Orden 1960).

A.4.2. Promotion of Environmental Stability

Most reforestation efforts prior to the 1960s were located in established forest reserves, national parks, the watersheds of Agno, Pampanga and Cagayan in Luzon, and other places where problems of flooding, erosion, and soil and water conservation required attention (Orden 1960). Forest rehabilitation efforts in the 1970s and 1980s were carried out in state forest lands, especially in the upland regions. The government, private sector and local communities established plantations of mainly indigenous species. Hence, environmental considerations continued to be a major driving force of rehabilitation in succeeding decades. The Environmental Management Bureau (EMB) in 1990 estimated that 8.4 million hectares of land in the country are severely eroded. Soil erosion caused the siltation of rivers similar to that in the Cagayan Valley River basin (Conservation international, 2001). In this sense, loss of vegetative cover of watersheds resulted in extreme and unpredictable water flows, which eventually caused huge floods, such as in 1991 when the city of Ormoc, Leyte in the Visayas was inundated, claiming 4,000 lives and leaving 2,000 people missing (Vitug 1993). Another incident occurred in December 2004 in Quezon and Aurora provinces in Luzon where hundreds of people died and thousands were rendered homeless when heavy rains triggered landslides and flash floods (Unna Chokkalingam *et al.* 2006: 23). Many scholars, environmentalists and the government widely attribute the floods to forest destruction through logging (media reports for the period). These events spurred DERN to suspend logging concessions and incorporate greater rehabilitation into its 2005-2010 Plan of Action for the forestry sector.

A.4.3. Socio-economic Considerations

The emergence of people-oriented forestry programs in the 1980s and the 1990s shifted the emphasis from the traditional approach of "getting the trees on the ground" to getting the livelihoods of the people off the ground" (Peluso 1992), through their involvement in reforestation and other forestry projects. Local farmers obtained additional income opportunities through participation in different reforestation activities - providing incentives and support to upland communities by providing tenure rights over reforested areas and livelihood support. With CBFM adopted as the national strategy for sustainably developing the country's forest lands, it would be safe to assume that most plantations were established by DERN from 1996 to 2002, totaling 185,407 hectares.

A.4.4. Institutional Dimensions

At least eight major groups of actors drive the process and outcomes of forest rehabilitation/reforestation in the Philippines: the Congress, the President, DERN, LGUs,

OGAs, upland farmers/local communities and the POs that represent them, NGOs and civil society, the private sector, academics and other research institutions and the donor community. Their varied roles are presented in Table 3-2. In this sense, rehabilitation is a complicated process given the presence of other stakeholders from various sectors and levels of society and the diversity of their personal and institutional interests and priorities. The dynamic interaction among them influences not only the form but also the substance of forest rehabilitation.

Table 3-2 **Key players and their roles**

Key players	**Major Roles in Reforestation**
The Philippine Congress	The Congress has the mandate to provide the legal framework for forest development and management including reforestation.
The President	Of the country's five president since 1965, President Marco's Administration issued the most policies relevant to rehabilitation. The Forestry Sector Projects were initiated during the administrations of President Corazon Aquino and Fidel Ramos. The administration of President Joseph Estrada and Gloria Arroyo merely sustained their predecessors' initiatives, particularly FSP.
Department of Environment and Natural Resources (DERN)	The DERN is the main government agency concerned with implementing forest rehabilitation initiatives. It promulgates rules and regulations that translate the generalities of law into concrete terms. The DERN Secretary is responsible for issuing Administrative Orders that guide the implementation of forest laws or decrees issued by the President.
Private Sector	The private sector holds various leases of public forest lands such as the TLA, SIFMA, IFMA, Tree Farm Lease Agreement, Private Forest Development Agreement, etc. Different policies mandate these private individuals, corporations or legal entities to be involved in rehabilitating certain areas covered by their leases.
Local Government Units (LGU)	The Local Government Code empowers LGUs to enforce forestry laws and implement reforestation and related forestry projects in partnership with the DERN and local communities. Some LGUs in Luzon and Mindanao have passed provincial/municipal resolutions appropriating funds to finance CBFM and reforestation projects.
Other government and semi-government agencie	These include the National Irrigation Administration, national Power Corporation, and the Philippine National Oil Company, among others, which by virtue of legal arrangements with the Government are also tasked to engage in rehabilitation activities in watersheds under their jurisdiction. More recently, the Department of Finance has been involved in some initiatives in partnership with LGUs under its Community-based Natural resources Management Project supported by the World Bank.
Upland Farmers/Local Communities and Pos (People Organization)	This group is composed of both indigenous people and migrants on the ground doing the hard labor of forest

	rehabilitation. Until the early 1970s they were simply hired as laborers in reforestation projects and did not have tenure security over the land they occupied. More recently, the government encouraged upland farmers and communities to organize themselves into people's Organization and play a larger role in rehabilitation projects.
NGOs and the rest of the Civil Society	NGOs and the rest of the civil society such as religious groups, media, and others, operate nationally and locally. Their influence ranges from providing technical and financial support to Pos; policy advocacy; legal assistance especially to indigenous people; implementation, monitoring and evaluation of reforestation projects, etc.
Academic and other research institutions	Their main contribution lies in promoting science-based policies and programs; providing technical assistance and support; project monitoring and evaluation; critiquing government forestry policies, programs and projects, etc.
Funding Institutions	Multilateral and bilateral funding institutions act as global drivers of reforestation policies and programs in the Philippines. Their instrument of influence includes providing funds and budgetary and technical support. The chief among these are ADB, World Bank, JBIC, USAID, IFAD, ITTO, Ford foundation, and the governments of new Zealand and Germany.

Source: Modified based on Pulhin (2003). Cf Unna Chokkalingam *et al.*, 2006, pp. 26-27.

The degree of engagement of various actors continues to evolve, shaping the process and outcome of forest rehabilitation along the way. For example, DERN's inability to promote successful reforestation by itself led to the involvement of the private sector and civil society in the different government-initiated reforestation programs starting in the late 1970s. On the other hand, the availability of funding support from the different financial institutions in the late 1980s to 2000 boosted the country's reforestation efforts, although funding availability did not necessarily result in project objectives being achieved (Korten 1994). Meanwhile, private sector involvement has declined in recent years due to an unstable policy environment and inadequate incentives.

B. **The Role of the Government in Plantation Development**

B.1. **Introduction**

The Philippines government established a good 'tree plantation´ climate for investors. The government gives economic incentives, tax breaks, easy bureaucracy (permissions), and access to limited banking[9] to develop tree plantations and wood processing mills (sawn timber, plywood, veneer, pulp and paper, etc.). There are many schemes available for tree plantation investment, for instance, *IFMA/ITPLA*[10] for the private sector and *SIFMA* for the cooperative sector, people's organizations (*PO*), and individuals. The response of the private sector and other stakeholders towards these government facilities are very positive, however the policy for obtaining banking credit must be approved in the field,[11] therefore, to realize the efficient establishment of tree plantations, *DERN* cooperates with the private sector who have the technical capacity to provide and develop quality seeds. The local DERN, in Eastern Mindanao, covering Regions 10, 11, and 13 only has about 30 to 50 thousand hectares of forest land licensed for tree plantation development, while eastern Mindanao has been producing 60% to 70% of the national timber requirements and has developed a seedling research center (DERN, 2008: 6-7).[12]

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[9] Actually 'tree plantation' investment is costly, because of the long return on capital and high risk. As a consequence, limited banks provide 'credit' facilities to develop this sector. However, as the forestry sector is a significant contributor to national PDB (*Product Domestic Bruto*) and creates jobs, two national banks (*Land Bank of Philippines and Development Bank of Philippines*) provide access to credit for investors. This policy was launched in the early 2000s and is still relatively new, so the numbers of private sector companies that have received credit from both state banks are still limited. The interview was carried out with FMB Officers in Manila, on August 3, 2009.

[10] The government under DERN authority gives tree plantation concession for 25 years to the private sector under the scheme of IFMA or ITPLA (Industrial Tree Planting Lease Agreement) and this can be extended based on their performance. The area of IFMA reaches more than 5,000 ha. Meanwhile, the area of SIFMA is less than 5,000 ha. (Since the early 2000s, ITPLA was changed to become IFMA).

[11] The policy of banking facilities to provide 'credit' for plantation forestry' is new and positive. Until 2006, the private sector in the forestry sector, whether in tree plantations or wood processing, found it very difficult to obtain 'credit' from government bank, but it was easier to access private banks, with higher interest rates. Therefore, CSDC Company always obtains 'credit' from private bank facilities for expanding plantation forestry and wood processing mill (Interview on August 6, 2009 with CSDC officer).

[12] DERN Officer in Caraga Region 10 with a budget of 4 million Peso annually in 2008 developed 100,000 different seeds (such as *Falcate, Mahogany, E. deglupta, A. mangium, S. macrophylla, G. arborea*, etc.), and distributed almost 80% of quality seedlings for local communities, people's organizations, boy scout

For example, DERN Caraga Region Officer developed quality seeds of 1,200 plant species of P. falcataria with a local farmer (Mr.Ulip Sugano) who owned 1 hectare of land in 2001 (Figure 3-3). The *MOU (Memorandum of Understanding*) states that DERN is obliged to share technical assistance, advice, provide quality seedlings and consider mother trees (for obtaining new seeds to be developed) as the benefits. The local farmer received benefits from good maintenance, free seedlings, counseling and guidance, and harvesting the trees. Harvesting will occur in 2010 (9 years after planting), when the diameter of the trees has reached 35-45 cm. About 616 trees are still in good condition from a total of 1,200 previously planted *Falcataria* trees. Under the MOU, the local farmer will leave 10 percent of 616 trees to become mother trees, with a diameter of more than 50-60 cm at cutting time after 15 years (2015) (interview on August 7, 2009).

The response from the local farmer was positive. The MOU with DERN, in terms of free seeds, fertilizers and advice in initial planting and maintenance was significant to him.13 Farmers with privately owned land and customary forest rights in rural areas also appreciate the MOUs. They say that the MOU with DERN and a company with a guaranteed market encourages local farmers to be actively involved in timber plantations, for the following three reasons: firstly, as a long-term investment, as the price of one cubic meter of wood (such as Acasia and Gmelina) is considered very stable at about 1,000 pesos. Farmers can produce about 15-18 cubic meters with 30-35 cm diameter timber on 1 hectare of land; secondly, timber plantations, especially during planting and harvesting times, create jobs and improve 'income generation' for local farmers in rural areas; thirdly, the social and health impact is significant. For instance, local farmers can then afford to send their children to high school and college, creating better futures for their children.

movements, etc., who would like to plant on their land. This interview with DERN Officer, Caraga Region was carried out in Butuan City, on August 7, 2009.

[13] Interview with local farmer in Butuan city and San Luis town, August 6& 7, 2009.

Eucalyptus Trees around 9-10 years old on a farmer's land in Butuan City.
Source: Figure 3-3: individual photo document, August, 2009.

The DERN regional units in Eastern Mindanao set a goal to move away from sourcing timber from remaining natural forests by working towards the development of one million hectares of more productive tree farms and plantations in Eastern Mindanao by 2030 (to date, the Philippines need to reforest 8.8 million hectares of classified forest land).[14] Table 3-3 presents the current and projected tree planting rates in order to achieve the goal of establishing 1 million hectares of tree plantations, while Table 3-4 presents the estimated amount of seeds required to meet the annual tree planting targets for the region. The estimated volume of required seeds only represents the requirements for commercial tree plantation establishment intended for timber production. Therefore, to achieve these trees planting rates will require a lot of inputs and investments which neither one public sector organization nor a few timber companies can accomplish separately. This is a real opportunity for small-medium size businesses.

The planting rate for 2009-2010 is based on current DERN targets set for the three regional offices. To meet the tree planting targets of this period alone will require about 1.5 tons of seeds of the five identified priority species (*A. mangium, P. falcataria, E. deglupta, S. macrophylla, G. arborea*) being planted in the area every year.

[14] For a better understanding of the policy on tree plantations of DERN in Eastern Mindanao, see 'Small-Medium Business Opportunities on Seed Production, Collection and Trade for the Tree Plantation Programs in Eastern Mindanao, published by DERN, AUSAID, and CSIRO, 2008.

Table 3-3 **Current and projected tree plantation establishment rates to achieve one million hectares of tree plantations for Eastern Mindanao by 2030**

	Tree Planting Target (in '000ha)						
Species	**09**	**010**	**011-015**	**016-020**	**021-025**	**026-030**	**Total**
A. mangium	9	9	70	75	45	25	**233**
P. falcataria	27	27	70	75	45	25	**269**
E.deglupta	16	16	70	75	60	25	**262**
S.macrophylla	9	9	25	45	50	30	**168**
G.arborea	3	3	40	50	50	10	**156**
Other species	2	2	35	50	50	15	**154**
Total	**66**	**66**	**310**	**370**	**300**	**130**	

Source: DERN Eastern Mindanao, September 2008.

Table 3-4 **Estimated required amount of improved seeds to meet the target annual tree plantation establishment rates in Eastern Mindanao from 2009-2030.**

	Seed Requirement (kg)						
Species	**09**	**010**	**011-015**	**016-020**	**021-025**	**026-030**	**Total**
A. mangium	360	360	2,800	3,000	1,800	1,000	**9,320**
P. falcataria	1080	1080	2,800	3,000	1,800	1,000	**10.760**
E.deglupa	5.6	5.6	25	26	21	9	**91.70**
S. macrophylla	13.5	13.5	38	68	75	45	**252.00**
G.arborea	2.55	2.55	34	43	43	9	**132.6**
Other species	3	3	53	75	75	23	
Total	**1,465**	**1,465**	**5,749**	**6,211**	**3,814**	**2,085**	**231**

Source: DERN Eastern Mindanao, September 2008.

One main reason for the establishment of tree plantations is to fulfill the requirements of the wood-based industry (Carandang, 2000). Unless the establishment of industrial plantations and community tree farms is accelerated and given proper incentives from the government, wood supply from natural forests would fail to meet the needs of the country. In this sense, plantation trees are the main option for the government of the Philippines and other stakeholders of timber industries in order to ensure the sustainability of wood supply in the long run. There are at least five considerations highlighted for tree plantations: environmental, economic, availability of land, availability of funding and technical capacities.

B.1.1. Environmental Considerations

There is a current concern for global warming in the world. The role of tree plantations in the removal of atmospheric CO2, for the build-up of their biomass during the process of photosynthesis is significant. The planting of trees to sequester atmospheric CO2 has been considered to be the most effective long-lasting means and a significant approach to address the problem of increasing amounts of CO2 in the atmosphere.

Also, the planting of trees significantly promotes environmental protection of watersheds in the production of water for domestic, irrigation, industrial, hydropower, and other important uses. Leaves and branches of planted trees intercept rainfall, thus reducing their erosive energy. The plants' roots and litter improve the soil structure and enhances infiltration of rainfall (PCARRD 2008: 3). Trees not only minimize the amount of eroded soil, but these also retard the rate of runoff. Erosion and subsequent sedimentation have a direct impact of watershed's water yield and quality. Trees also give better flood protection than a natural covering of undesirable brush and grass species.

B.1.2. Economic Considerations

The development of timber industries such as sawn mill, plywood, veneer, lumber, furniture, construction for real estate and pulp and paper industries, have rapidly increased in the Philippines. Based on Forestry Statistics (2006), demand for timber annually reaches 13.5 million metric tons. However, the consumption of wood for timber industries is higher than the supply. Hence, the establishment of forest plantations provides an attractive and profitable undertaking for income 'opportunities' and 'employment' generation, while fulfilling the expected scarcity of wood from natural stands. Large volumes of round wood were being produced in the Philippines annually for various end products used by the wood-based industries (Table 3-5).

A ready market for wood-based products, whether for domestic consumption or for export, is assured for those who want to invest in forestation. There are big markets for logs for lumber and construction, veneer and plywood, wood chips for pulp and paper production, poles and piles, furniture, fruit and vegetable crates, woodcrafts and wooden accessories, panel products (particle boards), wood wool cement board and firewood.

Table 3-5 **Round Wood Production: 1994-2004 (in '000' m3)**

		Log				Fuel wood	
Year	G.Total	Total	Sawn log	Pulp-wood	Poles	Upland	Charcoal
2004	934	768	410	355	3	38	128
2003	699	506	349	151	6	39	144
2002	541	403	288	106	9	28	110
2001	713	571	319	241	11	58	84
2000	912	800	384	400	16	33	79
1999	860	730	568	160	2	49	81
1998	690	634	546	82	6	34	22
1996	804	771	400	365	6	33	-
1994	1,063	957	805	149	3	104	2

Source: Philippine Forestry Statistics (2004).

G.Total: Grand Total.

The 1950s to early 1970s were characterized by a logging boom in the Philippines. Japan, South Korea, Taiwan and the USA are recorded as major importing countries of the Philippine's logs. The area under *TLAs (Timber License Agreement)* more than doubled between 1958 and 1970, from 4.6 to 9.4 million hectares. Consequently, the annual allowable cut also more than doubled from 7.2 to 15.5 million m^3. However, timber started to run out in the 1970s, especially in some parts of Luzon. By the mid-1970s, logging areas in central and western Luzon were either abandoned or covered by logging bans (Baodo 1998). As an illustration, in 1974-1975 log exportation from the Philippines peaked at 6.84 million m^3 valued at US$ 283 million. Conversely, log importation rose steadily until 1996 where it reached a maximum of 877,585 m^3 valued at US$ 127.4 million m^3 (Tolentino, Jr 2007). Therefore, the imminent timber shortage contributed to 'reforestation' efforts intensifying in the early 1970s. As already mentioned, the government initiated some policies and programs to encourage and support timber production:

a) P.D 1153 (*Presidential Decree*) known as the "Tree Planting Decree".
b) The Program for Forest Ecosystem Management that established one municipal nursery for each of the 1,000 municipalities and increased the role of the Bureau of Forest Development in reforestation.
c) The Energy Farm Program, which required each *barangay* (village) to plant at least two hectares as a community fuel service.
d) P.D 705 and 1559 and E.O 725 (Executive Order) encouraged the establishment of ITPs, TFs and AFFs, and the reforestation of inadequately-stocked forest lands within forest concessions to help supply the raw materials needs of forest-based industries.
e) The NFP (*National Forestation Program*) was to provide adequate 'industrial timber' and fuel wood supply in addition to its environmental and socioeconomic objectives (Umali 1989). The NFP thus targeted reforesting 1.4 million hectares from 1987 to 2000 (Unna Chokkalingam *et.al*. 2006: 24-25).

B.1.3. Availability of Public Lands

Currently, the country has enough potential lands for the establishment of quality forest tree plantations that can support the raw material needs of the wood-based industries. Based on the *Philippine Forestry Master Plan* (1990), the country needs to develop about 500,000 hectares of quality forest tree plantations as the source of raw materials for the industry to be self sufficient in plantation wood and surplus for export. However, both the government and private sectors must invest on a massive scale the establishment of industrial tree plantations and the protection and improvement of existing stands.

B.1.4. Availability of Funding Mechanisms for Prospective Investors

The necessary financial institutional funding for investors in tree plantations is significant. There are banks (e.g., *Development Bank of the Philippines and Land Bank of the Philippines*) that provide loans to investors who would like to venture into reforestation, tree farming and plantation development. At present, there is a growing interest in tree farming and plantation development from domestic and overseas businessmen as well as, for example, SCG (*Siam Cement Group*) from Thailand, because of their bright economic prospects and growing income opportunities.

B.1.5. **Availability of Tree Farming Technologies**

Innovative technology to provide best quality seeds is significant to bolster tree production in the future. There are technologies available, generated through research and development (R&D) by research institutions, academics and the private sector that can be used to enhance the production of forest plantations. Research institutions can be tapped to provide technical assistance in the production of high quality planting materials of forestation species and appropriate development and management techniques to improve survival and increase 'productivity' of forest plantations.

The 2003 Revised Philippine Master Plan for Forestry Development has targeted the establishment of 40,000 hectares of commercial plantations per year or a total of one million hectares over the next 25 years to meet the nation's timber needs. Therefore, the establishment of tree planting programs is necessary to be realized as below:

B.2. Tree Planting Trends in the Philippines

The government, through the authority of the *Forest Management Bureau* (FMB) Officer, gives tree planting concessions to the private and cooperative sectors. For instance, most planting has been conducted by government issued TLAs (*Timber License Agreement*) in 1970s-1980s. The private sector reforested large areas in three periods since 1975: from 1977-1984, 1988-1990 and 1994-1996. The total area planted was more than 93,520 hectares. Generally more than 20,000 hectares were planted annually during these periods, while in 1990s TLAs changed to become IFMAs (*Industrial Forest Management Agreement*) and SIFMAs (*Socialized Industrial Forest Management Agreement)*.[15]The aims of the establishment of IFMA and SIFMA were to revitalize the industrial forest plantation program and generate income for the private sector and smallholders in the

[15] Private sector who obtains IFMA concession from FMB officer could manage more than 5,000 ha from state forest land. The concession is given by the government about 25 years and could be extended for second terms based on his performance. Meanwhile, SIFMA for cooperative sector, the area concession below 5,000 ha.

local communities. A total of 8,568 hectares of trees were planted under IFMA and SIFMA and 3,963 hectares under TLAs from 2000-2002.

In general planting stocks, Tolentino addresses the significant benefits that could be obtained from seeds, vegetative produced stocks and wildlings, because seeds are the most common source of reproductive material when it comes to tree planting endeavors in the Philippines. The reasons are very obvious. First, seeds of the most popular and commonly planted tree species are abundant and widely distributed in many regions around the country, making them a more economical and practical source of planting stocks. Second, they are generally easier to handle and store for longer periods of time, unlike vegetative produced stocks (E.L. Tolentino, Jr 2007).

Historically, beginning in 1977, the participation of the private sector in tree planting through the years visibly manifested itself. From around 2,000 hectares, the aggregate accomplishments of the *Industrial Forest Management Agreement* (IFMA), tree farms and Agroforestry Farm Areas by 2004 had reached 824,000 hectares (Figure B.2). Bulk planting initiatives contributed by IFMAs (86%), while agroforestry farms and tree farms accounted for 11 and 2%, respectively.

B.2.1. Species Selection in Plantations

To provide excellent tree species for tree plantations is very important. Species commonly used in reforestation are surprisingly few, considering the abundance of commercially valuable species used by the timber industry. The popularity of exotic trees in the Philippines as a reforestation species date back to when reforestation started early in the 20th century. Apparently, of the top ten species planted in reforestation projects around the country, eight are exotic and only two are *ITS* (Indigenous Tree Species) (Figure 3-4). Mahogany (*Swietenia macrophylla)* and Gmelina *(Gmelina arborea*) are among the dominant exotic trees planted. Narra (*Pterocarpus indicus*), a common ITS, comes a close second. Another ITS, Agoho (*Casuarina equisetifolia*) ranked seventh among the commonly planted species (E.L. Tolentino, Jr 2008: 321-322).

Reports on the plantations of private concessionaires showed a similar pattern: *Paper Industries Corporation of the Philippines* (PICOP) Resources Inc. (Surigao del Sur, Mindanao) have plantations of more than 40,000 hectares, mainly *Paraserianthes Falcataria, Eucalyptus Deglupa and Acacia Mangium. Nasipit Lumber Company* (NALCO) (Agusan del Norte) has more than 4,000 hectares of exotic tree plantations. The main species planted are: P. f*alcate, G. arborea, Acacia auriculiformis, A. mangium, Pinus caribaea, Swietenia macrophylla and Tectona grandis. Provident Tree Farm Inc* (PTFI) (Agusan del Sur) has established another 6,000 hectares of plantations dominated

by exotic trees like A. mangium and G. arborea (Ecosystems research and Development Bureau, 1998). The *Bukidnon Forest Inc*., an industrial tree plantation in Malaybalay (Mindanao), has successfully established 6,367.32 hectares of assorted exotic trees. The major species planted are: *A. mangium, Eucalyptus urophylla, E. deglupa and P. caribaea.* Some native species have been tried, including: *Pinus Kesiya, Casuarina equisetifolia, Lagerstroemia speciosa, Pterocarpus indicus var.echinatus* and *shorea contorta.* It was claimed that most of the native species are slow growing with high mortalities which increases plantation costs, and therefore undesirable to management (Cuevas 1999).

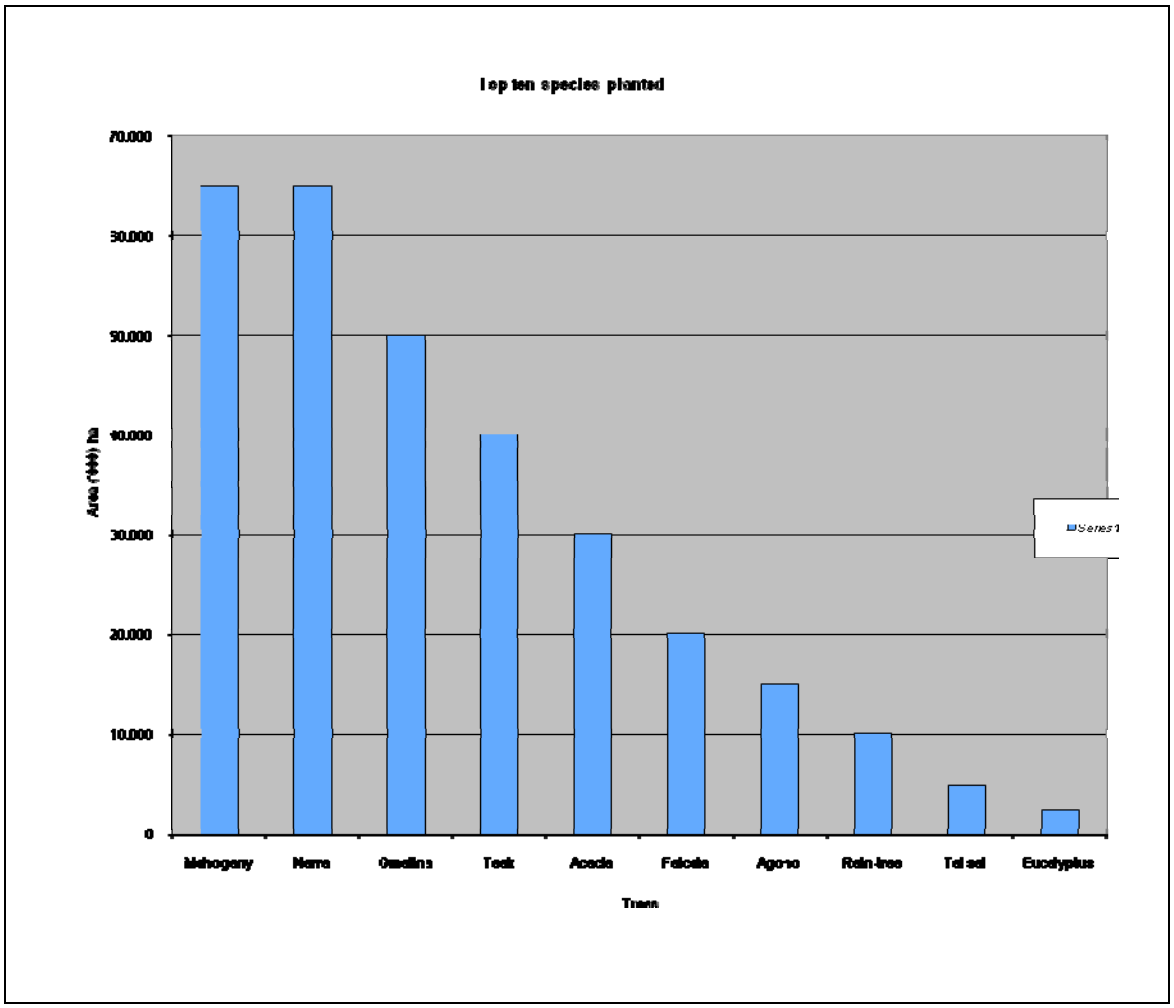

Figure 3-4 **Top ten species planted in reforestation projects in the Philippines** (Forest Management Bureau, 2000). Cf: E.L. Tolentino, Jr 2008)

Another study conducted among 50 smallholder tree nursery operators in Cebu, Bukidnon, and Misamis Oriental reinforced the predominant practice of raising exotic trees. Seedlings in the forest nurseries studied were composed of 59 percent timber species and 36 percent fruit trees. Of the timber species being raised, 35 percent are indigenous and 65 percent are exotic. Bagras (*Eucalyptus deglupa*) was ranked as the most popular species being raised in 48 percent of the nurseries studied. Other popular species include large leaf mahogany (*S. macrophylla*, 35 percent), A. mangium (21 percent), Black wattie (*albizzia lebekkoides*, 19 percent), *Eucalyptus robusta* (19 percent), E. *Torreliana* (17 percent), narra (*P.indicus*, 17 percent, and *Yemane or gmelina (G.arborea*, 15 percent). All, with the exception of *narra*, are exotic (Tolentino *et.al*. 2008:322).

The use of exotic species is not an exclusive silvicultural preference in the Philippines. In Southeast Asia, countries like Indonesia, Thailand, and Vietnam have developed extensive plantations of exotic trees like *S.macrophylla, P. falcataria, A. mangium. P. caribaea, Eucalyptus spp, and Casuarino spp* (FAO Forestry Database). Even in Brazil, another country with active plantation activities, data as early as the 1900s revealed an inclination towards the exotic eucalypts over Brazilian timber species (Nararro de Andrade 1941). In fact, as of 2005, Brazil has an estimated 3.2 million hectares of eucalyptus plantations (Neto 2005), the exotic species most abundant in that country's plantation program (Mc Nabb 2005).

The following are some of the main reasons for why exotic trees dominate the country's tree planting program (Tolentino,JR, 2008: 323-324):

B.2.1.1. Wide Adaptability and Tolerance to Stress

It was recognized by most foresters and farmers that planting exotic trees provided certain advantages, such as the adaptability of exotics to degraded sites (e.g. acidic, low soil fertility, fire-prone areas) and their ability to colonize even marginal grasslands. As an example, the exotic legumes (e.g. *Acacias, Falcataria*) as fast growing trees and are nitrogen-fixing trees that permit optimum growth and development even in nitrogen-depleted soils.

B.2.1.2. Fast Growth and High Yield

Exotic trees are fast growing and provide a high yield. These characteristics make them very attractive for smallholder tree farmers desiring quick income and immediate returns on their investments. Some estimates revealed that the yield of exotic trees ranges from a low of 5 m^3 per hectare per year in poor sites to as much as 40 m^3 per hectare per year in good sites. However, most of these species exhibit impressive growth yields averaging

from 30 to 35 m^3 per hectare per year. This is almost similar to the average growth performance of eucalyptus species in Brazil with is 20 to 40 m^3/ha/year.

B.2.1.3. Available Researches and Technologies

Most research has focused only on a few economically important tree species, thus making available technologies for tree plantation development of these species easily accessible to tree growers. Apparently, many of these plantations species are exotics grown outside its native range. In the case of exotics planted world-wide, e.g. *Pinus caribaea, Eucalyptus grandis, and Tectona grandis,* available research, technology package and experiences allow many users to plant them with an acceptable degree of certainty (Evans J, 1992).

C. Wood Processing Mill

C.1. Introduction

The development of the pulp and paper industry in the Philippines has not grown as fast its ASEAN counterparts in Indonesia and Thailand (Table C.1). There were at least three reasons why the pulp and paper industry in the Philippines is not as strong: 1) the government has not realized yet a good climate for investment in terms of facilities to obtain large credit in banks, lack of infrastructure, breakdown of tariff barriers and political instability; 2) lack of facilities from the government to encourage integrated pulp and paper milling with plantation forestry and 3) lack of new machinery equipments to establish new pulp and paper factories. The transfer of technology in this sector had been realized in Indonesia and Thailand, where at least 10 modern pulp and paper mills have been established, with production capacities ranging from 550-4,000 tons per day (Table C.2). Indonesia is ranked first for paper production in ASEAN. In 2002, the country produced 6.9 million m^3 and in 2005 to become 7.6 million m^3, and rapidly developed to become 9.2 million m^3 in 2009[16]. This is followed by Thailand with the production of 2.4 million m^3 in 2002 and in 2005 to become 4.3 million m^3 and 4.9 million m^3 in 2009, followed by the Philippines at 1.056 million m^3 in 2002, and in 2005 1.6 million m^3 and to become 2.1 m^3 in 2009.

The pulp and paper industry consists of 42 operating mills in the country, mostly located in Metro Manila (14 units), categorized as non-integrated recycling paper mills; in region

[16] See another sources, *The Japanese Pulp and Paper Industry in Charts and Figures* (2005), published by Japan Pulp and Paper Co, Ltd. P. 45; FAO STAT 2002; APKI (Indonesian Pulp and Paper Association) 2009; *The Jakarta Post*, 16 August 2010.

3, Central Luzon area (4 units), while the rest are located in other regions, categorized as non-integrated pulp mills, and as integrated pulp and paper mills (1 unit –PICOP). The mill utilizes tropical hardwood for their pulp production. PICOP's production capacity is recorded at 171,000 tons per year for all paper grades (*newsprint, lines board and corrugating medium*). Unfortunately, PICOP filed for bankruptcy because of miss-management and uncertain government regulations in 2005 (Rosario Bantayan *et al.* 2008).

The paper industry in the Philippines is heavily dependent on 'recycled fiber' as a cheaper input than imported 'wood pulp'. The country's waste paper collection system is quite efficient with an actual rate of recovery of 65%. Table 3-8 indicates the volume and value of waste paper imports from 1997-2004. According to Amando Rios, former President of PULPAPEL, the industry imported 369,957 metric tons (MT) of various grades of waste paper valued at US$ 43 million (Table 3-6). The largest sources of waste paper are United States America (USA), Europe, Japan, South Korea and Thailand.

The processing of pulp into paper could be derived from wood pulp, pulp from recycled fiber or non-wood pulp requires a lot of chemicals such as chlorine, calcium, sodium hydroxide and bleaching chemicals. Hence, the pulp and paper industry is highly dependent upon the chemical industry. Aside from the chemical industry, the pulp and paper industry also provides support to the following economic activities: publishing, printing, health/hospital and communication industries.

Table 3-6 **Comparative Pulp Production for Paper in ASEAN Countries (1998-2002) (000 Metric Ton/MT)**

Country	1998	1999	2000	2001	2002
Cambodia	0	0	0	0	0
Indonesia	1,895	1,725	3,726	5,587	5,587
Malaysia	112.7	119.7	123.7	123.7	123.7
Myanmar	17	39	42	47	47
Philippines	149	200	202	202	202
Thailand	772	836	844	999	999
Vietnam	133	294	314	314	314

Source: FAO STAT, 2002.

Table 3-7 **Comparative Paper and Paperboard Production across ASEAN Countries (1998-2002) (000 MT)**

Country	1998	1999	2000	2001	2002
Cambodia	0	0	0	0	0
Indonesia	5,487	6,978	6,977	6,995	6,995
Malaysia	761	859	791	851	851
Myanmar	41	37,4	39,2	41,6	41,6
Philipinnes	987	1,010	1,107	1,056	1,056
Singapore	87	87	87	87	87
Thailand	2,367	2,434	2,312	2,445	2,444
Vietnam	190	356	384	384	384

Source: FAO STAT (Last accessed on 6 December 2004).

Table 3-8 **Imports of Waste Paper from 1999-2004 (000MT)**

Year	Volume	Value (US$)
2004	369,957	43,000,000
2003	18,942	1,997,691
2002	362,076	34,013,302
2001	354,103	37,197,208
2000	407,213	52,930,913
1999	368,547	40,824,307
1998	307,111	28,537,602

Source: Philippines Forestry Statistics 1998-2004, PULPAPEL 2004.

The emerging pulp and paper industries are significant in their impact on the country's economy. The industry's export of paper and paperboard products contributes an average of US$ 69.7 million per year to the country's economic growth and development. The export volume of Abaca pulp has reached amount to US$ 28.1 million per year over the last five years (1999-2003). Job creations absorb about 5,600 regular employees and around 1.6 million people derive their livelihood from wastepaper collection. The constraints pointed out by the private sector to invest even more in the pulp and paper industry include:

a) tenure duration is too short to make long-term investments;
b) obtaining credit is difficult;
c) development and transport costs are too high to be financially viable, because mostly damage the street in rural areas;
d) frequently changing policies affect plans and operations, particularly regarding timber harvesting rights and transporting;
e) marketing support is low.[17]

[17] This data is based on interviews with *CSDC* Company (Casilayan Softwood Development Corporation) Officer in Talacogon and Butuan City, Agusan del Norte on August 6 & 7, 2009.

DERN officers are aware of these constraints for plantation forestry investment, which is why, along with other regulations and infrastructure improvement, DERN engaged local farmers by giving SIFMAs and IFMA for private sector concessions.

This paper aims to conduct a short review of paper industry performance and the role of the private sector, by considering the activities of a company actively engaged in plantation forestry in Caraga region 10. The company's name is *CSDC (Casilayan Sofwood Development Corporation*), and is categorized as an integrated wood processing mill, producing veneer, clippings, lumber, etc, for distribution on the domestic market. A comparison will be made on the response of local farmers on the existence of the CSDC Company and academic discourse on the impact of ecological damage from the company's operations.

C.2. Paper Industry Performance

C.2.1. Domestic Production

The Philippines's paper factories produce various paper grades, such as newsprint, printing and writings, craft/sack paper, corrugating medium and linerboards, tissues and specialty paper. In 2005, the total production capacity of the paper mills reached 1.4 million metric tons (MT), while pulp (abaca) production capacity was 24,000 MT (Pulpapel, 2005). Production reached only 75 percent of its potential due to inefficient production, because most mills are old and need to be remodeled. Table 3-9 shows paper production by grades. From 1997-2003, total paper and paperboard production registered an increasing trend during 5 years, with an average annual growth of 10 percent except for the years 1996 and 2000 (which could be associated with economic crises, political instability, peso devaluation, the rising cost of fuel and other factors). Paper mill production eventually rose to 1,051 million MT in 2001-2003. Packaging, paper and board constituted the largest proportion of production (45 percent), followed by printing and writing paper (28 percent), newsprint (24 percent), and sanitary paper, tissue and specialty grades (3 percent) (Bantayan, R *et.al*. 2005).

Table 3-9 **Paper Production by Grade ('000 MT)**

Paper Grade	1997	1998	1999	2000	2001	2002	2003
Newsprint	154	156	174	275	258	258	258
Printing	126	296	296	135	296	296	296
Packaging	392	504	504	504	470	470	470
Tissues	21	23	27	38	27	27	27
Specialty Grades	7	8	6	na	na	na	na

Total	**700**	**987**	**1007**	**952**	**1051**	**1051**	**1051**

Source: FAO Statistic, 2003.

In general, per capita demand for paper consumption in the Philippines has been recorded at 14.4 kg, which is way below the world's average of 55 kg. However, there is more room for growth with the country's potential population of about 88 million (*National Statistic, 2007*). The population and economic growth of the country is at a rate of 2.3% per annum, an increase in per capita consumption by just 1 kg would require paper mills to produce an additional 85,000 tons of paper and paper board.[18] The industry is reported to be growing over the following years, due to increasing market size for both domestic demand and exports as well. For instance, sub sectors, including the food and packaging industries, are heavily dependent on paper and paper-based products. Hence, studies have shown that paper demand is expected to increase in the following years due to increased newspaper circulation, a high level of literacy and educational institution demand for material paper, packaging materials and other social and economic factors. Statistics have shown that from 1992-1999, in terms of share to total output, newsprint account for 20% of the industry's total production capacity, printing and writing grade 18%, and craft/corrugating medium/sack grade has a total share of 57%, and the remaining 5% is devoted to tissue and specialty paper manufacturing.

Table 3-10 **Paper and Paperboard Production and Consumption 1998-2003 (000 MT)**

Year	Production	Net Import	Consumption
1998	987	418.1	1,405.1
1999	1,007	532.2	1,539.2
2000	952	507.0	1.459,0
2001	1,056	692.9	1,748.9
2002	1,056	609.7	1,665.7
2003	1,056	605.6	1,661.6

Source: *Philippines Forestry Statistics*, 1998-2003 and FAO 2003.

C.2.2. Trade

C.2.2.1. Export Orientation

The government has a policy to export paper production in order be able to obtain foreign exchange earnings. Paper and paperboard exports have generally increased over the last

[18] There is optimism for the growth of the pulp and paper industries in Philippines in the next decade, while government decision makers are aware of the need for pulp and paper investment and launches 'positive policies and facilities to the investors. Interview with *FMB (*Forest Management Bureau) officer on August 3, 2008.

10 years. For instance, in 2003 the Philippines exported 150.000 MT of paper and paperboard valued at USD 71 million (Table 3-11). The predominant markets are Asian countries such as China, Hong Kong, Taiwan, Singapore, South Korea, India, and Malaysia (Rosario B. Bantayan, *et.al.*, 2008: 12).

Table 3-11 **Export of Paper and Paperboard, 1997-2003 ('000 MT)**

Year	Quantity	Value (in US$)
1997	54,022	51,986,537
1998	113,500	78,587,056
1999	104,964	72,347,870
2000	134,097	91,398,350
2001	147,944	94,490,606
2002	175,376	72,522,174
2003	150,420	71,260,387

Source: *Philippines Forestry Statistics* 1997-2003

The Philippines is well-known as the Abaca producer. Therefore the country's pulp exports are mainly derived from Abaka pulp. It has been reported that around 70% of the world's abaca fiber requirements come from the Philippines. Table C.7 shows the volume and value of Abaka pulp trading from 1998-2003. The target countries of Abaka export are Japan, Netherland, United Kingdom, USA and France. Apparently, from 1998-2002, the country's export of Abaca pulp reached 78,334 metric tons valued at USD 128,597,666 (FMB 1998-2002).

Table C. 7 **Export Abaca Pulp 1998-2003 ('000 MT)**

Year	Quantity	Value (in US$)
1998	14,987	35,961.708
1999	13,881	31,627.331
2000	15,664	35,949.069
2001	15,164	29,601.293
2002	16,306	31,367.146
2003	2,336	4,293
Total	**78,334**	**128,597.666**

Source: *Philippines Forestry Statistics* 1998-2003.

C.2.2.2. Imports

As previously discussed, the Philippines still lacks sufficient timber production as the raw material for processing pulp. In this context, the Philippines imports pulp from other countries, mainly Indonesia, Thailand and China. Meanwhile, a small amount of paper and paperboard, such as printing and writing paper and other specialty paper grades, are still imported from other countries (Table 3-12). The reasons for this are: a) the government tariff reduction programme, especially for pulp and paper; b) the declining

prices abroad compared with the price of domestic paper; c) the quality of local paper does not approximate the quality of prime paper produced in other countries (Aragon 1995).

Table 3-12 **Imports of Pulp, Paper and Paperboard, 1996-2002 ('000 MT)**

Year	Pulp		Paper and Paperboard	
	Volume	**Value (Mil. US$)**	**Volume**	**Value (Mil.US$)**
2002	44	24	571	293
2001	56	32	533	309
2000	64	42	468	317
1999	73	41	477	257
1998	86	43	392	246
1997	107	57	458	297
1996	92	52	393	277

Source: FAO STAT, 2004.

C.3. Study of the CSDC's Profile: Wood Processing Mill

The company is familiarly called **CSDC**, an abbreviation of *Casilayan Softwood Development Corporation*. It was established in 1983 for plantation forestry, match manufacturing and wood processing. To date, the company manages four industrial forest plantations covering a total of 34,727 hectares under contract through IFMA with the national government under DERN, in the provinces of Agusan del Sur and Agusan del Norte in Mindanao region (Figure C.1) Another new contract of IFMA 95,000 hectares was received in 2009 located in the island of Samar in the Visayas.

CSDC provides raw material from plantation trees such as *Falcata, Gubas, Mahogani, Acasia Mangium and Gmelina* in many areas, such as 5,000 hectares in Mahayahai village, San Luis town and 12,000 hectares in Lapaz (Figure 3-5). These areas are mostly located in Agusan del Sur. The company used a strategy of making plantation forestry by encouraging the participation of local people as workers and providing a guaranteed market at harvesting time of their tree products. The fees per hectare totaled 10,000 pesos and absorbed 10-15 persons for work. During harvesting (8-10 years after planting), the company gives contracts to groups which consist of 10 persons to cut down trees with chainsaw equipment. Hence, plantation forestry, especially in planting and harvesting time, creates jobs in rural areas and improves the incomes of rural individuals by synergic cooperation between company, local government and local people.

As an illustration, of a total of 5,000 hectares in Mahayahai village, 1,000 hectares belongs to tribal leaders. The company has made an MOU with 89 tribal leaders. The aim of the MOUs is to improve the performance of the company in realizing input

requirements of trees. The company provides a subsidy on good quality of seeds, fertilizer and 2,000 pesos per month per head for each tribal leader to develop their staple foods, such as rice, corn and cassava.[19]

Acasia Mangium trees in CSDC's timber concession, in Mahayahai village (Figure 3-5: individual document, August, 2009).
Source: Wikipedia English 2008.

CSDC owns 14,727 ha of timber plantations in this region in 2000s.

[19] Interview with one of head of tribal leader in Talacogon, August 6, 2009.

Source: Wikipedia English, 2008.

CSDC owns 20,000 ha of timber plantations in this region.

In terms of transportation of products to the wood processing mill, there are two ways: 1) using land transport (trucks) in the dry season and 2) using the river in the rainy season.[20] Transporting wood from rural areas to wood processing mills causes very heavy traffic, destroying roads, especially during the rainy season (Figure 3-6). Therefore, to overcome these difficulties, the company prefers to transport wood in harvesting time by the river, namely by rafting the timber down the river.

[20] Usually occurred in Philippines for dry season starts annually from the mid of November until April and for rainy season starts from May until the end of October.

The infrastructure (road) to timber concession areas are bad.
Figure 3-6 individual document, August, 2009.

The CSDC holding company is JAKA Corporation, a business that produces safety matches, located in Agusan del Norte, provided with an ISO 9002 certification with and currently the country's leading manufacturer of high quality safety matches. The main shareholder is Juan Ponche Enrile[21]. The head office of the company is located in Makati, Manila. Juan obtains credit to expand his company (JAKA Corporation), but never from governmental facilities, in order to prevent any collusion with government officers or senators. Therefore, he prefers to gain financial access from private banks, namely RCBC (Result Commercial Banking Corporation) and BOC (Bank of Commerce).[22] JAKA Corporation also launched capitalization for new projects by selling shares in *Makati*. These shares were sold in order to expand the core business and other leading projects such as plantation forestry, wood processing mills.

[21] Juan P. Enrile was previously appointed as Defense Minister under the Ferdinand Marcos regime in the 1980s. In 2009, he was acting as Senator in the Upper House of the Philippines Parliament. JAKA Corporation is a synonym of the names of his two children - Jack and Catherina.

[22] The interview with MA Teresa FE C.Booc, Finance & Administration Manager was carried out on August 7, 2009 in Batuan City.

Table 3-13 **Plantation Concession owned by CSDC**

Concession	Hectares	Expires Date
IFMA 03-2008	5,000	January 1,2034
IFMA 019 (RMI)	5,000	December 31, 2017
IFMA 07-2006	23,727	December 31, 2032
IFMA X-1994	1,000	June 30, 2019

Source: The Company's Profile, 2009.

The 2009 financial report of CSDC indicates that the company is healthy and gaining good profits. Gross Revenues accounted for 108 million pesos in 2008, while costs accounted for 101 million pesos. Therefore, the company recorded a profit of 7 million pesos before income tax. The total income after tax was 5.25 million pesos, mostly from the wood processing industry. The company is profitable in its operations and is planned to be expanded with additional production by providing new machineries and raw materials.

The following statement from a CSDC officer was based on an interview with the writer concerning the company's responses to government regulations and the climate of investment for plantation forestry and its wood processing mill.

Do you feel that there is now a better climate for investors in 'plantation forestry'?
Yes, the company feels that the climate is good for plantation forestry. Although the regulation, infra structure and other economic incentives must be largely given to the private sector in order to drive investment in the Philippines.

The company fulfils all the requirements of DERN, and is strong in terms of IFMA evaluations in *water, air, land, biodiversity and interaction with people* requirements, which are held twice annually by DERN.[23] Actually the company accepts that there is now a better climate for plantation forestry investment in terms of easier procedures for plantation concessions and tax breaks for the first five years of planting. However, the economic incentives through credit access from banks, reductions in machinery taxes, facilities for exports in the port, etc., are not assisted by the government. Therefore, the company established a timber processing mill in 2002, using second hand machinery made in Germany for veneering (Figure 3-7). This strategy was taken in order to reduce taxes by using used machineries and efficiently spending money from the principal of *JAKA*

[23] Forest Management Bureau (FMB) officers hold IFMA evaluations twice annually for all companies that have received plantation concessions. Interview with Ms. Nely Butic Head of Division on Environmental Affairs, FMB, on August 6, 2009.

Corporation. The most important one is the maintenance of machinery in order to keep them operating until now.[24]

CSDC's wood processing mill for veneering products in Talacogon.
Figure 3-7 individual photo document, August, 2009.

How far does the timber processing mill create jobs in this municipality?

The existence of this company which allocates around 15 hectares of land for timber processing creates jobs for 120 regular persons, 150 contract workers and largely absorbs all work for rural villagers, especially in the planting, maintenance and harvesting trees. The workers are derived 85 percent from local townspeople and 15 percent from other provinces. The allocation of 85 percent local and 15 percent from other provinces is based on an MOU (Memorandum of Understanding) between the company and the municipality of Talacogun. The company also pays above regional standard average salary. For example, for high school qualification and about 1-3 years working experience, the salary received is around 5,000-6,000 pesos/month and a college graduate with medium skills as a technical operator with 1-3 years working experience will receive

[24] The machineries for making veneering and lumber are still performing well in production timber, based on interview with Head of Wood Processing Mill on August 6, 2009 in Talacogon.

about 8,000-10,000 pesos/month, while a supervisor or head of division with 1-5 years working experience will receive 18,000-22,000 pesos/month and a manager with 1-5 years working experience, 35,000-40,000 pesos/month.[25] Also, all workers receive a one month bonus at the end of year. Therefore, the flow of money is spread out in Talacogon municipality through property land taxes, business taxes from the gross income of the company (taken 0.5 percent) and spending money from the incomes of the workers and farmers surrounding the Talacogon area.[26]

What are the investment constraints you face and how much do you produce?

Actually, for foreign investors, plantation forestry and the timber processing mill are not attractive, because there are some constraints in this sector, such as limited land, banking facilities, unstable politics, expensive machinery taxes and lack of infrastructure. As an illustration, the timber processing mill produces 1,950 cubic meters (CM) per month of veneer. The company produced 1,600 CM in 2007 and rapidly increased this to 1,700 CM in 2008 and 1,900 CM in 2009. Several veneer products such as Lowaan veneer costs 9,000-10,000 peso/CM, Falcata veneer costs 6,000-7,000 peso/CM and Miselen veneer costs 9,000-10,000 peso/CM. The marketing of these products could be conducted for the domestic market. For example, the company sends to the Mindanao plywood factories such as PSPI, Richmond, Emco, APC and APTCO and also veneer factories in Manila such as Winlex and Rewoodco. But the problem is to expand wood timber business and pulp and paper from viewpoint of investors need huge capital and could not be available in Philippines Stock Exchange Market and international exchange market for selling shares at moment. Apparently, the policy in terms of obtaining huge credit, tax facilities and other regulations must pro-business spheres.

C.4. The response from local people

The existence of the company (CSDC) is positive for both the local community and government, a tribal leader mentioned, [27] because the company encourages the "participation" of local people for the plantations and especially at harvesting time. At the same time, the company pays taxes to the local government, develops agricultural land

[25] Actually the standard of regional fees (in Municipality/town) for high school graduate just receives 4,000-4,250 Peso/Per month. In case of income for managers around 40,000 Peso in wood processing mills is similar with the income of Professor in State University such University of Philippines. Currently US$ 1 is similar with 47,80 Peso. Then, 40,000 Peso is similar around with US$ 934.

[26] Based on interview with Manager of Wood Processing Mills on August 6, 2009.

[27] The interview with Mr. Charlie, one of head of tribal leader was carried on August 6, 2009.

(for staple food production) and repairs the road, especially during the rainy season in rural areas.

Three tribal leaders (Manubu, Man Waon and Ban Waon) consider that the population growth in their village (Mahayahai) is very high (300 households and 3,945 people), with a strong inverse correlation between population growth and economic social welfare. If it cannot be managed properly, the community will suffer growing poverty. The reasons for the rapid population growth are: 1) a high birth rate per head of family (7-8 children) and 2) some tribal leaders are married to two women, and they usually bear many children. The customary forest lands are registered at about 21,720 hectare, while 5,000 hectares is land concession belonging to CSDC, and 1,000 hectares is ancestral land. To manage and cultivate 21,720 hectares, the land is divided between the 89 tribal leaders. One tribal leader represents 12-14 heads of households, cultivating 12-15 hectares each. The system of working is “Pahina”, which means one group cooperates with other groups without paying fees, just providing meals and water during work, from clearing land, cutting trees and planting seedlings. This Pahina system has been maintained throughout the generations until now and is still well practiced in rural areas. The main problem of the village is lack of educational infrastructure (*elementary school*) (Figure 3-8), health and road facilities and sanitation.

Elementary School in Mahayahai village.
Figure 3-8 (Individual photo document, 2009).

Before CSDC, the PICOP Company carried out plantations and tree harvesting from local farmers as raw material for the pulp and paper industry. However, according to a tribal leader who witnessed the golden peak of production in the 1990s, there was only a guaranteed market for trees at harvest time, without any assistance with seedlings, free fertilizer and no cash payments for farmers. Farmers were paid two weeks after the trees were transported to the company. But, after PEACOP suffered bankruptcy in 2005, CSDC appeared as the best performance company and a true partnership with local farmers, especially in Sun Luis town and Mahayahai village.

Another positive of the program is that CSDC gives a bonus of around 2,000-2,500 pesos for every tribal leader in the New Year and also gives funds for the village committees celebrating the birth of the town and Independence Day of the Philippines.

What trees have local farmers planted?

Most plantations are occupied by *Falcata and Acasia magium* tree, because these trees are considered commercially viable and fast growing. These trees are used as the raw material for pulp and paper and veneer products. One hectare consists of 400 seedlings, using 5kg/ha of fertilizer and takes 8-10 years from planting until harvesting. At harvesting time the trees reach around 30-40 cm in diameter. Production volume reaches 180 cubic meters/ha. The market price was about 1,000 pesos/CM in 2008. Usually tribal leaders rent chainsaws during harvest, at a cost of 500 pesos/day. The operation of one hectare uses 1 chainsaw for three days. They collect the cut trees together into a log pond and the company's truck transports them to the timber processing mills. Generally, 1 hectare consists of 10-15 truckloads and one truckload consists of 18 cubic meters of timber.

What is the contribution of the local government to the farmers?

The local government (San Luis town) contributes per head family seedlings and fertilizer for projects such as *rubber*, *falcate and Ruan* (*Local Philippino Mahogani*) trees to be planted in their customary forests. The purpose of planting trees is for 'forest conservation' rather than for commercial trees in order to prevent 'soil erosion and flooding' in the uplands. The government also gives non-organic fertilizer of 5 kg/tribal leaders. But, this gift in terms of seedlings and fertilizer based on projects. It not regularly distributed them annually to local farmers.

Do you receive any benefits from synergic cooperation between the private sector, local government and local farmers?

Yes, we receive a lot of benefits, largely the opening of job opportunities and receiving income by planting trees and selling timber products at harvest time to the company. This has a positive impact on improving economic and social affairs for rural villagers. Actually, if the central government gives sufficient credit to local farmers from state bank in order to boost timber products in Philippines, it is the best way how to widely open job and improve income generating for rural communities.

How do they spend their income from harvesting trees?

At harvest time, the company pays money based on how many cubic meters of timber farmers produced, bolstering the incomes of heads of households by about 50,000 - 60,000 peso. This is a large amount by rural villager standards. About 20 percent of their income goes on daily necessities in town, 15 percent on replanting, 35 percent on educational and health fees for their children in high school and university and 10 percent for maintenance of their health, while 20 percent is saved in the bank for hard times in the future.[28]

C.5. Academics and NGOs Criticize Environmental Disasters

The mid-1980s and 1990s, stories on environmental disasters such as the following grabbed the headlines: floods - such as those that killed at least 5,000 people in Ormoc, Leyte in November 1991 and drowned several hundred in Southern Luzon in November 1995, or Calauag, Quezon in late 1995, where hundreds perished because of rising floodwaters could no longer be contained by treeless watersheds. These tragedies could be traced back to deforestation issues, strongly correlated with 'logging concessions and politics'. Companies' connections to former President Ferdinand Marcos who secretly owned nearly half of the lucrative firm, allowed it to flout environmental standards. In contrast, when Cory Aquino became President (1986-1990), the government took over and revised the policy of the company and appointed a new board to run it.[29] Actually the boom in Japanese demand for tropical *hardwood* (log) in the 1960s created enormous wealth for those who found themselves in control of the timber concessions, especially in

[28] Educationally, their children are currently performing better, because they mostly continue through high school graduation to colleague/university. So, parents spend more money to send them to the municipality and city. This is the case in Charlie's family, as one of the tribal leaders. Three of his daughters are in high school and one in university, while Charlie himself only graduated from high school.

[29] Sheila S. Caronel, :Unnatural Disasters", in Sheila S. Coronel (ed.). 1996. *Patrimony: 6 Cases Studies on Local Politics and the Environment in the Philippines*, The Philippine Center for Investigative Journalism, pp.8.

Agusan, north Mindanao. Some logging holders brought the amount of money for political elite as paying 'tribute' for their sustainable concession and dealt with the powers that-be in Manila and with their buyers in Japan. This is a common portrait of logging holders' behavior in connection with politics in the Ferdinand Marcos regime.

To overcome the impact of *Acacia mangium* and *Eucalyptus* trees plantations due to 'shortage of water', the government, represented by the Forest Management Bureau (FMB), included an *environmental performance monitoring* (*EPM)* assessment on several elements such as the quality of land, air, biodiversity, water and interaction with people in the SIFMA and IFMA assessments held twice annually. So far, based on the evaluations, both the private and cooperative sectors are standing up to scrutiny on 'environmental assessment'.[30] Local farmers in Caraga region 10, which make up almost 40-50 percent of national tree production gave a positive response on 'plantation forestry', consisting of several trees such as *Gubes, Paraserianthes falcata, Acasia mangium, Eucalyptus deglupa, Swietenia macrophylla and Gmelina arborea*. They do not talk any more about the negative impact of eucalyptus trees on the ecology. They prefer to consider these trees as commercial trees that generate an income for people in the short term (DERN, 2008: 8-9).

The following argument is used to support the idea that eucalyptus trees could be cultivated and interplant with native species (*fungi)* in order to make fertile land.[31]

Why do you criticize eucalyptus trees as monoculture plants?
Eucalyptus deglupa is disadvantageous as a monoculture plant as it absorbs much water. Therefore to maintain biodiversity, reduce water depletion and improve fertility of the soil, farmers should interplant eucalyptus with native species (*ectomycorrhizal fungi*). The aim of interplating is to restore back water, reduce soil erosion and increase biodiversity, eventually restoring the entire wildlife and ecosystem.

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[30] An interview with Head of Environmental Affairs Ms. Nely Butic of Forest Management Bureau (FMB) on August 5, 2009 in Butuan City.

[31] An interview with Dr. Nelson M. Pampolina, he is lecturer in Department of Forest Biological Science, College of Forest, UP Los Banos, on August 2, 2009. Mr. Nelson wrote Ph.D thesis in Murdoch University, Australia entitled:" Ecology of Ectomycorrhizal fungi in eucalypt plantation in Western Australia and the Philippines," in 2000.

Currently, Eucalyptus deglupa is mostly planted by local farmers in Caraga region 10, because of its fast growing and high yield.

Do you agree that eucalyptus and other fast growing trees (P.falcate, Acasia mangiun, Gmelina arborea, atc.) can bring about a positive impact through income generation for farmers and the private sector?

Yes, I agree that these trees could be beneficial to local farmers and the company (private sector), as raw material for pulp and paper, plywood, sawn timber and house construction.

Are there indications of a connection between deforestation and poverty?

Yes, there are activities that lead to deforestation, such as illegal logging, 'shifting cultivation' (*Kaingin*) in the uplands and encroachment on state forest land for agricultural conversion. Therefore, to prevent these activities, the government and other donor countries need to cooperate with local farmers to realize *forest rehabilitation* and *reforestation* in many regions, ensuring that local people could get income by planting trees and harvesting timber as a counter to poverty in rural areas.

How is your view of the ADB (Asian Development Bank) as a funder of planting eucalyptus trees as raw material of the pulp and paper companies?

I do not agree with the policy launched for the private sector by the ADB. ADB must actively engage other *stakeholders* (*local farmers, cooperative sectors*, etc) to plant several types of trees. The Philippines is occupied by a very rich diversity of local species. The ADB policy only selected one species of trees (*Eucalyptus deglupa*) without encouraging other local species trees to be planted as commercial trees for the domestic market.

Actually the ADB has supported two plantation projects in the Philippines. Both projects created problems. The first was approved in 1983 and suffered from deficiencies in project design and implementation according to the Bank's Project Performance Audit Report. The project was redesigned in 1988, after a typhoon hit the project area. Instead of planting a different tree species, as initially planned, "the project adopted a strategy of near monoculture plantations of eucalyptus camaldulensis." The plantations were poorly maintained and "were characterized by a highly uneven and low tree growth rate." As a result, the bank failed to monitor the project adequately.[32] The second project by the ADB in the Philippines was the Industrial Forest Plantation and also faced problems. The project started in 1991, and aimed to establish 30,000 hectares of industrial tree plantations. In fact 6,100 hectares were planted. The cost of establishing the plantations

[32] See Chris Lang, "Plantations, poverty and power: Section 3", pp. 11 (http://chrislang.org/2009/02/06/plantations-poverty-and power-section-3/).

was higher than expected, because of "the cost of settling disputes over the land for the plantations" according to Alastair Fraser, an ADB consultant.[33]

C.6 Concluding Remarks

The Philippines forests have been facing deforestation over the past 40 years and more. From the view point of 'political ecology', which emphasizes *stakeholders*, the role of government in the period of Ferdinand Marcos (1965-mid 1980s) was the peak of 'deforestation' (Table 3-1). There were and are two driving factors causing 'deforestation' in Philippines's forests. First is the political factor that forests are treated as commodities and political interest. Logging concessions were given by Marcos to his cronies and political elites supporting his power. This led to large scale deforestation (165,000 hectares annually), because most logging holders did not practice sustainable forest management. Second is the conversion to agricultural land (2.8 million hectares) due to population growth and growth in agriculture in general. In many developing countries - such as the Philippines – there is great pressure imposed on forest lands by increasing populations, relentlessly damaging the ecosystem, especially shifting cultivation (*kaingin*) in the uplands, conservation and protected forests. The impact of the deforestation criticized by NGOs and academics was the creation of greater environmental disasters occurring since the mid-1980s-1990s.

Observing the above environmental disasters, the Philippines government, especially under Cory Aquino and Fidel Ramos, invited other **stakeholders** (*academics, congressmen, NGOs, local governments, local people,* etc.) and even donor countries to actively design various programs to protect and conserve the remaining forest by launching 'forest rehabilitation and reforestation' . These programs included the Integrated Social Forestry Program (ISFP), Upland Development Program, National Forestation Program (NFP), Forest Land Management Program (FLMP), Low Income Upland Communities Project (LIUCP), Community Forestry Program (CFP), Regional Resources Management Project (RRMP), Forestry Sector Project (FSP), and finally revised to become the Community-Based Forest Management Program (CBFMP).[34] CBFMP, introduced in 1995, in particular recognized the indispensable role of local people in managing forest resources in the country. Many forest analysts say that the CBFM program, which has been practiced for at least two decades in the Philippines, is the best model of sustainable forest management and has inherently improved the socio-

[33] *Ibid.*

[34] See Harrison *et.al.* 2005. *Past and Present forestry support programs in the Philippines, and the lessons for the future.* Small-scale Forest Economics, Management and Policy, 3 (3): 303-317.

economic situation of many local farmers. The success of the CBFM program is in the active *participation* of other stakeholders such as local people, local government, academics, NGOs and donor countries in the program.[35] The focus and aim of forest management has thus shifted from technical commercial forestry to a more people-oriented social forestry. However, improving the socio-economic condition of the rural populace (*particularly small holders*) remains a great challenge for the Philippine government, because 30-40 percent (Statistics, 2008) of Philippinos remain in *rural areas*, and are mostly categorized as 'poor' compared with people who live in urban areas. However, the main problem in reforestation issues within the CBFM program is that at harvest time, the government is reluctant to provide permissions to farmers to cut and transport their timber, even if it is in the MOU that farmers may cut their trees at harvest time with a cycling cutting system from one block area to another. The argument of the FMB officers is that large cutting of trees by farmers in certain areas (such as the uplands) subsequently affects soil erosion and flooding in the downstream areas.

The demand for timber has reached 13 million m^3 annually. Therefore, to fulfill this high demand for timber such as pulp and paper, sawn timber, plywood and house construction, the Philippine government issued 'timber plantation' concessions for 25 years that could be extended based on their performance. There are many schemes available for tree plantation investment, for instance IFMA/ITPLA for the private sector and SIFMA for the cooperative sector, people's organizations (PO) and individuals. The main constraints to investors, both foreign and domestic, is that the government of the Philippines does not provide economic stimulus and incentives and good infrastructure services (roads and ports) for integrated investment from timber plantations (downstream) to timber processing mills (upstream). For instance, the lack of economic stimulus and incentives means that state bank officers are reluctant to give big credit to investors, because bank officers still consider the forestry sector as high risk and a very long term return. Even fast growing trees (*Acasia Mangium, Eucalyptus*, etc.) need 8-9 years and the price of timber products is unstable. Besides, infrastructure (roads and ports) in rural areas are in very bad conditions. The central government still does not pay enough attention to infrastructure investment in rural areas. Even better performance of infrastructure could easily mobilize investors on transporting valuable commodities such as agricultural products, cash crops, timber from rural to urban areas and exporting to overseas from the domestic port. The limited infrastructure facilities are a constraint, especially for transporting timber to processing mills. Empirically, the Philippines is considered 'backwards' within the forestry industry compared with other fast growing forestry industry in ASEAN countries such as Indonesia and Thailand. As a consequence, foreign

[35] Interview with informant in UP, Los Banos, July 31, 2009.

investors are reluctant to enter and invest in the forestry sector. As an illustration, domestic investors find it very difficult to obtain credit from state banks or the stock exchange to obtain fresh capital, as told by CSDC Company officer in Butuan city.

Therefore, the Philippines government, especially *FMB* under *DERN (the Department of Environmental and Nature Resources*) should create a political commitment to cooperate with other institutions such as banking institutions to create a strong foundation for the forestry industry, originally based on the *reforestation* programs under the **CBFM scheme**, where timber plantations to timber processing mills are categorized as a *strategic industry* in the Philippines for the following reasons: firstly, the forestry industry could largely contribute to obtaining foreign exchange earnings and national GDP of the Philippines. Secondly, the forestry sector could create many more jobs in rural and urban areas, creating long-term income generation for local people. Thirdly, it is highly recommended that the government and other stakeholders practice sustainable forest management in the Philippines as this will help to prevent soil erosion, flooding, and excessive negative impacts from typhoons. Therefore, to realize and facilitate the above conditions, the Philippines government should revise the regulation on timber plantations, tax breaks, law enforcement and access to credit from institutional banks. These changes could actively engage stakeholders of the forestry sector to invest and expand their businesses in the Philippines in the long run.

CHAPTER 4 INDONESIA

A. Review of Industrial Timber Plantation (HTI)

A.1. Introduction

Industrial Timber Plantations (**HTI**) can be utilized as a means of equal land distribution between local people and company holders, utilized as a source of production and improving the socio-economic condition of local communities. Walhi NGO officers highlight that there are two main conflicts concerning **HPH** (logging concessions) and **HTI** and local communities (Hidayat, 2004: 152). First is the conflict of space, as the government[1]claims, through Forestry Act number 5/1967 and number 41/1999, which all forests belong to the state and therefore the government ignores the customary forest ownership of local people. Most of their lands are generally not certificated by the government, leading to land conflicts between logging and HTI holders and locals in many districts of Indonesia. Under the Soeharto regime, there were 1,700 land conflict cases (*Tempo*, 24 September 2000). Second is discrimination in the provision of concessions. Most logging and HTI concession holders occupy 51.6% of production forests. For instance, Sinarmas Forestry Company owns more than 900,000 hectares of HTI concessions, while the number of landless farmers is rapidly increasing. A recent study reveals that the percentage of landless farmers on Java increased from 3.2% to 14.9% between 1973 and the 1980s, with the percentage of farmers owning less than 0.5 hectares rising from 45.7% to 63%.[2]. Hence, potential causes of further conflict in forestry development, both logging and HTI concessions are: 1) how the government manages equal land distribution to stakeholders (local communities and private company holders) and 2) how the government regulates provision of concessions for logging and HTI's holders and local communities. In order to improve conditions in Indonesia, the government should first revise the regulation of HTI concession holders and actively engage individual farmers and households as actors in plantation forestry and second, the government should commit to drastically reducing poverty in Indonesia, under the13%-14% (30.1 million) registered in 2009 (*Kompas*, 22 September, 2010). Therefore HTIs must be utilized as a strategic means of shifting people into better socio-economic

[1] Reformation era (1999-2009) is the period of government administration after Soeharto stepped down (in May 1998), governed by BJ. Habibie, Abdurrahman Wahid, Megawati, and Susilo Bambang Yudoyono (SBY), still defending that all forests belong to the state (interview with Department Forestry Officer (April 30, 2010).

[2] For further information, see Colchester, Marcus in 'Banking on Disaster: International Support for Transmigration', in *Ecologist*, Vol. 16, No.2/3, 1986, pp. 61-67.

conditions. The government should provide economic incentives to stakeholders (local farmers and private companies), through access to credit, encourage contract farming between farmers and the private sector and ensure guarantees in the market for timber by companies).

The government played a significant role in facilitating investment in **HTI** (*Industrial Timber Plantation*), issuing simplified procedures, economic incentives, friendly trade regulations, credit facilities, land for HTI plantations and reforestation policies. However, many companies are using these reforestation funds, while others, such as APP, Toba Pulp Lestari, Indah Kiat, Wira Karya Sakti and RAPP, are not using government reforestation funds, prefering to use their own funds for their timber plantations.

During Pelita I [3] (1969-1975) there were just six factories in operation, with total production reaching 9,000 tons annually. However, by 1987, there were 36 pulp and 41 paper factories, increasing again in the 1990s to 82 approved pulp and paper companies. In line with the development of pulp and paper factories, the demand for sustainable timber supply also grew. Therefore, the Ministry of Forestry began a **HTI** program in the 1980s with a regulation to plant 200,000 hectares of trees for every pulp and paper factory in order be able to provide their raw material needs. As a result, these HTI produce short fibers (*serat pendek*) as raw material for the pulp industry. However, long fibers (*serat panjang*) are still imported from overseas.

Paper highlights some issues: the government's policy of HTI; private company responses to this policy; the adoption of contract farming, sustainable forest management and the preservation of primary forest biodiversity and academic and NGO critiques concerning the ecological damage created by the APP mill in Riau province.

A.2. Government Policy on HTI, Ministry of Forestry

All forests in Indonesia belong to the state under the management of the Ministry of Forestry. According to the Ministry of Forestry, in 1999, Indonesia forest cover was 133.8 million hectares, consisting of: 1) production forest of 60.8 million hectares; 2) estate plantations of 22.7 million hectares; 3) protected forest of 30.5 million hectares and 4) conservation forest of 19.8 million hectares.[4]

[3] Pelita (Pembangunan Lima Tahun/Five Years Development). The Soeharto regime launched 'Program for Economic Development' continuously consistent for every five years during his presidency period from 1969-1998.

[4] For further information see (http://www.dephut.go.id).

The Ministry has the authority to classify the allocation of forest use and issues concessions for *industrial timber plantations* (**HTI**) on critical lands of production forests. According to Schlager and Ostrom (1992), **HPH** (*forest rights concessions*), called "access and withdrawal", manage timber concessions in production forests and are provided by the Department of Forestry, and only timber is allowed to be harvested. The government has the authority to withdraw HPH concessions, if HPH or HTI holders break regulations (Kartodihardjo, 2006: 65).

Based on regulation P.19/Menhut-II/2007, article 4 (requirements of applicants), four (4) categories of entities can apply for IUPHHK-HTI concessions[5]: 1) a cooperative; 2) Indonesian private sector; 3) state enterprise business (BUMN) and 4) district enterprise business (BUMD). The size of HTI concession areas is between 100-100,000 hectares. In practice, the majority of HTI concession holders are large companies, such as Sinarmas, Musi Hutan Persada, RAPP forestry, Inhutani[6], etc., who manage more than a hundred thousand heacters of HTI areaa each. According to the regulation (article 9), HTI holders of more than 10,000 hectares should perform an **AMDAL** analysis (*Analisis Mengenai Dampak Lingkungan*) (*environmental impact analysis*) and those of less than 10,000 hectares should perform a **UKL** analysis (*Upaya Kelola Lingkungan*) (*environmental management analysis*).

The Department of Forestry, in an effort to improve investment in the sector, provided easy access to timber concessions to the private sector. As a result, some companies manage large HTI concessions. For instance, Sinarmas manages more than 900,000 hectares in many districts in Indonesia and, in the initial establishment of some pulp and paper factories in Indonesia, the government also gave permissions to import the necessary equipment and tax exemption to the companies. The government and the private sector in Indonesia considered pulp and paper industries as strategic for future foreign exchange earnings and the Indonesian government considered the growth of these

[5] The abbreviation of IUPHHK-HTI is (*Izin Usaha Pemanfaatan Hasil Hutan Kayu-Hutan* Tanaman Industri) or (Timber Utilization Products Concession for Industrial Timber Plantation). The concession issued by Ministry of Forestry based on their requests and must fulfill several requirements such as administration and technical requirements. This regulation has been revised by regulation (P.11/Menhut-II/2008), but no fundamental changes are included).

[6] Inhutani is represented of State Forestry Enterprise. It categorized of **BUMN** (*Badan Usaha Milik Negara*) or (*State Enterprise Company*). Inhutani owns HPH and HTI's concession areas mostly located in outer island (Sumatra, Kalimantan, Sulawesi, Maluku and Papua). The management of Inhutani is the responsibility of the Ministry of Forestry.

industries as investment in the economic development of rural areas (interview, 30 April 2010).

In the 1980s, when HTI were initially launched, the government instigated a fund which was paid for by 40 percent of shares in the HTI. The fund was originally taken and collected from logging concession holders for reforestation. It aimed to actively motivate private companies to replant trees for their industry. However, since the reformation era, starting in 1998, the reforestation fund was returned to the government budget, but it was difficult for the Ministry of Forestry to request the funds from the Ministry of Finance. As a result, private companies were forced to borrow from banks or issue stocks on the stock exchange in order to fundraise to develop their industrial timber plantation (HTI).

As an illustration, the government had issued 600, 000 hectares of HTI from 1989-1995, 4.2 million hectares by 2001, 7.8 million hectares in 195 units of HTI for all of Indonesia's districts by 2009 and finally 8.7 million hectares of forest in 207 units by 2010[7], from a total of 60.8 million hectares of production forest (Table 4-1). The growth of HTI units was in accordance with the development of pulp and paper factories. For instance, in 1987 a total of 36 factories were registered, increasing to 41 in 1990, 57 in 1998 and 69 in 2008 (APKI, 2008).

Table 4-1 **Development of HTI areas and units from 1989-2009**

Year	Area (ha)	Units
1989	30,000	1
1989-1995	600,000	14
1996	1,742,509	24
1997	2,752,392	58
1998	3,877,897	89
1999	4,028,754	93
2000	4,133,391	95
2001	4,210,713	97
2002	4,236,225	100
2003	4,314,565	102
2004	5,491,170	111
2005	5,548,285	114
2006	6,616,400	133
2007	6,790,287	163
2008	6,835,687	165
2009	7,830,289	195
2010	8,763,555	207

[7] Based on interview with HTI officer held on April 30, 2010 in the Ministry of Forestry Office in Jakarta.

Source: Directorate General of Bina Produksi Hutan (*Timber Production Resources*) (2009), The Ministry of Forestry.

Table 4-2 **Annual Pulp Production and Wood Consumption of Indonesia's Pulp Industry 1988-2000, with Projection to 2005, 2010**

Year	Pulp Production (000 tpa)	Wood Consumption (000 m3)
1988	368	1,805
1989	461	2,261
1990	697	3,415
1991	850	4,165
1992	870	4,263
1993	900	4,410
1994	1,314	6,439
1995	2,022	9,908
1996	2,561	12,549
1997	3,048	14,984
1998	3,430	16,807
1999	3,400	16,660
2000	4,140	20,286
2005	5,790	28,945
2010	6,715	33,605

Source: Indonesian Pulp and Paper Association (APKI) for 1988-2000;
Jaakko Poyry (1998) for 2005-2010 Projections.

Table 4-3 **Private Companies planting in HTI in 2000 (ha)**

Company	Location	Land Reserved	Realization
Using Reforestation Fund			
Alas Helau	Aceh	96,899	24,630
Musi Hutan Persada	South Sumatra	296,000	205,084
Surya Hutan Jaya	East Kalimantan	183,300	125,642
Tanjung Redep	East Kalimantan	180,330	77,342
Finantara Intiga	West Kalimantan	299,700	33,268
Acindo Foresta	East Kalimantan	201,821	29,016
ITCI Hutani Manuggal	East Kalimantan	161,127	88,181
Indonusa Indrapuri	Aceh	111,000	30,600
Menara Hutan Buana	South Kalimantan	268,585	113,952
Non-Use of Reforestation Fund			
Toba Pulp Lestari	North Sumatra	269,060	49,117
Indah Kiat	Riau	299,975	181,313
Wira Karya Sakti	Jambi	172,978	84,703
Riau Andalan Pulp and Paper	Riau	159,500	101,327
Total		**2,700,675**	**1,114,175**

Source: Ministry of Forestry, Directorate General Bina Produksi Hutan (*Forest Production Management*), 2000; Data Consult Research Paper, 2000.

A.3. Regulation for providing raw material

The government initially issued a policy obliging every pulp and paper company to plant around 200,000-300,000 hectares of HTI. These investments for HTI usually reach ten percent (10%) of capital for every factory, worth US$1.5 billion, to establish a new factory. For example, the harvesting times of acacia mangium and eucalyptus trees are an estimated 6-7 years after planting and will produce 150-200 m3 of wood per hectare. Therefore, 25 m3 of wood is produced annually per hectare. If the area of HTI is 200,000 ha x 25 m3, then five million m3 (5,000,000 million m3) of wood can be produced. This is roughly equivalent to one million tons of pulp. There are many ways to obtain raw material: (1) the pulp and paper companies plant trees on their plantations (acacia mangium and eucalyptus pelita/EP05); (2) the companies conduct contract farming where company guarantees a market at harvest, provides fertilizer and seedlings for farmers and provides technical extension to farmers; (3) the companies buy logging waste and wood cuttings from land clearing, such as from oil palm and transmigration areas and (4) companies collect recycled paper.

The HTI plantations and other materials provide *short fibers* for the pulp industry. However, long fibers are still imported from overseas, because the material is not available in the domestic market. To illustrate, in 1993, pulp companies imported 705,700 tons of long fibers, producing 900,000 tons domestically. 123,600 tons of pulp was exported and domestic consumption was 1.4 million tons, rapidly increasing in 1998 to 4.3 million tons of pulp production, with 1.6 million tons exported, 839,510 tons imported and domestic consumption at 2.6 million tons (*Directory Indonesia Pulp and Paper, 1999*).

B. APP (Asia Pulp and Paper) Mill

B.1. Profile of Sinar Mas Group

Asia Pulp and Paper (APP) is one of holding companies of **Sinar Mas Group** (SMG). SMG was founded in 1962 by **Eka Tjipta Wijaya** (Chinese name is **Oey Ek Tjhong**), a prominent Indonesian-Chinese businessman. According to Globe Asia Magazine on May 31, 2010, Eka Tjipta Wijaya is the second richest man in Indonesia with personal assets of US$ 4 billion or IDR 40 trillion (*Kompas*, June 6, 2010). Annual sales of his companies total IDR 20.2 trillion (US$ 8.5 billion) with more than 200 affiliated companies (Sato 2003). Currently, SMG holds assets worth a total of over US$ 20 billion and 150,000 employees, recognized by *Forbes Magazine* as one of the largest consortiums in Indonesia. The core business of SMG consists of Sinarmas forestry, pulp and paper, agriculture and food processing, especially the palm oil estate called **Golden Agri Resources** (GAR), finance and real estate (http://www.appbrasil.com). This study focuses on two emerging industries under SMG, namely pulp and paper (APP) and Sinarmas forestry, mainly located in Riau province, Siak district.

B.1.1. Study Sites

Interviews were conducted with Department of Forestry officers, academics and NGOs, the Sinarmas plantation and APP mill executive directors, with observations of the plantation forestry program, research and development department and Arara Abadi Company (affiliation company with Sinarmas Forestry) cooperation with local farmers in Siak district, Riau (Figure 4-1).

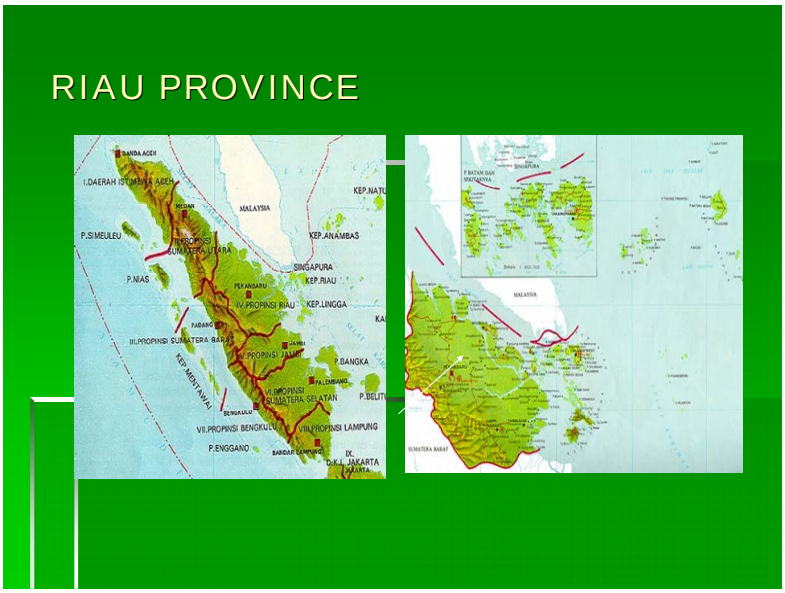

Figure 4-1 Riau province is located in Central Sumatera Island.
Siak district is where APP mill and most of the forest plantations of Sinarmas Forestry is located.

B.2. APP mill

B.2.1. The Company's Response to Government Policies

According to company officers, the climate for plantation forestry is conducive, because the company can obtain easy access to timber concessions in many districts. Although land conflict with local farmers still occurs in rural areas, to overcome these conflicts, the company conducts negotiations and shares production fees with local farmers for planting trees. (Interview, 29 April 2010).

APP began in 1972 with a small caustic soda manufacturing plant on the outskirts of Surabaya. In December 1976, Indah Kiat was established as a joint venture between Berkat Company, Chung Hwa Pulp Corporation and Yuen Foong Yu Paper Manufacturing Company Ltd from Taiwan. Its development Sinar Mas Group acquired 67% of Indah Kiat's total shares. Chung Hwa and Yen Foong Yu had 23% and 10% shares respectively. In December 1991, Indah Kiat acquired Sinar Dunia Makmur - a manufacturer of industrial paper located in Serang, with production capacity of 900 tons/day. In February 1994, Pindo Deli came the under control of APP (http://www.appbrasil.com).

Figure 4-2 Integrated company offices of Sinarmas Group
within APP Company located in Jakarta downtown.
The picture was taken in May, 2010.

APP's vision is to become the 21st century's number one, international standard, pulp and paper manufacturer. To fulfill this vision, APP has committed itself to being socially, environmentally and economically sustainable in all of its operations (APP 2007). APP's business philosophy is: "tradition and modernity go hand in hand" and is the key to the company's success (http://www.appbrasil.com).

APP consists of the top 5 leading pulp & paper companies in Indonesia.: Indah Kiat, Lontar Papyrus, Pindo Deli, Tjiwi Kimia, and Ekamas Fortuna (Table 4- 4) (Interview with APP officer, May 6, 2010). APP has its principal operations in Indonesia and China, with total assets of over US$10 billion and annual production capacity of over 13 million tones and over 930,000 plantations. Since 1992, APP China has been investing a huge amount of capital into the establishment of pulp and paper industries in the Yangtze and Pearl Delta and expanding, with the establishment joint ventures such as Ningbo-Zhonghua Paper, Gold Huasheng Paper, Gold Hong Ye Paper, Gold East Paper and Hainan Jinhai Pulp and Paper (Figure 4-3). The headquarters of APP China is in Shanghai. Gold East Paper and Ningbo Zhonghua Paper were ranked first and second respectively in the "Top 100 Most Prominent Chinese Enterprises" for 2000-2002(http://www.appbrasil.com). Currently APP China has shares in over 20 pulp and paper companies, as well as more than 20 forestry plantations in China with approximately 28,000 employees and a total asset value of US$8.9 billion (RMB 66 billion). The annual production reaches over 6.4 million tons. In 2006, APP China revenue was an estimated US$2.28 billion (RMB 21.4 billion). APP in Indonesia and China combined have an estimated total asset worth of over US$10 billion and an annual production capacity of over 13 million tons of pulp and over 700,000 hectares of man-made plantations.

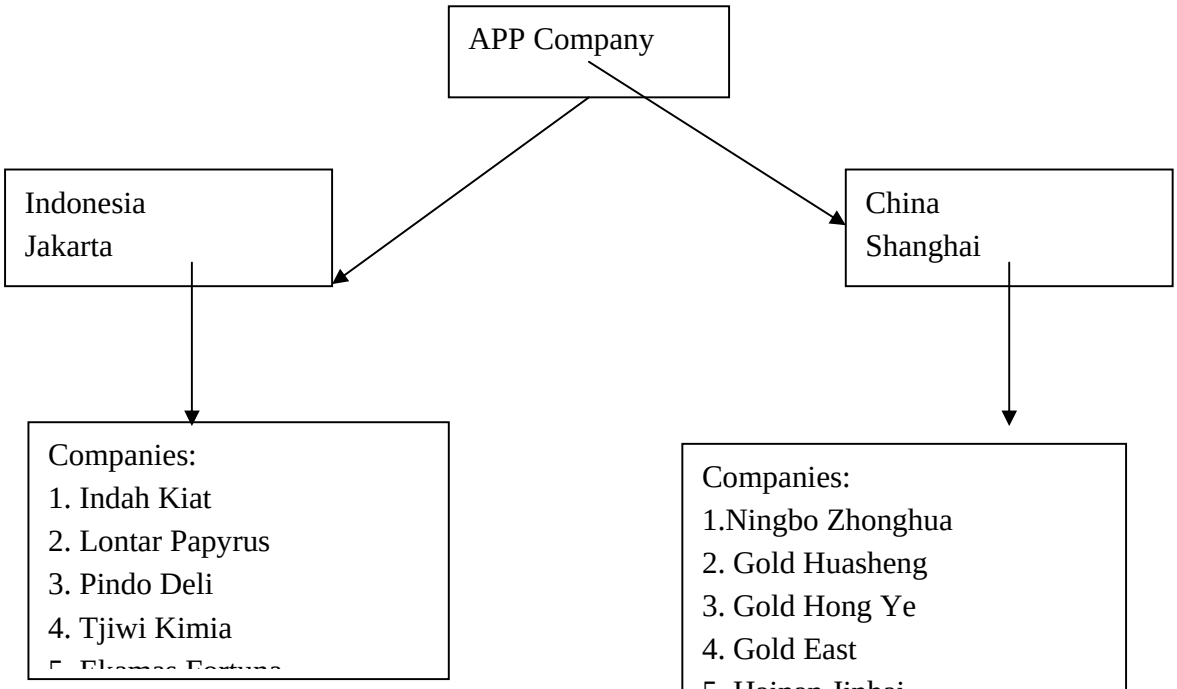

Figure 4-3 APP Company's in Indonesia and China

B. 2.2. Raw Materials

How does the company ensure constant timber supply?

The Sinarmas Forestry Company (SMF) partners with other stakeholders to provide timber for the mills. SMF affiliates with other companies owning private estate plantations, invites farmers to enter into contract farming and also contracts land from farmers. SMF provided nearly 60% of the total timber used in the production of APP paper products during 2007. Also, recycled paper from domestic and overseas sources reached 23% recycled at the mills and 10% from non-fiber fillers, with 10% purchased paper pulp - primarily softwood (APP 2007).

B.2.3. APP provides Capital & Technology

The initial establishment of APP was supported by the government through tax relief for imported machinery, while the company obtained credit from banks and the stock exchanges in Jakarta, Singapore, Tokyo and New York by selling shares to the public. As APP is a public company, responsible to shareholders, it is assessed by public accountants, with annual assessments and reports to shareholders. In terms of technology, APP's manufacturing facilities are from Scandinavia (Finland and Sweden), USA,

Canada and Japan. Wastewater management and air emissions and effluents at the mills meet all Indonesian and most international standards. The Company has competitive advantages with other foreign companies in terms of providing best quality seedlings that grow faster in tropical zones and labor costs are lower (*interview with APP Officer, May 6, 2010*). According to the 2008 annual report,, there was an "increase of 21.2% in consolidated net sales, from US$1,879.4 million in 2007 to US$2,277.0 million in 2008, [an] increase of 31.3% in consolidated operating income, from US$224.6 million in 2007 to US295.0 million in 2008 and [therefore an] increase of 120.5% in consolidated net income, from US$91.8 million in 2007 to US$202.4 million in 2008" (Indah Kiat 2008). This profit was mainly caused by increasing sales prices of the company's products and its total sales volume of pulp, enjoyed from the beginning of the year until the third quarter of 2008 (Indah Kiat 2008).

B.2.4. The Market of Products

The marketing division of APP actively engages in domestic as well as overseas marketing. Jakarta is appointed as the central office for APP marketing management over all of Indonesia's districts and provinces. APP has also established marketing in Singapore, the Middle East and Japan. The Company exports the majority of its products to different countries in Asia (Southeast Asia, Japan, China and Taiwan), the Middle East, Europe, United States, Australia and Africa. The greatest sales occurred in 2007 and 2008 consecutively, where the company received the **Primaniyarta Award** as one of the best exporters, provided by the National Export Development Bureau (*Badan Pengembangan Ekspor Nasional*) (Indah Kiat 2008). This success, according to an APP officer, was due to the professionalism and performance in improving products and quality services for customers, providing maximum benefits to the shareholders, while providing strong attention to environmental preservations.

B.2.5. APP and Sustainability

APP has a high commitment to sustainability. The company operates in compliance with the national laws on sustainability, fiber procurement, environmental protection and health and safety. In 1996, Pindo Deli, which is located in Banten province, became the first mill in Indonesia to receive ISO 14001 *Environmental Management System* (**EMS**) certification, an environmental compliance and wood supply traceability audit carried out by **AMEC Simons** Forest Industry Consulting in November 2001. The findings highlighted the group policy adopted by APP and Sinar Mas Group (SMG) that had resulted in the following: 1) implementation of comprehensive ISO 14001 environmental management systems for all mill and forestry companies, certified by internationally leading certification companies; 2) working within the Indonesian government forest law and Department of Forestry regulations concerning operational licenses for conversion of

land for industrial pulpwood plantations and legal documentation required for wood delivery 3) and commencement of implementation of forest management practices in accordance with *Forest Stewardship Council* (**FSC**) forest certification principles and criteria.[8]

The other two company's mills, located in Perawang - Riau and Serang - Banten respectively obtained ISO 14001 certification in 1997 and 2004. The company also has been **SMK3** (*Occupational Health and Safety*) certified (Indah Kiat 2008: 22). Another APP mill, Tjiwi Kimia in East Java, received Green Seal Environmental Certification in December 2009 for its recycled photocopy paper products under the category of Printing and Writing Paper.[9] A Green Seal is provided by the *American National Standard Institute* (**ANSI**), which is a US and Canada-based independent, non-profit organization with the aim of safeguarding the environment and transforming the marketplace by promoting the manufacture, purchase and use of environmentally responsible goods and services. Green Seal utilizes a life-cycle approach, which means it evaluates the product from raw material composition (forest plantation) processing through to the manufacture and end use of the product and then on to recycling and disposal. The final products can only become Green Seal certified after rigorous testing and scientific evaluations based on internationally accepted methodologies.

B.2.6. Production and Employees

APP production during 2007 was more than 7 million tons of pulp, paperboard, stationery, tissue products and packaging (Table 4-4). In total, this represented a 4-5% increase over production levels in 2005 and 2006. All of APP's mills are compliant with ISO 9001 Quality Management System (QMS) standards and with ISO 14001 Environmental Management System (EMS) standards.

In 2007, sales for the five APP companies were estimated at US$ 4.3 billion and employed more than 37,000 workers. The workers mostly come from Indonesia and other countries such as Singapore, Malaysia, Philippines, Finland, China and Taiwan. Meanwhile, in APP mill, most expertise comes from Taiwan, because Taiwan's company owns 23 percent of shares. Mill operations created in excess of 25,000 indirect (part time and temporary) jobs, and fiber suppliers under the flag of **Sinarmas Forestry** (*SMF*) utilized an estimated 6,900 employees and accounted for nearly 1,600 indirect jobs. Total

[8] For further information, see report of *APP Pulp Mills& Sinar Mas Group Forest Companies: Environmental Compliance & Wood Supply Audit*: Executive Summary. Reviewed by AMEC Simons Forest Industry Consulting, November 21, 2001.

[9] For further information please see Stakeholder update of APP (environment@app.co.id).

employment in APP mills and Sinarmas Forestry (SMF) reached more than 71,000 persons (Table 4-5) (APP 2007).

Table 4-4 **APP Mill Sales and Production in 2007**

Mill	Sales (US$ Thousands)	Production
Indah Kiat	1,856,307	3,806,366
Pindo Deli	1,262,999	1,693,243
Tjiwi Kimia	1,153,500	1,335,000
Ekamas Fortuna	69,453	178,923
TOTAL	**4,342,259**	**7,013,532**

Source: APP 2007.

Pindo Deli Pulp and Paper Mills owns 80% of Lontar Papyrus Pulp and Paper Industry. Sales for these entities are consolidated for reporting.

Table 4-5 **Distribution of APP Mill Employees, Mill Indirect Jobs and Fiber Supplies Jobs in 2007**

Location	M. Employee	Indirect Job	Sinarmas Forestry	Temporary Employee	Total
Java	26,877	6,041	0	0	32,918
Sumatra	10,712	19,501	5,909	735	36,857
Borneo	0	0	1,054	855	1,909
TOTAL	**37,589**	**25,542**	**6,963**	**1,590**	**71,684**

Source: APP 2007

Borneo refers to the Indonesian provinces of East and West Kalimantan.

M: Mill

B.3. Sinarmas Forestry Response to Government Policy

Sinarmas Forestry (SMF) conducts sustainable plantation forestry based on economic, social and ecologically feasibility in the field. SMF is one of the leading plantation managers in Indonesia. SMF manages timber plantation affiliations with many affiliated companies, such as Arara Abadi (Riau), Satria Perkasa (Riau), Bina Duta Laksana (Riau), Mutiara Sabuk Khatulistiwa (Riau), Wira Karya Abadi (Jambi) and Finantrata (in West Kalimantan). The aim of SMF is as follows: 1) the company is committed to implement sustainable forest management, feasible from a social, economic and environmental viewpoint; 2) the company provides sustainable raw material by plantations and contract farming and 3) the company provides best quality seedlings, such as eucalyptus pellita (EP05) and acacia crassicarpa, based on intensive research in the R&D center in Perawang.

The Sinarmas Forestry plantations consist of 961,000 hectares (40%) of conservation area, reserves for community use, indigenous species and infrastructure; 760,584 hectares of plantations (32%) and the rest either degraded forest (151,439 hectares) or bare land, scrub lands, waste lands or fire damaged areas awaiting reforestation (514,624 hectares).

Table 4-6 **Sinarmas Forestry Concessions area of December 31, 2007 (in hectares)**

Island	Total Area	Conservation	Planted	Degraded	Fire damaged
Sumatra	1,865,142	655,142	639,550	148,936	412,220
Kalimantan	522,620	296,679	121,034	2,503	102,404
Total	**2,388,468**	**961,821**	**760,584**	**151,439**	**514,624**

Source: APP 2007.

A Sinarmas forestry officer mentioned that the plantations grew to 930,301 hectares by 2009 in order be able to provide timber for APP mills (Table 4-7). The forestry industries, which were initially categorized as unstrategic, became strategic after the signing of an EPA (Economic Partnership Agreement) between Indonesia and Japan in 2007, as pulp and paper, plywood and furniture industries could obtain much more foreign exchange earnings and produce more jobs than before.[10] As an illustration, Sinarmas Forestry in Riau Province absorbed 254,289 workers, produced a net income of IDR 11.5 trillion (6.97% from total Riau's income), IDR 92.6 billion in government taxes and export earnings of US$837.4 million (MB-IPB 2008).

Table 4-7 **Accumulative Size of SMF plantations until September 2009**

Province	**Width (ha)**
Riau	311,781
Jambi	197,176
South Sumatra	255,408
West Kalimantan	55,329
East Kalimantan	110,607
Total	**930,301**

Source: Sinarmas Company, 2009.

Note: total amount of area 930,301 hectares, includes all partnerships (contract farming with farmers) with the company.

B. 3.1. Sustainable Forest Management

[10] An interview with Sinarmas forestry Executive Director, on April 29, 2010 in Jakarta, whereby the argument made was that they needed to extend the area of timber concession in order be able to export wood-chip to overseas. However, when cross-checkung with a Ministry of Forestry officer, this was refuted, because concessions had been issued for 8.7 million hectares, but planting of trees had occurred in less than half by 2010.

SMF is committed to three goals in it's vision of sustainable forestry: 1) to practice sustainable fiber productivity (growth rate and fiber yield); 2) to provide competitive fiber cost and 3) to use methods that are environmentally acceptable and socially compatible. To achieve these goals, Sinarmas Forestry is working with LEI (*Lembaga Ecolabel Indonesia*) or (*Ecolabel Institute of Indonesia*), which has recently adopted standards for both a regular and phased approach to fully sustainable forest management certification. LEI first produced its principles, criteria and indicators in 1998, based on the International Tropical Timber Organization (ITTO) Guidelines for Sustainable Forest Management and has developed certification standards for industrial plantations in Indonesia, which were implemented in 2004. Currently LEI Standard 5000-2 is the only credible national forest certification scheme. Because SMF and APP both agreed to ensure that all timber brought into its two pulp mills in Perawang and Jambi are verified legal and of non-controversial origin, system performance and improvements are verified regularly through third-party auditors, such as LEI.

B.3.2. SMF and conservation areas

Biodiversity should be maintained and developed in conservation forests. The commitment of Sinarmas to conservation is realized through practicing sustainable forest management, which highlights ecological issues. According to Sinarmas, buyers from Europe, Japan and the USA have misconceptions about the pulp and paper industry in Asia, especially Indonesia.[11] Sinarmas has a high commitment to protecting biodiversity and endangered species in Indonesia. All initiatives, according to a Sinarmas officer, are co-managed with other stakeholders, such as academics and government institutions, local and international NGOs and other private sector organizations.

Arara Abadi, one of the affiliated companies of Sinarmas Forestry (SMF), made significant investment in conserving species and maintaining forest diversity through actively engaging: Arboretum in Rasau Kuning sub district; the Giam Siak Kecil - Bukit Batu Biosphere Reserve in Siak district; the Taman Raja Conservation Area in Jambi province; the Senepis Buluhala Tiger Sanctuary in Riau and the Kutai Orangutan Conservation Group in East Kalimantan.

The SMF established the **Arboretum Conservation** area in lowland forest in 1990s and manages about 173 hectares in Rasau Kuning Minas sub-district, Siak district. The aims of the arboretum are: 1) conservation of flora and fauna species; 2) to maintain elephant habitat and breeding; 3) to maintain the watershed system; 4) to keep exotic local species

[11] For further information see Stakeholder Update on "APP Surprises the Heart of Europe with Nature Conservation Projects", in (environment@app.co.id).

and 5) to develop medicinal plants (interview with SMF officer, May 2, 2010). In addition, the arboretum implements joint research studies with universities, research institutes and the forest department as an educational, research and recreational center. According to an arboretum officer, “we have built various nature trails with most of the trees labeled with identification tags both in local and botanical names. In terms of flora, there are 135 species of flowering plants and 16 species of palm found here.” The endemic flora species growing in this area are: Shorea sumatrana (Meranti balau), Shorea leprosula (Meranti pirang), Shorea parvifolia (Meranti bunga) (Figure 4-4), Dipterocarpus crintus (Keruing Bulu), Dryobalanops oblongfolia (Kapur), Stryax benzoin (Kemenyan), Aqualaria species (Gaharu), Dyera costulata (Jelutung), Macaranga spp. (Mahang), Endospermum malacensis (Sondok-Sendok (Figure 4-5), Durio carinatus (Durian hutan), Kompasia spp. (Kempas), Ganosty macophyllus (Ramin) and Tetramerista glaba (Punak). The arboretum also holds 26 species of animals comprising of mammals, reptiles, birds and fish. The large endangered mammals found are Elephas maximus sumatranus (Gajah Sumatera), Helarctos malayanus (Beruang Madu), Maccaca sp (Kera ekor panjang), Hylobates agilis (Siamang), and Sus scrova (Babi hutan) and Tupaia splendidula (Tupai). Birds categorized as endangered are: Bucheros rhinoceros (Rangkong), Ichthyopage ichtyaetus (Elang), Alcedo (Raja Udang), Gracula R (Burung Beo), Dicrurus A (Srigunting) and Nectarinia (Burung Madu). Endangered reptilian species such as Phyton rebailatus (Ular Sawah/Phyton), Chendopyton leichardii (Ular Hijau), Naja sp (Ular Kobra), Salvator veranus (Biawak) and Chitra indica (Labi-Labi/Bulus) can also be found in this area.

Figure 4-4 **Shorea leprosula (Meranti Pirang) in Arboretum’s collection**

Figure 4-5 **Endospermum malacensis (Sendok-Sendok tree) in Arboretum.**

The **Giam Siak Kecil-Bukit Batu (GSK-BB) Biosphere reserve was established** in 2009. The core reserve zone of 179,000 hectares consists of natural forest and a peat lake, designated as a Biosphere Reserve by UNESCO in 2009. Some core stakeholders are the *Forestry Agencies* (Province and District Level), the *Lembaga Ilmu Pengetahuan Indonesia* (LIPI/Indonesian Institute of Sciences), *Balai Besar Konservasi Sumber Daya Alam* (BKSDA/the Natural Resources Conservation Agency (Department of Forestry), the Center for Biodiversity Conservation (University of Riau) and APP and SMF (APP 2007). The GSK-BB Biosphere reserve encompasses two wild life reserves of nearly

Dyera costulata
(Jelutung Tree)

100,000 hectares and SMF, together with its partners, has contributed more than 72,000 hectares from its production forest concessions in Riau. These locations will serve as an ecological corridor between two wildlife reserves. In 2007, Arara Abadi Company, in cooperation with LIPI, funded a US$24,500 for biodiversity study to create baseline data for an initial management plan. Arara Abadi also funded a US$34,000 socio-economic study, also conducted by LIPI during 2007. According to research findings there are at least 195 species of plants (of which 173 are species of woody plants), 162 species of moths, 150 species of birds, 30 species of fish, 10 species of mammals and 8 species of reptiles. SMF, in 2010, issued a budget of IDR500 billion for the management of this reserve and is working in partnership with other stakeholders, especially the Riau provincial governor, to develop landscape level management and conserve biodiversity (Interview with SMF Officer, February 11, 2010).

Taman Raja Conservation Area in Jambi Province is estimated to be more than 16,400 hectares, but excludes about 6,800 hectares inhabited by several local communities and 3,600 hectares already deforested by illegal logging prior to the granting of the concession. The remaining 6,000 hectares of natural forest is a preserve for biodiversity. SMF invited other stakeholders with collaborative agreements, including APP, the Sumatran Tiger Foundation, the Community Alliance for Pulp and Paper Advocacy (CAPPA), the Forum Komunikasi daerah (FKD) and The Natural Resources Conservation Agency (BKSD). SMF provided US$ 17,059 during 2007 to develop management planning frameworks and for a Social and Biological Survey of the proposed reserve. The list of IUCN endangered species found in this area include: the Malayan Sun Bear (Helarctos malayanus), Clouded Leopard (neofelis nebulosa), Malayan Pangolin (Manis javanica), Pig tailed Macaque (Macaca nemestrina), Hornbill Rhinoceros (Buceros rhinoceros), Great Honrbill (Buceros bicornis) and the Great Agus (Argusianus argus) (APP 2007).

Finally, **Senepis Buluhan Tiger Sanctuary,** with a total area of about 106,000 hectares, is aimed at protecting wildlife in a production forest that still supports a viable population of the Sumatran Tiger. APP and SMF provided US$ 26,800 in 2007 for the development of an initial management plan, aimed at enhancing the remaining tiger habitat. An additional US$ 5,100 for operational costs was provided by SMF for the working group, comprising of Yayasan Penyelamatan dan Konservasi Harimau Sumatra (Foundation of Sumatran Tiger Conservation and Protection), the Riau Province Forestry Service, BKSDA, the Forestry Service of Rokan Hilir and Dumai Regencies, the Wildlife Conservation Society-Indonesia, Arara Abadi Company, Diamond Raya Company and Suntara Gajapati (APP 2007). Jusuf Anwar, Ambassador of the Republic of Indonesia for Japan, on Independence Day celebrations on August 17 in Tokyo, said “Indonesia is

firmly committed to their preservation through a mix of strategic policy, regulation and action such as relocating and rehabilitating tigers back into their natural habitat" (*The Japan Times*, August 17, 2010). The plan targets to preserve habitat requirements of the Sumatran Tiger, put forth practical actions that will be required to ensure the long-term viability of the current tiger population and identify risks and opportunities at the landscape level.

B.3.3. Research and Development (R&D)

The R&D division of Arara Abadi was established in 1988 in Perawang, Riau Province. The mission of the R&D is to improve plantation productivity through development and application of leading technologies. The budget allocated to develop R&D was IDR 40 billion in the 1990s, declining to IDR 20 billion in the 2000s. The R&D division is comprised of 8 senior researchers, 44 researchers, 118 assistant researchers, 26 support staffs and 400 field workers (Interview, May 4, 2010). R&D encourages producing best quality seedlings in the following species: acacia mangium, A. crassicarpa, A. hybrids, eucalyptus pellita, E. hybrids, acacia auriculiformis, A. aulacocarpa, E. urophylla and Gmelina arborea (Table 4-6). R&D also conducts research on the following local species: Shorea spp. (Meranti), Palaquium sp. (Nyatoh), Calophyllum sp. (Bintangur) and Laphopetalum sp. (Perupuk).

Table 4-6 Tree Improvement Program

No	Species	No of Trials	No of Clones
1	A.mangium	34	1,113
2	A. crassicarpa	7	327
3	A. hybrid	4	120
4	E. pellita	12	169
5	E.Urophylla	3	28
6	E.hybrid	2	139
	Total	**62**	**1,896**

Source:http://www.pdf4free.com (Google: Sinarmas Forestry).

In 1993, the company carried out research in cloning to develop eucalyptus pellita, succeeding in creating the EP05. In 2000, most plantations have been substituted with EP05 (Figure 4-6). The company attained property rights (*Certificate for Plant variety Protection*) for EP05 from the Department of Agriculture, Center for Plant Varieties Protection, on January 5, 2007 and subsequently developed 7 million seedlings from 2007-2009. 1,666 EP05 are planted per hectare, reaching a size of 270 m3 after 6 years. Meanwhile, acacia crassicarpa grows to 150 m3 with a density of 2,000 seedlings per hectare. To produce 1 ton of pulp from EP05 we need 4.15 m3 of timber, but acacia mangium needs to supply 4.3 m3.

The R&D division is constantly trying to improve their seedlings, and have since produced EP 499, EP 15147 and EP 5193 (Figure 4-7). These new seedlings have been trialed and performed well (Interview, May 4, 2010).

Figure 4-6 **Eucalyptus pellita (EP05) in R&D location in Perawang**

Figure 4-7 **EP 15147 tree species mostly develop by SMF in 2010**

The R&D division collaborates with domestic and foreign research institutes in producing better seedlings, such as the Center for Research for Forest Biotechnology and Tree Improvement Research and Development, Jogyakarta, Bapedal (Environmental Assessment Board) in Riau and Jakarta and the Research and Development Center of Forest and Nature Conservation, Department of Forestry or Jaako Proyri (1991-1997), Beijing University (1994), Michigan Technology University (1995-1998), Taiwan Chung Hsing University (1997-2000) and the Chinese Academy of Forestry (1998). (http://www.pdf4free.com).

B.4 Local Farmers response to Plantations

B.4.1. Partnership Model: Village Cooperatives

The existence of a company in a district should benefit the communities in employment opportunities and connection to markets. The company has a cooperative sector program (*Koperasi Desa*), such as the one called 'Bunut Abadi', which was established in 2002 by villagers of Bunut village, Pinang Sebatang, Tualang sub-district, Siak district. The Bunut Abadi Cooperative conducts a *Eucalyptus Nursery Program* in partnership with Arara Abadi to provide eucalyptus seedlings to the company (APP 2007:112). The cooperative was established in this village because it directly borders with a plantation area. SMF allocated about IDR 4.3 billion for its CD program in 2008 and IDR 3.9 billion in 2009. The CD program's budget of IDR 3.9 billion in 2009 covered 9 districts in Riau Province: Siak, Pelalawan, Bengkalis, Kampar, Dumai, Rokan Hilir, Rokan Hulu, Indragiri Hulu and Indragiri Hilir. The CD program works in five main areas: education, economy, social, religious activities and infrastructure. Siak District receives more of the budget allocation than any other district, receiving IDR 1.2 billion in 2008 and IDR 1.5 billion in 2009 (Table 4-8), because this district is where the mill, factory and staff accommodations are located. The cooperative of Bunut Abadi was categorized as an economic activity (Interview with Arara Abadi Officer, May 5, 2010).

Table 4-8 **Realization of Community Development SMF 2009 in Siak District**

Field Activities	Siak	Pelawan	Bengkalis
Education	257,550,000	267,210,000	177,140,000
Economics	863,778,588	34,900,000	175,843,988
Socio-Cultural	401,825,590	126,085,000	181,927,970
Religious	4,500,000	23,300,000	43,000,000
Infrastructure	15,640,000	687,337,069	142,973,583
Total	**1,543,294,178**	**1,138,832,069**	**720,885,541**

Source: Sinarmas Forestry, CD Officer, 2009.

Its development in 2004 the cooperative with the guidance, to guarantee market and credit fund Rp.30 million rupiah of Arara Abadi (Figure 4-8) The Company eventually led to cooperate with Bunut Abadi cooperative to establish nursery project to produce quality seedling such as Acacia crassicarpa reaches 80 percent and Acacia mangium reaches 20 percent.

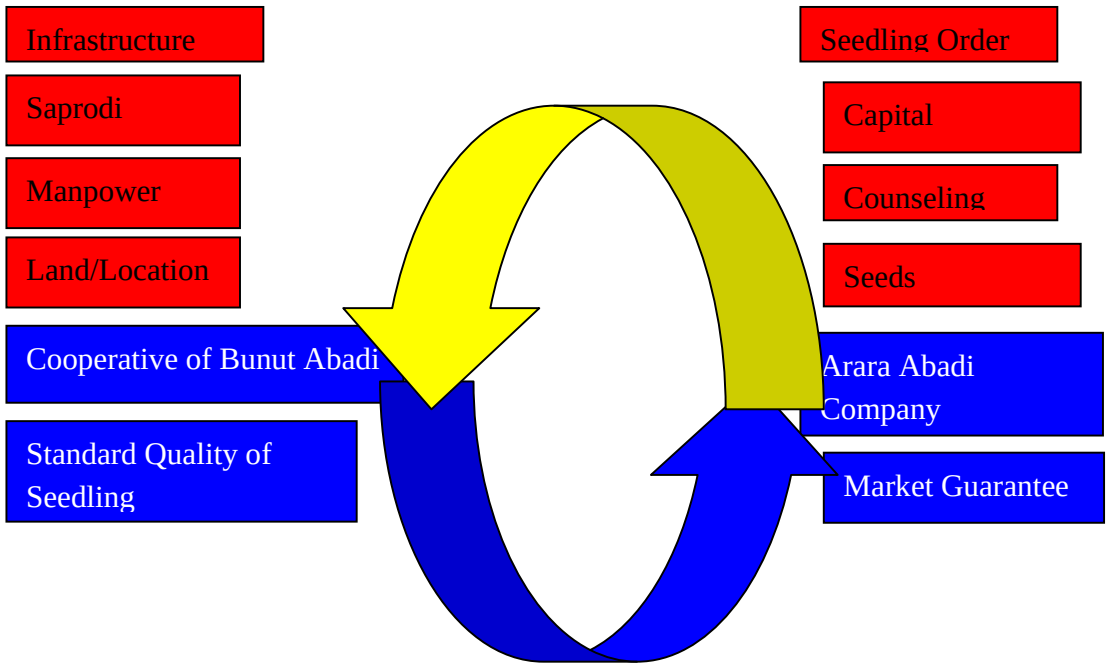

Figure 4-8 **Mutual cooperation and partnership between the cooperative and the company**
Source: Bunut Abadi Cooperative Booklet (2009)

According to an Arara Abadi nursery unit officer, acacia crasicarpa, produced by the Bunut Abadi cooperative, fully meets the quality standards set by the company and they hold a contract with the cooperative to supply seedlings. In 2005, they started with a monthly request of 100,000 plants, rising to 650,000 plants from 2006-2007 and again to 1,000,000 plants monthly from 2008-2009 (Interview with Bunut Abadi officer, May 4, 2010). The estimated costs per plant are IDR 175, if the company provides fertilizer and *polibags*[12], but through a different scheme, the estimated cost per plant is IDR 225, where all fertilizer and polibags are provided by Bunut Abadi cooperative itself. According to

[12] Polibags are used in developing nursery projects for holding individual seedlings.

the 2008 financial report, the cooperative gained IDR 39 million in profit, with total assets of IDR 600 million and sales (*income*) of plants of IDR 882 million (Figure 4-9).

Cooperative membership in 2008 reached 183 persons, consisting of 123 males and 60 females. Members have to pay IDR 75,000 per person for membership and IDR 5,000 a month. The cooperative has extended business to include a shop, transportation (2 small trucks) and drill machines for making fertilizer. Based on this performance, Arara Abadi expanded the capital to IDR 75 million, to be paid back within 2 years.

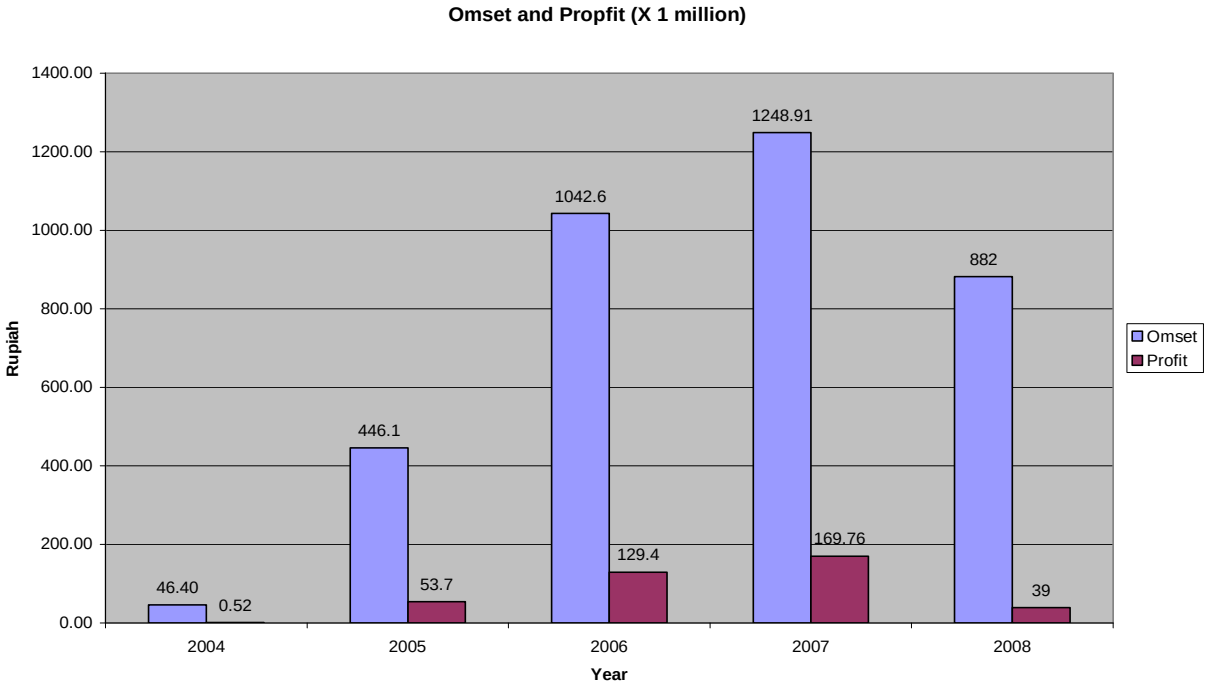

Figure 4-9 **Omset (Income) and Profit of Bunut Abadi Cooperative** (**X 1,000,000**)
Source: Bunut Abadi Cooperative (2009)

Job creation

The cooperative provided jobs in rural communities, mostly for the unemployed in Pinang Sebatang village (10 persons in 2004, 51 in 2005, 82 in 2007, falling to 62 persons in 2008). Salaries are based on total achievement of work per one unit plant - IDR 42-45, but usually they work in groups consisting of 10-15 persons. One group can collect 1,000 plants a day, getting around IDR 42,000 - IDR 45,000. The total monthly income averages at IDR 1 million/per person.

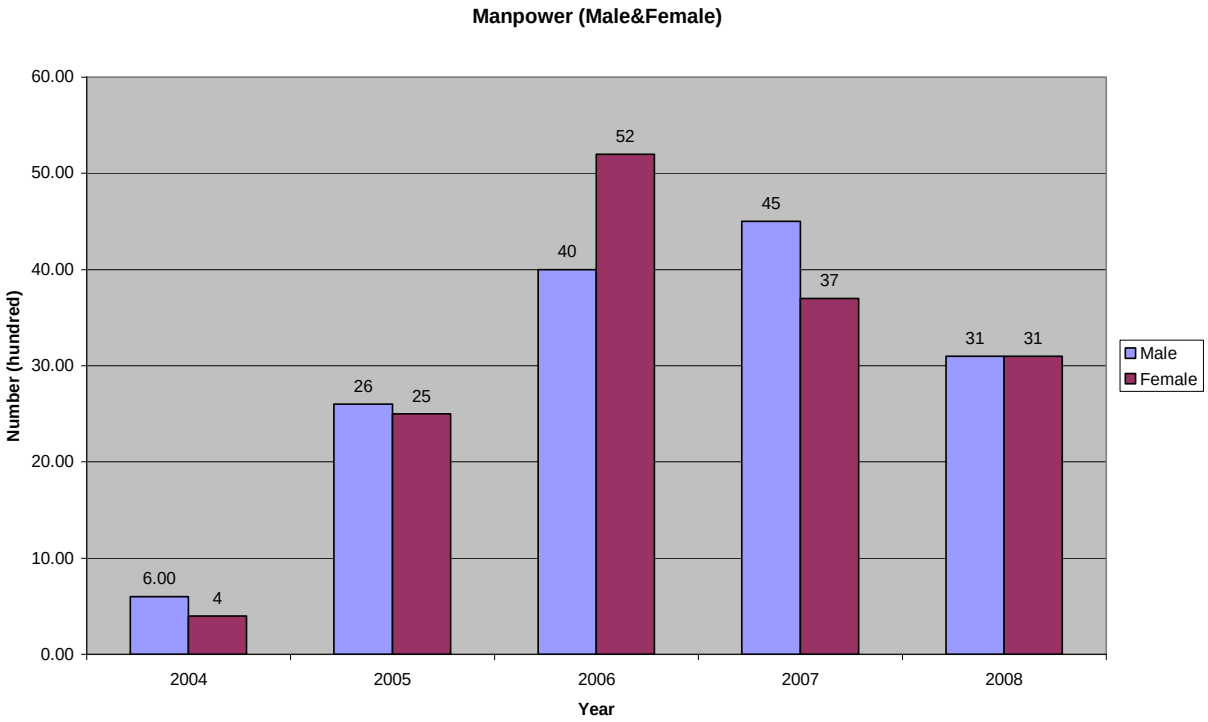

Figure 4-10 **Manpower absorbed by Bunut Abadi Cooperative**
Source: Bunut Abadi Cooperative (2009)

Achievements

Bunut Abadi cooperative officers and its members work hard in managing the cooperative with intensive guidance and counseling from Arara Abadi officers. The cooperative was deemed second best management performance in 2005 by the local Siak District and in 2006 and 2007, it was deemed best performer in Siak District. The Ministry of Cooperative and Small Business Holders in October 2009 selected the cooperative as winner for best performance, based on their accounting reports, in Samarinda, East Kalimantan.

B.4.2. Community Development on Economic sector

In 2007 Arara Abadi established a Community Training Center in Pelalawan district. The Company provided US$ 61,207 for the construction of the training center and other facilities. The Center provides local people with training in cultivation with thirteen types of fruiting plants and trees, harvesting and marketing of food crops, as well as in aquaculture techniques. The Center's orchard largely produces quality seeds that are distributed to the 520 farmers living near Arara Abadi area (APP 2007: 112).

B.4.3. From Conflict to Partnership: Farmers and SMF

The issue began in 2000 with land conflict concerning about 854 hectares in Kuala Gasib village, Tualang Sub-district, Siak District. Arara Abadi had received a HTI concession from the Ministry of Forestry No.743/Kpts-II/1996 on November 25, 1996, but the land was occupied by local farmers.[13] To overcome the land dispute, the company and farmers agreed to utilize the land as an industrial timber plantation (HTI), planted with acacia crassicarpa, whereby farmers would receive compensation and production fees of about IDR 10,000/ton when harvested by the company. Arara Abadi initially provided IDR 40 million as requested by the head of Kuala Gasib village on December 3, 2002. The money would be repaid through the compensation and production fees paid each year to the village. After 7 years, in August 2009, Arara Abadi made the first payment Of IDR 381,007,000 to the villagers of Kuala Gasib in a ceremony held in Aston Hotel, Pekanbaru on August 25, 2009, attended by the head of Kuala Gasib village, the head of the informal village leaders, other villagers and SMF and Arara Abadi officers. Nazaruddin, as public affairs officer of Arara Abadi, said "a social partnership through close relations between the company and farmers is the best method of cooperation in the future". Meanwhile, Basri Hasan, head of Kuala Gasib village, commented that "a good relationship between the company and the people must be defended and improved, because a poor village such as Kuala Gasib needs the cooperation of the company to share in construction". The amount of money based on the calculation of tree production reached 38,100 tonnes from 515 hectares at harvest. The remaining 178 hectares was still not harvested yet, planned to be harvested in 2011 (Interview with Arara Abadi officer, May 5, 2010).

[13] For further information, see "Agreement letter between Arara Abadi Company with Kuala Gasib villagers, Tualang sub-district, Siak district about "Agreement to Overcome Land Occupation", Number 001/NKB/AA-KG/XII/2002.

C. NGO Critiques concerning Ecological Damages

Since the 1980s, several NGOs have been active in promoting more environment-friendly policies and campaigning for sustainable tropical forests and timber practices in order to stop global warming. This paper looks at how NGOs act in discussions on climate change, protection of forests, by adopting case studies of peat swamp forests in Kampar Peninsula, deforestation, land disputes and the impact of the industry on forest fires, flood, soil erosion and more.

C.1 Climate Change

Climate change is now widely accepted to be the greatest threat humanity has ever faced. Southeast Asia is one of the regions most vulnerable to the impacts of climate change, according to the *Asian Development Bank* (**ADB)**. It warns that the poor-and especially women-are the most threatened. Approximately 2.2 billion Asians are subsistence farmers; they are already experiencing falling crop yields caused by floods, droughts, soil erosion and other factors.
(http://www.greenpeace.org/international/press/reports/forests_for_climate_factsheet)

The ADB has highlighted the driving factors as: the burning of fossil fuels-such as oil, coal, and gas and forest fires are causing global warming, while *deforestation* is considered to contribute to about a fifth of global greenhouse gas emissions. At the United Nations Climate Summit in Copenhagen in December 2009 there was agreement among advanced and developing countries on how to significantly reduce gas emission from both fossil fuels and deforestation. The **REDD** (*Reduce Emissions from forest Destruction and Degradation*) concept was one of the options chosen to reduce gas emission and they agreed on master plan to end global *deforestation* before 2020. Advanced countries have committed to provide 30 billion Euros annually to a forest fund to boost reforestation and afforestation in developing countries with tropical forests, such as Brazil, the Democratic of Congo and Indonesia for them to guarantee to conduct forest conservation and protect biodiversity and indigenous peoples' rights.

From his speech on last the Copenhagen meeting, in December 2009, President Susilo Bambang Yudoyono (SBY) said that Indonesia was targeting a glass house emission reduction of 26% by 2020. Even with the fund from international donor institutions, Indonesia could improve this target to 41%.[14] The commitment from Indonesia exceeds the developed countries' commitment, raising the questions: how will it implement the

[14] For further information see *Warta: Forum Komunikasi Kehutanan Masyarakat* (Social Forestry Communication Forum), February edition, 2010, pp. 14.

2020 target in annual activities and where does it start so that the commitment can be realized? A 'roadmap' must be designed, which contains strategic policy and procedures to guide this process, with measurable progress of **REDD** implementation in Indonesia.

C.2 Protecting Forests Stops Climate Change

According to FAO (2005), 'more than one million hectares of forest, mostly located in tropical rainforest, is destroyed every month-that is an area of forest size of a football pitch every two seconds' (www.fao.org/forestry/fra/fra2005/en/). Forests and their soils are huge carbon stores; they contain nearly 300 billion tones of carbon. That is 40 times more carbon than we currently emit to the atmosphere every year (Solomon S *et.al*., 2007). Hence, deforestation and forests degradation drive 'climate change' in two ways. Firstly, land clearing and burning of forests releases gas (carbon dioxide) into the atmosphere. Secondly, forests, which absorb carbon dioxide, decline. Indonesia was categorized as having 'one of the fastest rates of deforestation' (FAO 2005), emitting so much CO2 that Indonesia is the third largest climate polluter, after China and the United States.[15]

C.3 The Case of Land Clearing for HTI

Walhi criticizes natural forest conversion for industrial timber plantations (HTI) carried out by big companies such as Sinarmas, RAPP and Musi Hutan Persada. According to Deddy Ratih, a Walhi officer, when land clearing for plantations occurs, forest soil becomes dry and there is a loss of biodiversity (interview, April 29, 2010). HTI and natural forests have totally different functions. The natural forest has a complex ecosystem, which monoculture plantations do not. For example, natural forests are self-regenerating: fertilizing the soil, conserving water and producing a microclimate, creating energy and sheltering fauna and flora. Therefore, sustainable forest management is an ecological balance within a natural forest, while HTI areas are one type of tree only and it is more appropriate to call them "**Kebun Kayu Komersial**" (*Commercial Trees Garden*) than forest. HTI can have a negative impact on ecosystems, because they reduce soil fertility, consume much water and encourage loss of biodiversity in flora as well as fauna. However, the greatest difficulty, according to Walhi investigations, is that almost all HTI areas are located in previously production forests, which were intended for reforestation programs.

C.4 The Case of Peat Swamp Land

[15] See WRI 2008. Climate Analysis Indicators Tool (CAIT) Version 6.0 (Washington, DC: World Resources Institute) (http://cait.wri.org).

The largest contribution of CO2 is from illegal logging in conservation and protected forests, land clearing in natural forests in *peat swamps* and conversion of forests to palm oil and HTI. For example, land clearing of around 13,000 hectares of natural forest in peat swamp in Kampar conducted by APP affiliated companies such as Bina Duta Laksana (PT BDL) and Mutiara Sabuk Khatulistiwa (PT MSK) in 2004. According to **Eyes on the Forest** (EoF)[16], natural forest clearance by both APP affiliated companies in Kerumutan forest in Kampar District are legally questionable based upon the following laws and regulations:

1) Forest was cleared on peat with a depth of more than 3 meters deep which is not allowed to be converted into plantations;
2) Natural forest with a dense canopy cover was cleared, which is not allowed to be converted into plantations;
3) The majority of the concessions overlap with national Protected Areas and
4) Some of the concessions overlap with provincial Protected Areas.[17]

BDL Company is one of 14 companies that the police carried out an investigation into in 2007-2008 for alleged involvement in the spread of illegal logging by the pulp and paper industry in Riau. The government set up an inter-department team and recommended that 14 companies should be processed thoroughly by the law. Strong statements by President Susilo Bambang Yudhoyono have been made, ordering the presidential *Judicial Mafia Eradication Task Force* to probe illegal logging practices, including that of BDL. Kampar peninsula registered only around 400,000 forests covered in 2007, which was 700,000 hectares in 2002. NGOs and the government of Indonesia consider that Kampar peninsula is a conservation site and must be protected. A local NGO, **Jikalahari,** signed an MoU with the Siak and Pelawan District administrations at a side event of the Bali COP last year (http://jikalahari.org/index). Meanwhile, WWF included these forests in Sundaland Rivers and Swamps ecosystem of its Global 200 priority eco-regions and proposed to the Ministry of Forestry to protect Kampar *(http://www.panda.org)* (interview with WWF officer, April 30, 2010). **WWF** findings indicate that tigers have rapidly declined to only number 60 in 2009, from an estimated 400 in 2002. Other NGOs such as Wetlands International and Bird Life International have designated it as an important bird area and identified Kampar as one of the highest priority areas for inclusion in the protected area network (Zieren, *at.al*., 1994). According to **Greenpeace,** the government of Indonesia has strict laws to protect these carbon-rich peat areas in

[16] Actually Eyes of the Forest (EoF) is a coalition on Environmental NGOs in Riau, Sumatra. It consists of: Friends of the Earth Riau Office, Jikalahari "Riau Forest Rescue Network", WWF-Indonesia and Riau Program. See Investigated Report EoF December 2009, published in April 2010.

[17] *Ibid.*

Kampar, but it fails to enforce the law and even continues to give permission to companies to destroy peat land.[18] Under Indonesian law, it is prohibited to develop or clear the forest and to drain any peat if it is deeper than three meters.[19] While over 80% of Kampar peat is deeper than that, companies are still granted licenses for this area. Therefore, there is obvious collusion and corruption occurring on the issuing of concessions for peat lands between the Department of Forestry, head of the district and private companies. Only one person has been brought down for this: Azmun Jaafar, head of Pelalawan District, issued licenses for peat land to Putra Riau Perkasa Company and was subsequently jailed by the Corruption Eradication Commission (KPK) due to allegation of issuing logging licenses against existing laws.[20]

C.5. Impact on Kampar Peat Ecosystem and Global Climate

Construction of new roads, canals on both sides, and all the natural forest clearance involved has drained water from the peat soil and caused serious levels of CO2 emissions. According to EoF, efforts have not been made by APP's affiliates to minimize the destructive hydrological impacts of their canals. In GPS location 2, the investigators calculated the canal width to be around 6 meters and estimated the depth to be 7 meters. The water surface was around 2 meters from the top of peat banks. This condition could cause enormous CO2 emissions from decomposition of dried peat.

The report by WWF-Indonesia and peat scientists [21] concluded that average annual CO2 emissions from deforestation, forest degradation and associated peat decomposition and fires in Riau between 1990-2007 was equal to 122% of the Netherlands total CO2 and annual emissions, 58% that Australia, 39% that of the UK and 26% that of Germany. EoF has called on APP to stop further clearance of natural forest in the Kampar peninsula due to its negative impacts on *climate change*, threat to critically endangered Sumatran tigers and questionable legality of their activities. EoF has called on APP to immediately: 1) dismantle the road to prevent illegal logging, encroachment and poaching from entering the heart of Kampar; 2) dismantle the drainage canals to stop further draining of Kampar

[18] For further information see Greenpeace comments on "Indonesian's Rainforests and the Climate Crisis". Human Impact Report, Climate Change: Global Humanitarian Forum, Geneva. The Anatomy of a Silent Crisis, May 2009 (www.ghfgeneva.org/Portals/O/pdfs/human_impact_report.pdf).

[19] See Ministerial Decree 14/Permentan/PL No. 110/2/2009.

[20] *Tribun Pekanbaru*, published in Saturday 15 December 2007, pp.1.

[21] Uryu *et.al*. 2008. Deforestation, Forest Degradation, Biodiversity Loss and CO2 Emissions in Riau, Sumatra, Indonesia. WWF Indonesia Technical Report, Jakarta, Indonesia. Published at: http://www/worldwildlife.org/wildplaces/borneo/updates/disappearingforest.cfm.

peat domes and 3) set aside the two concessions at the centre of Kampar fully for conservation.

C.6. Impact on Kampar Peat Land of Forest Fires

There is a strong correlation between land clearing on peat swamps in Kampar carried out by Sinarmas and forest fires. 51% of Riau Province consists of peat swamp land. Converting this peat swamp into useable land for palm oil and HTI, means creating canals that can affect the water content, drying the land out. This causes the land to be more prone to forest fires, which is, according to Sudirno, Vice Head of the Forestry Agency in Riau, "it is very difficult to extinguish, because fires could develop under ground, even though on the surface, it looks like there is no fire'. The only tool to extinguish fires in peat swamp, according to Sudirno, is to flood all the peat swamp areas (*FKKM Riau*, No.3, December 2006-March 2007:6). During the massive fires of 1997/1998 over 3.3 million hectares of forest were destroyed in Indonesia, including parts of 17 protected forest areas. Riau was one of largest contributors of forest fires in Sumatra. Based on police investigations in 1997, Arara Abadi, one of affiliation of wood supply of Indah Kiat pulp and paper factory, was named by the Forestry Department as one of 176 companies whose concessions affected by fire, based on monitoring from August 1 to September 15, 1997. As a result, the Ministry of Forestry temporarily suspended their timber concession on October 3 for failing to submit reports proving that they had not started fires in their area.[22]

According to the report of the Department of Forestry in 1999, Riau province suffered forest fires on 852 hectares, declining to 422 hectares in 2001 and growing again to 2,211 hectares in 2002, falling again to 750 hectares in 2003[23], rising again to 7,189 in 2004 and again to 15,476 fires in 2005 and 1,419 in 2006 (*FKKM Riau*, *Op Cit*: 8).

C.7. Impact of Forest Fires on Physical Environment

The impact on the physical environment from forest fires is land, air and water damages. The discussion will highlight: 1) land damage because of forest fires. It is widely known that fires damage the characteristics of the land, causing loss to plants and biodiversity. If followed by rain, this causes soil erosion, creating infertile land; 2) air pollution, causing

[22] For further information see Friends of the Earth for the planet for people on Briefing "Asia Pulp & Paper" (www.foe.co.uk).

[23] The hotspot means where original forest derived from. Forest forests in Kalimantan the hotspot originally the fires come from the coal mining under soil or the leafs of trees in the surface because of sun heating. These factors is natural and happened in summer time. But, also because by man made, illegal logging caused fires, because the previous wood cutting burnt by local farmers.

smog, which affects people's health (*asthma, bronchitis, pneumonia, eye irritation and skin, etc*.) and stopping airplane flights, business and school activities; 3) water preservation, through the elimination of plants that function as water holders, impacting on water flows, leading to soil erosion and floods.

C.8. Land Disputes

There are some land conflicts occurring between Arara Abadi and local communities. The most significant of these are in Bengkalis and Kampar and Pangkalankuas sub districts.

Arara Abadi initially attained a HTI concession of about 299,975 hectares in 1991 in Bengkalis and Kampar districts, which includes Tarik Serai, Tasir Serai Timur, Melibur, Minas, Mandiangin, Pinang Sebatang Barat and Koto Garo villages. The company invested in these areas, created job absorption (15,000) and obtained foreign exchange earnings. However, the local people claim that part of the area belongs to customary forest rights and people withdrew from cutting a part of the acacia plantation in Tasik Serai and Tasik Serai Timur in protest, casuing the company a loss of more than IDR 10 billion. Unfortunately, the government responded very slowly to land conflict between the company and the farmers. According to Yuwilis, an Arara Abadi attorney, the company manages the conflicts in accordance with the law.[24]

Also, however, Arara Abadi, backed by state security forces, has seized land for the plantations from indigenous communities such as 3,000 hectares of Sakai people's forest gardens [25] , causing serious clashes with local villagers in Mandiangin, Betun, Pangkalankuas sub-district, in Riau Province on February 3, 2001.[26] Hundreds of club-wielding company militia attacked residents, seriously injuring nine and detaining sixty-three. These villagers were eventually released following representations by the Pelelawan community leaders and Non-Governmental organizations. The conflict was a result of the villagers blockading the road through the village leading to the pulp plant's feeder plantation. The blockade occurred as a result of community frustration at the damage being caused to the forest. Human Rights Watch requested donors, at their upcoming Bali meeting, to call for a complete and transparent audit of all military and police activities and the legality of steps taken by the Indonesian government to address

[24] For information See 'Conflict between Arara Abadi and farmers, while Customary Rights forest Threaten investment" (http://srikat-tani-nasional.blogspot.com/2008/03.riau-konflik-pt Arara Abdi-masyarakat).

[25] *Ibid.*

[26] See "Indonesia: Paper Industry Threatens Human Rights" (http://docs.hrw.org/embargo/indon0103/index.htm).

tenure disputes on state forest land. The Indonesian government should appoint an independent land claims board or ombudsmen to deal with compensation disputes over seized forestry. Human Rights Watch also recommended that pulp and paper companies such as APP should establish and effectively enforce performance standards for both private and state security personnel, using the Voluntary Guidelines on Security and Human Rights developed by the U.S State Department and the British government as a foundation.

D. Concluding Remarks

The rapid development of pulp and paper companies in Indonesia has had a positive impact on economy of the country, where Indonesia is now the largest pulp and paper producer in Southeast Asia. Paper production reached 7.6 million tons in 2005[27], reaching 9.2 million tons by 2009[28], while pulp production went from 5.2 million tons in 2005 to 6.4 million tons in 2009. According to the Ministry of Industry and **APKI** (*The Indonesian Pulp and Paper Association*), the pulp and paper sector is definitely included among the country's top 20 commodites, generating from US$ 4.8 billion in exports in 2007 to US$ 5.3 billion in 2008. Indonesia's timber demand was estimated to have reached 33-40 million m3 by the end of the 1990s, putting a severe strain on the natural forests, due to deforestation caused by over and illegal logging practices. The Ministry of Forestry initially provided easy access to **HTI** (*Industrial Timber Plantation*) concessions and economic incentives through access to banking in the 1980s. Unfortunately, the government lacked the capacity to actively engage individual farmers and households, and even the forestry regulations on timber concessions does not include individual farmers as actors, which would have allowed individual farmers to improve their socio economic performance. Instead, the government and private sector developers have progressively planned and developed forest plantations as the backbone of agro-industries since the early 1990s. 1.7 million hectares of HTI in 1996 became 4.2 million hectares in 2001 and 8.7 million hectares in 2010, producing employment, but not own-employment.

The response of private companies and state forest enterprises (Inhutani) towards the incentive to replant through the 40 percent of shares payment for HTI holders was positive, but APP did not use government funds for replanting, preferring to obtain credit on the stock exchange or from private banks.

Through ensuring a continuous, guaranteed supply of timber (60% of mill demand), conducting research and development to improve the quality of seeds and cooperating with other companies to open up domestic and overseas markets, APP ensured a solid and growing business. In order to ensure these overseas markets, APP attained internationally recognized levels of certification, such as ISO 9001, ISO 14001, LEI, etc., in, concentrating on sustainability and environmental issues.

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[27] For further information, see *The Japanese Pulp and Paper Industry* (2005). It was published by Japan Pulp and paper Co., Ltd, pp. 45.

[28] See the Statement of APKI (*The Indonesian Pulp and Paper Association*) officer, in the *Jakarta Post*, August 16, 2010.

NGOs have criticized the ecological damage created by APP in Riau, such as the report by Walhi that there has been an ecological functional transformation affecting forest soil, becoming dry and losing biodiversity, due to the transformation from *multiculture* natural forests to *monocultures* (acacia mangium or eucalyptus). **Eyes on the Forest** (EoF) has also criticized the cutting of peat swamp land in Kampar district. This report is legally strong, as: 1) the company cleared natural forest on peat with a depth of more than 3 meters deep which is not allowed to be converted into plantation and 2) the majority of the concessions overlap with national protected areas.

Therefore, APP must be consistent in it's stand on ecological issues, such as the conservation of species and forest biodiversity, consistently practicing sustainable forest management. APP should also ensure that it follows all the laws, especially concerning the cutting of *peat swamp forest* with a depth of more than 3 meters.

CHAPTER 5 VIETNAM

A. Review on forest plantation policy

A.1. Introduction

Forestry resources have traditionally been a significant mainstay of the livelihoods of many rural communities in Vietnam. Hence, a number of government programs have been introduced, encouraging communities to participate in a plantation forestry program. The government believes that 'forestry and agricultural products' can improve the livelihoods of rural communities, thereby increasing national food security in the future. However, in reality, the forest areas of Vietnam have declined sharply in the past century due to three inter-related reasons, namely: over exploitation for timber production; shifting cultivation practices among local communities in upland regions and wood extraction for fuel. As a result, forest degradation has seriously affected water quality and supply and exacerbated flooding and soil erosion. The decrease in forest area has led to a reduction in the biodiversity of the country. A variety of animals and plants found naturally in forest ecosystems of Vietnam are now facing extinction.[1]

To overcome this deforestation, the government has taken two different approaches. Firstly, the Vietnam government and donor communities have established a partnership to promote 5MHRP (five million hectares program), carrying out reforestation and forest rehabilitation. The main objectives are protecting the environment and biodiversity, producing raw material and creating employment, particularly in rural communities, to reduce poverty. Secondly, the Vietnam government, in cooperation with other stakeholders, is carrying out 'sustainable forestry' in production forests, to ensure a continued, sustainable supply of raw materials for forestry industries such as pulp and paper, plywood, sawn timber, furniture and more. An FAO (2001a) report indicates that this program has established 600,000 ha of sustainable plantation forestry in 1990, increasing to 1.7 million ha in 2000.[2] The government shifted the land management policy from collectives through centralized management in the early 1980s to one of contracted farming through a free market system by providing 'timber concessions' to stakeholders. This has reduced the role of the state as the main actor and supported the emergence of other stakeholders, such as cooperatives, farm households, individual farmers and private companies. Recently the timber demand in Vietnam has increased,

[1] Phan Sy Hieu. 2004. "The Changing Administration and Role of Forestry in the Economy of Vietnam", in *Small-Scale Forest Economics, Management and Policy,* Hanoi, 3 (1): pp. 85.

[2] FAO. 2001a. *Global Forest Resources Assessment 2000*. Main report. FAO Forestry Paper 140.

because of rapid development of pulp and paper, sawn timber, furniture and plywood industries.

Forestry contributed to 3% of GDP in 1990, fell to 1.4% in 1995, and the value of exports from forestry fell from 5% of total export value in 1990 to less than 3% in 1995. Currently, forestry contributes only about 4% of total agriculture value and 1.8% of GDP and provides jobs for 3.9% of the labor force (MARD 2006; FAO 1999: 142). Most of the poor in rural communities derive their living from plantation forestry. The development of pulp and paper industries in the 1980s and 90s re-invigorated the industry, providing job creation and producing paper to fulfill the rising demand for paper in Vietnam, expanding to the export of paper, earning the country much needed foreign exchange earnings.

This paper aims to examine the role of stakeholders in the government's forestry policies, including the reforestation and rehabilitation program and timber concessions for stakeholders through a case study on land distribution and plantation forestry carried out by the local government in Phu Tho province. This paper looks at how private companies, household farms and the cooperative sector have responded to government policies on timber concessions and the pulp and paper industry.

A.2. The significance of forests and other resources

Generally the *forestry sector* was categorized in the agricultural sector in Vietnam (Hieu, Phan 2004: 87). In the reform period from 1989 to 2001, Vietnam had high GDP growth of about 7.1% annually and the role of agriculture in creating employment in rural communities was significant. As shown in Table 1, in this period the growth rate of the agricultural sector remained stable at an average of 3-5%, while the growth rate in the industry sector was higher, at about 8-14%. From this stable and high growth in both sectors, the economic structure of Vietnam gradually shifted into 'industrialization', which is addressed via the reduction of the agricultural sector contribution to GDP from 33.1% to 23.6% in 2001.[3]

Table 5-1 **Annual Growth rates of Industrial and Agricultural Sector GDP and Rural Population share in Vietnam 1990-2001**

Year	Industrial growth (%)	Agricultural growth (%)	Population (%)
1990	2.27	1.00	80.5

[3] See GSO (General Statistic Organization) (2003), *Statistical Year Book*, Statistic Publishing House, Hanoi. And also in Hieu, Phan (2004: 86).

1991	7.71	2.18	80.5
1992	12.79	6.88	80.1
1993	12.62	3.28	80.0
1994	13.39	3.37	78.9
1995	13.60	4.80	80.0
1996	14.46	4.40	78.9
1997	12.62	4.33	77.3
1998	8.33	3.53	76.9
1999	7.68	5.23	76.4
2000	10.07	4.64	75.8
2001	10.32	2.79	75.2

Source: GSO (2003); Hieu, Phan (2004:86).

The main social implication from the reform period was a dramatic reduction in the poverty rate. The expenditure per capita below the poverty line fell from 70% in the mid 1980s to 58% in 1993 and to 37% in 1998 (World Bank 2000). According to a World Bank report, Vietnam is one of the few countries that have succeeded in the twin objectives of increasing the growth rate and reducing poverty. However over 75% of the population lives in rural areas (Table 5-1), and about three-quarters of the rural labor force work in the agriculture and forestry sector, of which about 25 million people rely on non-timber forest products for their livelihoods.[4] On the other hand, development of the industrial sector has mainly focused on low job-creatable fields; hence this sector is not strong enough to attract surplus workers from rural areas (CIEM 1999: 27). As a consequence, the slow movement of workers from rural to urban areas and declining contribution of agriculture to GDP have led to a widening of the income gap between urban and rural workers, and 90% of the poor now live in rural areas (MARD 2006; FAO 1999: 160).

Administration's perspective

The MARD plays a significant role in managing forest resources, the agricultural sector and rural development in Vietnam. At the central level, MARD is responsible for forest resources sector administration, including managing land functions as production,

[4] See CIEM (Central Institute of Economic Management) (1999). *Vietnam Economy in 1998*, Education Publishing House, Hanoi. And see in Hieu, Phan (2004: 87).

protection and *special use* forests.[5] Plantation forestry, launched as a national policy to provide timber supply for the forestry industry, is located in production forests. The Forestry Department (DoF) and Forest Protection Department are MARD's agencies tasked with focusing on forest administration.

The organizational structure of Vietnam's forest sector administration has four administrative levels: the central/national level, provincial level, district level and commune level. At present, Vietnam has 64 provinces, about 600 districts and 10,000 communes. All administrative levels are under the control of the state.

At the provincial level, two forest administration agencies are under the control of the Provincial People's Committee (PPC). The first of these is the Department of Agriculture and Rural Development (DARD), in which the Forestry Sub-Department operates as a specialized agency to assist the Director of DARD in forestry activities. At present, Vietnam has 34 Forestry Sub-Departments with a total 530 employees.

At the district level, the Economic Division for Agriculture and Rural Development is under the control of the District People's Committee (DPC) and employs one or two forestry staffs responsible for monitoring forestry activities.

At the commune level, as regulated by the Forest Protection and Development Act, communes with forest cover are obliged to recruit forest employees, while Forest Protection Units assign one forest ranger to work in one commune/commune group (Interview, March 5, 2010).

Trends in Forest cover

In 1943, Vietnam had 14.3 million hectares of natural forests, accounting for 43% of the country's area. Since that time, forest cover has decreased dramatically, especially during the 1976-1990 period. During that period, about 98,000 hectares were annually contracted for logging (Table 2). By 1973, the proportion had declined to 29%, 27.2% in 1990, but increased again to 28% in 1995. The main causes of forest cover decline between 1943 and 1990s were: (1) land conversion for farming; Vietnam's accelerated population growth during much of the second half of the 20th century and its persistent poverty levels and (2) devastation by war, including two anti-invasion wars, from 1945-1954 and 1961-1975. During these wars Vietnam lost nearly 2 million hectares of forest

[5] The decree divides special-use forests into: (1) national parks; (2) natural reserves, sub-divided into natural reserves and fauna and flora habitat reserves, and (3) historical, cultural and environmental relics or landscape-protected areas, see Wil de Jong *et.al*.2006, *Forest Rehabilitation in Vietnam.* WWF, pp.12.

(Wil de Jong, *et.al*. 2006:13). The establishment of plantation forestry, protected forests and special-use forests increased, causing the total forest area to first stabilize and then increases. As of 2004, Vietnam's forest cover had reached 12.3 million hectares, or 36.7% of the country's total area (Table 5-2). This phenomenon was appropriate with the data gathered by FAO (1990) that plantation forestry has rapidly developed in Vietnam from 661,000 hectares in 1990 to 1.7 million hectares in 2000 (Evans J&Turnbull, J 2004:34).

Table 5-2 **Vietnam's forest cover throughout different periods** (1,000 ha)

	1943	1976	1980	1985	1990	1995	2000	2004
Total area	14,300	11,169.3	10,608.3	9,891.9	9,175.6	9,302.2	10,915.5	12,306.7
Natural Forest		11,076.7	10,016.0	9,308.3	8,430.7	8,252.5	9,444.1	10,088.2
Plantation		92.6	422.3	583.3	744.9	1,047.7	1,471.3	2,218.5

Source: MARD (2006). Wil de Jong (2006), pp. 13.

By 2008, Vietnam had a forest area of 13,118,773 million hectares. It consisted of 10,348,591 hectares of natural forests and 2,770,182 hectares of plantation forestry. The main role of special-use forest is nature conservation, protection of historical and cultural relics, tourism and to some extent, environmental protection. It is important to maintain protected forests to protect water streams prevent soil erosion and militate against natural disasters. On the other hand, *production forests* have the main aim of providing timber and non-timber forest products (NTFP), but also to provide environmental protection.

Table5- 3 **Forest land of Vietnam by its function (2008)**

Forest Classification	Area (ha)
Production Forest	6,199,294
Protection Forest	4,739,236
Special-Use	2,061,675
Other outside three type uses	118,568
Total	**13,118,773**

Source: *Dien Tich Rung va Dat Lam Nghiep* (Vietnam Forest Statistic), 2008, pp. 13.

According to the draft National Forest Strategy 2020 (MARD 2006), the total area of land with forest cover is to be increased to 16.2 million hectares, consisting of 5.7 million hectares of protection forest, 2.3 million hectares of special-use forest and 8.2 million hectares of production forest.

Study Sites

Conducting interviews among stakeholders such as government officers, **RIPPI** (*Research Institute of Pulp and Paper Industry*) officers, Vietnam Pulp and Paper Association members, academics and NGOs was conducted in Hanoi. Meanwhile, the field study sites were located in Phu Tho province, Phu Ninh district (Figure 5-1). In-depth interviews with informants such as the Department of Forestry officer in Phu-Tho, Vinapaco, research institute of Vinapaco officers and local farmers.

Figure 5-1 Vietnam, where field work is located Phu Tho province and Phu Ninh district.

A.3. Timber Consumption Demand

The most rapid development of forestry industries occurred in the 1990s. Its impact on economic development was assisted by Vietnam joining the **WTO** (*World Trade Organization*). According to the Ministry of MARD on the Anniversary of 50 years of Forestry in Vietnam, export of wood products such as furniture, veneers, plywood and paper reached US$2.5 billion in 2009. A total of US$1.1 billion was produced from furniture and veneer industries, which accounts for over 42% of the country's export

value of the wood processing industry (Nong Nghiep and Nong Thon 2009: 2).[6] For this reason, the forestry sector should be maintained and developed for future sustainable economic benefits. The impact of sustainable forest management was positive in shifting the livelihoods of local farmers, creating new jobs and attaining foreign exchange earnings.[7]

There is a strong correlation between the amount of timber demand rise with the growth of sustainable timber supply through rapid development in forestry industries, such as pulp and paper, plywood and sawn timber in Vietnam. From the 1960s to 1980s, Vietnam harvested about 2 million m3 of timber annually for civil and industrial purposes, excluding firewood, rattan and bamboo. Paper consumption has reached 1.7 million tons in 2010 and is expected to rise again to 2.6 million tons in 2015 and 4 million tons in 2020 (Table 5-4). As a result, timber consumption for paper products, pulpwood, plywood, sawmill, furniture, etc., will grow to about 3.8 million m3 in 2010 and 5.5 million m3 in 2015 (Table 5-5). As an illustration, Bai Bang Paper Company upgraded and expanded production to annual output 100,000 tones of paper and 61,000 tones of pulp in 2006 and again to 250,000 tones of paper in 2007 (http://www.baibang/evn_td.htm).

The timber for this industry originally came from both natural and plantation **forests**, but the government encouraged a shift towards plantations. The government provided easier procedures for obtaining timber concessions, easier access to credit from banks and other financial institutions and tax reliefs for the import of machinery, upgrading *infrastructure* (port and high ways), the planting of trees, etc. (Interview, March 5, 2010).

Table 5- 4 **Forecasted paper consumption (1,000 tons)**

Products	**2003**	**2010**	**2015**	**2020**	**Yearly growth(%)**
Newspaper	54.8	92.8	133.4	192.0	8-9
Writing paper	159.9	295.2	451.0	690.6	9-11
Cardboard	680.1	1240.9	1880.9	2856.4	9-11
Others	75.8	138.3	209.6	318.4	9-11
Total	**970.6**	**1,767.2**	**2,674.9**	**4,057.4**	**9-11**

Source: MARD (2006), See Wil de Jong *et.al*., (2006: 20).

[6] for further information "The Wood Processing Industry in Vietnam"
(http://www.ambhanoi.um.dk/en/menu/Commercial Services/

[7] The speech was delivered from Ministry of MARD in celebrating 50 years of Forestry in Vietnam.

Table 5-5 **Forecasted timber and forest product demands (1,000m3)**

Products	**2003**	**2010**	**2015**	**2020**
Timber: domestic&export	7420	14004	18620	22160
Large timber for industry	4561	8030	10266	11993
Small wood for wood based Panels	1649	2464	2992	1682
Pulpwood	1150	3388	5271	8283
Pitwood	60	120	160	200
Export value of timber products And NTFPs (million USD)	721	2400	3200	4000
Wood products	567	2100	2600	3200
NTFPs	154	300	600	800

Source: MARD (2006); Wil de Jong (2006: 20).

A.4. Reform of the Forestry Policy

The Vietnam government consolidated as one nation (North and South) at the end of the war with the United States in 1975. The communist single party system was adopted as state ideology. Prior to the 1980s, the characteristics of Vietnam's economy were essentially those of a centrally planned economy (CPE). The economy was heavily distorted in resources allocation with poor incentives and restricted information flows. As a consequence, the economy suffered from persistent shortages with low levels of per capita consumption and inefficiency of investments (Taylor, Philip 2004: 64). The Sixth Party Congress in December 1986 was a starting point in a shift in Vietnam's economic policies. The government recognized the existence and the essential role of a multi-ownership structure in Vietnam's economy and subsequently declared the approval of the **doi moi** (renovation) program by the Congress. In March 1989, Vietnam adopted a radical and comprehensive reform package aimed at stabilizing and opening the economy (*Ibid*: 65). The issue of collectivization and centralized management underwent modification at the end of the 1980s, with the introduction of a contract system, through Resolution No. 10, which officially ended the *collectivization period* and was followed by official acknowledgement of *a free-market system*. Forestry was viewed as a "source to be used for construction of the country, with its generation not being given adequate

attention".[8] Changes made since 1990 have caused a transition in forestry, from a centrally planned sector with the state as the major actor, to a multi-sectored participatory sector. As a result, the state is no longer the main actor in plantation forestry, but other stakeholders have emerged - cooperatives, state forest enterprises, farm households and private companies. The government issued the 5MHRP (million hectares reforestation program) during 1998-2010. The program aims to protect the environment, provide jobs and reduce poverty for rural people, while increasing the wood supply for industry and households (Ohison *at al* 2005:253). The program has three main purposes (ICARD 2003):

a) Increasing the proportion of forest area nationally to 43%, assuring environmental security for soil and water, as well as preserving biodiversity;

b) To supply domestic demand for firewood, providing materials for paper production and artificial board production, timber quantities for export, promoting forestry to be an important sector in the national economy and facilitating socio-economic progress in mountainous areas, and

c) Creating 2 million more permanent jobs, increasing the incomes of people living in forests, helping them to eliminate hunger and reduce poverty and stabilizing politics, society and national defense, especially in the mountainous and border areas.

The government also issued a forestry policy to maintain forest resources and a tree-planting program to increase timber resources. Being aware of the necessities of natural forests, the government of Vietnam implemented a range of policies to highlight the role of forests, reduce exploitation, promote tree planting in production forests and restore/rehabilitate natural forests, especially protected forests. Of the policies created since 1990, about 150 important policies related to forestry have been created in the following ways:

1. The Forest Law, issued by the National Assembly and adopted by the government
2. Decisions by the prime minister
3. Regulations and circulars
4. Ministerial directives

As a result, the following are the main forestry policies:

1) The 1991 Law on Forest Protection and Development of Forests (reviewed and amended).

2) The Land Law (1993), reviewed and amended in 1998-2000.

[8] See Ohison *at.al* (2005). "Government Plans and Farmers Intentions: A Study on Forest Land Use Planning in Vietnam", in *Ambio*, Vol. 34, No. 3, May, pp. 248.

3) Government Resolution 01/CP (1995), on the allocation and contracting of land for agriculture and forestry to state enterprises,
4) Prime Ministerial Decision 661/QD-Ttg (1998), on the objectives, tasks, policies and organizations for the establishment of five million hectares of new forest,
5) Government Decree No. 163/1999/ND-CP, concerning allocation and lease of forestland to organizations, households, and individuals for long-term forestry purposes,
6) Prime Ministerial Decision No. 08/2001/QD-TTg (2001), which issued regulations on management, rules for special-use forest, protection forest, and production forest,
7) Prime Ministerial Decision No.178/2001/QD-TTg (2001), on the rights and obligations of households and individual that are allocated and contracted forest and forest land for benefit-sharing,
8) Other policies on development investment credit, taxes and extensions related to forestry activities.[9]

The major trends in forestry policies have been focused on three main objectives:
1. To invite stakeholders to develop social forestry as an integral part of establishing socio-economic entities and conservation of protected and special forest use;
2. To emphasize a transition in the forestry sector from harvesting natural resources, especially timber, to sustainably managing and utilizing forests and
3. To address the need for a market-oriented economy and foreign exchange earnings, create employment and improve the socio-economy of rural communities.

A.5. Land Tenure

In Vietnam all forests are owned by the state under the management of the *Ministry of Agriculture and Rural Development* (**MARD**). The *Department of Forestry* (DoF), which is under the MARD, has the authority to manage and issue regulations regarding forests. It emphasizes in articles 22, 24 and 26, Decree No. 108/2006ND-CP on 22/9/2006, detailed regulations and guidelines for the implementation of the law on investment Forest rent is stipulated in Decree number 23/2006/NS-CP, dated 03/3/2006, concerning implementation of the law on protection and forest development in 2004 (interview with DoF officer, March 5, 2010). The DoF is to allocate production forests through timber concessions for three main actors, namely private companies, state enterprises and individuals or households (under cooperatives). The government provides incentives to

[9] For further information see Do Dinh Sam and Le Quang Trung, "Forest Policy Trends in Vietnam", in INOUE Makoto and Isozaki, H. 2003. People and Forest-Policy and Local Reality in Southeast Asia, the Russian Far East, and Japan. The Netherlands, Kluwer. pp. 159.

the private sector in the form of easier procedures for obtaining timber concessions, easier access to financial institutions and tax holidays for the import of machineries for establishing the pulp industry. The government also provides subsidies to households and individual farmers for planting trees by proving seedlings and fertilizer, with the aim of actively engaging farmers in planting trees (Interview March 5, 2010). As a result, the programs eventually lead to a boost in economic development and job creation in rural communities.

Generally, land tenure for the private sector is provided for 50 years, with a possibility of extension based on the stakeholder's performance. The size of land private companies could obtain ranges from 5,000-10,000 hectares, for households from 10-30 hectares and for individual farmers 2-5 hectares. The regulation the timber concession sizes, monitoring and penalties are managed by the DoF at the provincial level, because management was *decentralized* (Interview March, 5, 2010).

According to a Ministry of Agriculture and Rural Development (MARD) report, nearly 8.8 million hectares of forest (50%) have been allocated to various targets, of which 2.61 million hectares (29.7 percent of the area allocated) have been allocated to 450,000 households. An additional 50,000 households have received a total of over 1.86 million hectares of forest on contract for *State Forest Enterprises, protection and special-use forest management*, as well as foreign companies or joint venture companies (Do Dinh Sam &Trung 2003: 161).

Benefit-sharing Policy

The model used for encouraging rural communities to manage and develop protected and special-use forests is called "the benefit-sharing policy". In 2001, the prime minister issued two significant decisions on the management of natural forests and benefit-sharing covering: (1) the rights of households who sign contracts for and invest in protection forests. This regulation highlights that households have an obligation to plant, protect and regenerate forests, in accordance with the contracts signed with the forest management boards. As a reward, households have the right to collect fuel wood and non-wood forest products under the forest canopy (20 percent in timber forests; 30 percent in bamboo forests) and 85 to 90 percent of harvested products, after tax) and (2) special use-forests. The forest owners (households or individuals) are allowed to conduct harvesting, research and ecological tourism activities, in accordance with the laws and regulations.

In brief, the benefit sharing policy deals with protected, special-use and watershed forests. It is significant in supporting forest conservation and improving the socio-economic condition of rural communities in Vietnam. Hence, the response from people,

especially households, has been positive and they have actively engaged with the program.

Social Forestry Development

After the allocation of forest land, cooperative relationships in forest production have arisen in many districts. The implication for the social participation of communities has been great. Many households took the initiative and invested capital and labor to organize production activities, such as tree planting, protecting and practicing agroforestry. Below are some examples of what activities households have participated in:

a) In Yen Bai province, 9,500 farms combining forestry and agriculture have been established, representing 11.9 percent of the total farming households in the province;

b) In Lao Cai province, 1,500 farms producing annual revenues of 15 to 20 million VND each (US$1,200 to $1,600).[10] Every farm has an average of three hectares of fruit trees or industrial crops;

c) In Thanh Hoa province, over 13,000 households are engaged in forest gardens and forest farm production. The area of each farm is about five to ten hectares, with annual incomes of 5 to 20 million VND per farm;

d) Many households that were allocated land that included denuded hillsides, depleted natural forests, have planted trees and are able to produce enough firewood and timber for their own use. This effort made significant contributions to forest conservation, protecting biodiversity and the environment, soil improvement and much more (*Ibid*).

A.6. Case Study of DoF in Phuto-Tho Province

As mentioned previously, the technical operation in terms of implementation of regulations and monitoring of land tenure depends on the DoF at the provincial level. Therefore, Phu Tho province was chosen to carry out field research. Phu Tho province has an integrated allocation of households' model for the establishment of *cooperatives* for planting trees and State Forest Enterprises using contracts with farmers and households, such as Vinapaco and Bapaco. The annual budget of the government office covers 1 billion VND to manage forests, plant trees and conduct monitoring (Interview, March 5, 2010). The amount of forest registered is 353,261 hectares in Phu Tho

[10] One U.S dollar is equivalent to 12,000-13,000 VND in 2003. But in March, 2010 rapidly developed that one U.S dollar is reached to 19,000 VND.

province.[11] The DoF in this province has given 195,000 hectares for timber concessions to household and 144,000 hectares to private companies. In case of the State Forest Enterprises, represented by BAPACO, has received 60,000 hectares for plantations. The area is divided into 50,000 hectares where BAPACO cooperates with households and has established cooperatives, while the remaining 10,000 hectares is owned by VINAPACO[12] for planting trees.

Under the 661 projects policy, the government is obliged to implement *sustainable forest management*. The national budget to cover 661 projects is 20 billion VND, with a target of planting 10 million hectares of trees located in production, protected and special use forests. In case of Phu Tho, sustainable forest management is being implemented with the planting of 17,000 hectares of trees in special-use forest and 33,000 in protected forests. The purpose of planting trees in protected forests is aimed at forest conservation, reducing soil erosion and protecting biodiversity. The districts within Phu Tho province have the responsibility to monitor plantations, while the province levels functions as a general manager.

What about economic incentive?

The government provides credit for stakeholders to plant trees as forest resources are considered *strategic* commodities to be exported as paper products. In the case of 195,000 hectares of planted trees, Vinapaco Company provides credit, seedlings, fertilizer, technical assistance, training and a guaranteed market for timber products to households and farmers. The Company issued 10-15 million VND per hectare in the form of seedlings, fertilizer and maintenance until harvesting after 8 years. Tree planting started from 2008 in Phu Tho and will be harvested after 8 years (in 2016).

A.7. Eucalyptus Plantation Development

The Vietnamese forestry sector has never in its history witnessed such an active participation of the people at large (farmers, the cooperative sector, private companies, etc.), as during these last 10 years (1990s) in *Eucalyptus* plantations. The driving factors of this are: (1) Vietnam launched a strategy to recover denuded hill areas for planting trees and forest conservation. The effort in tree planting in the Northern Provinces started

[11] See *Dien Tich Rung Va Dat Lam Nghiep*-Nam 2008 (Forest Area and Forestry in Vietnam in 2008), that forest area in Phu Tho Province is categorized very limited compared with other East North provinces such as Cao Bang 672,462 ha and Lang Son 830,348 ha.

[12] VINAPACO is also State Forest Enterprise major task is providing for planting trees for Bai Bang Paper Company.

in 1975; (2) the government has enabled foreign investors to actively engage in plantation forestry to provide timber for forestry industries and conservation as well. This policy brought about a positive response from foreign companies and NGOs to conduct tree planting and (3) economic reform in Vietnam shifted from centrally planned systems to mechanisms oriented to a market economy (liberal trade). The main target in the forestry sector has been the application of a policy of land and forest allocation for farmers, households (the cooperative sector) and private companies. This lead to encouragement of stakeholders to aim for a better socio-economic life in the future.[13]
Since their development in 1985, Eucalyptus plantations have been developing nation-wide from north to south under two methods of establishment. First is concentrated industrial plantations, which have been carried out by private companies and State Forest Enterprises. Second is scattered tree planting practices, which have been conducted by households, farmers, people's leagues, etc.

The areas planted with Eucalyptus have become larger than any planted with other tree species, such as *Manglietia glauca, Pinus spp, Styrax tonkinensis, Tectora grandis*, etc. According to a DoF officer, most local tree species are prioritized for planting in protected forests because they absorb much water and it is better for conservation and protection from soil erosion. Meanwhile, Eucalyptus trees, as fast growing trees, are planted in production forests to provide timber for the pulp and paper industry (interview March 9, 2010).

It seems that Eucalyptus plantations have been playing a significant role in providing timber for the pulp and paper industry, with about 77,291 hectares planted over the period 1986-1990 (Figure 5-2). As an illustration, for the period 1986-1990, 629,000 hectares of plantations of all species were established; 50% by State Forest Enterprises and 50% by other entities such as private companies, farmers and households and 165,000 scattered trees (equivalent to 1,020,000 hectares, counted on the basis of 2,000 trees for 1 hectare) planted. According to MARD, it is estimated that over 50-60% of the full plantation area was planted with Eucalyptus (300,000-400,000 hectares) and 70-80% of the scattered tree areas were planted with Eucalyptus (700,000-800,000 hectares) (Tran Xuan Thiep, 2005:6).Data on Eucalyptus plantation areas established by state-owned enterprises during the period 1986-1990 are outlined in Table 5-6.

Table 5-6 **Eucalyptus plantation area 1986-1990 (Area-ha)**

[13] See Tran Xuan Thiep, "Eucalyptus Plantations in Vietnams: Their History and Development" (http://www.fao.org

Species	1986	1987	1988	1989	1990	Total
All tree Species	99,280	64,477	63,262	35,637	40,830	303,486
Eucalyptus	18,084	7,058	15,045	17,104	20,000	77,291

Source: 30 years (1961-1990) of Forestry Development; Department of Forestry (DoF), 1991.

The above shows that State Forest Enterprises are categorized as the lowest in the planting of eucalyptus, as they are located in mountainous areas in which Eucalyptus is not possible. However, the trend is towards more eucalyptus plantings in State Forest Enterprises, such as in the central northern zone, coastal midlands of the north east, coastal hillsides of northern central Vietnam, coastal hillsides of central Vietnam, south-eastern Vietnam and south-western Vietnam.

Main species used

Some 30-40 eucalypt species have been introduced into Vietnam, but in almost all areas only one species, namely *eucalyptus camaldulensis,* from Petford district (Australia) has been used for practical plantations. In its development, *E. tereticornis* has also been used for some small plantations in North Vietnam and more extensively in central and southern Vietnam. *E.urophilla* has shown good performance on some degraded hillsides of North Vietnam, as it was recommended by experts from the Forest Research Center (FRC) in Phu Tho to be most appropriate for infertile land (Interview, March 10, 2010). On the other hand, *E. exserta* is popular and used for fuelwood production by the people in the northern midlands.

According to P. Stahl (1991), a SIDA consultant: ”The main weakness of the eucalypt plantation program in Vietnam is that only E.camaldulensis has been used and the seeds only come from the district of Petford, Australia”. Meanwhile, K.M. Gray (1991), an FAO energy consultant, also said in his report on biomass energy for the “Forestry Sector Review” project: ”The plantation program in Vietnam relies only on a few tree species and provenance, in particular on Eucalyptus” (Tran Xuan Thiep, 2005: 7-8).

Which lands can be planted with E. Urophylla and acacia mangium? Based on an investigation carried out by DAO Dinh Sam, former Director of Forest Science Institute

of Vietnam, farmers should plant acacia mangium in good soil conditions and E. Urophylla in degraded soil,[14] because acacia mangium has bigger leaves, with an open crown, therefore the sunlight can directly penetrate the soil, eventually affecting soil fertility in the future. Therefore, acacia mangium and acacia hybrids have only been planted in southern Vietnam. In contrast, E. Urophylla, which has smaller leaves and the sunlight, does not affected soil negatively, then eventually the *hurmus* content in the soil will grow. This natural forest process will improve previously degraded soil, helping it to become fertile again.

A.8. The Response from Stakeholders

A.8.1. State Forest Enterprises

Vinapaco Company focuses on plantation forestry. The company is the second largest State Forest Enterprise (Figure 1), after Bapaco Company. The main task of the company is to provide chip wood as raw material for Bai Bang Company. According to Vu Ngoc Pha, Manager of Silviculture for Vinapaco, the company created cooperation for the plantations with household farmers under the contract farming scheme in many districts. This scheme engages 30 households and the profit agreed by both parties is 50% for the household and 50% for Company at harvest time. The company also contracts independent farmers to purchase their timber, while the company's own plantations total 80,490 hectares. The timber concessions are enough to last 50 years and could be extended again, based on the company's performance. The company pays tax of 4% for land use and the government provides special treatment for Vinapaco of only 6.9% interest per annum to the government bank in order be able to accumulate capital for planting trees in huge areas.

[14] See Sam, Dinh Sam, 2006. "Impact of Eucalyptus & Acacia mangium in Soil Fertility in Vietnam", published Scientific Report, Forest Science Journal.

Figure 5-2 Profile of Vinapaco Company in Phu Ninh district, Phu Tho province. The photo was taken in March, 2010 as personnel achieve.

According to an officer of Vinapaco, there are some constraints to the development of the company:
1) The limitation of production forest land in Vietnam. The Company cannot expand within Vietnam, but must expand in neighboring countries such as Laos and Cambodia; 2) land dispute with local farmers. Farmers who had been occupying the land previously, although they had no certificate from the provincial DoF; 3) contracting with households at the district level is sometimes difficult, because households sometimes use the land for agricultural purposes rather than plantations and 4) lack of sufficient capital to expand plantations. Therefore, the relationship with Banka and other institutions such as the stock exchange is necessary to obtain fresh capital.

Vinapaco functionalized a *Forest Research Center* (**FRC**) in Phu Tho in order be able to produce better quality seedlings. The FRC cooperates with ACIAR (Australian Centre for Agricultural Research) and SIDA (Swedish International Development Agency) to develop quality seedlings, with funding and research. The research findings highlighted eucalyptus urophylla (PN2) and acacia mangium as the best plants most suitable for the soil and climate in northern Vietnam (Figure 5-3). Also, FRC developed and produced 3 million seeds of local trees such as Sua, Cho Chi, Tram trang, Moraceae, Carabian, Mercury and Masrina. These local trees were ordered by the provincial DoF and distributed in protected forest areas for conservation aims. The production of commercial trees reached 4 million VND annually in 2009, growing again to 5.5 million seeds in 2011-2012 seeds annually. Seeds for the domestic market reached 75 percent and 25

percent were exported. The domestic market is mainly companies, households and farmers planting for commercial use and the 661 projects. The export market of seeds is largely for Taiwanese investors of forest plantations in Vietnam and Cambodia (50,000-60,000 acacia mangium seeds annually). The cost of seedlings is 700 VND/seed for E. urophylla, while the price for acacia mangium is 600/seed. Individual farmers order between 2,000-3,000 seeds, but households for the cooperative sector purchase between 15,000-25,000 seeds, while companies purchase on average between 200,000-500,000 seeds each year. (Interview, March 10, 2010).

Figure 5-3 Eucalyptus Urophylla seeds in FRC
The photo was taken as personnel achieve, in March, 2010.

The constraints faced by the Forest Research Center (FRC) (Figure 5-4) are as follows: (1) a lack of budget for new technology development research. So far, the annual budget of about 15 billion VND is insufficient; (2) the attainment of intellectual property rights for new tree species findings, which creates difficulties in own-funding of activities through the sale of products in the market and (3) an inability to expand international cooperations to improve seed quality (*Ibid*).

Figure 5-4 FRC Office in Phu Ninh district, Phu Tho province
The photo was taken in March 2010, as personnel achieve.

A.8.2. Models of partnership Company with Farmers

A.8.2.1 *Company with Cooperative Sector*

Vinapaco has been working with 32 cooperatives under a contract farming scheme in many districts. In one example of this, fourteen (14) households have established a cooperative with a total area of 34.3 hectares, called Commute Tu Da, Phu Ninh District, Phu Tho Province. The initial planting of E. europhylla started in 2005. Ten Lem, the female head of the cooperative, owns approximately 2-4 hectares of this land. The land was originally owned by a community group in the village and was infertile and very difficult for growing vegetables and cassava. The community group then shifted to growing trees by planting *eucalyptus europhylla* (figure 5-5). In the eight years it took for these trees to grow to harvestable size, (2013), farmers plant vegetables and rice on their, other, more fertile land, maintain livestock such as cows and pigs and fish in the river.

The Head of community group Tran Thi Thanh Lam approached Vinapaco Company and the reply from Vinapaco was positive to establish contract farming, providing seedlings, fertilizer and credit for households and guaranteeing the market for their products (Interview, March 8, 2010). According to Ten Lem, an informant, the planting fee for 34.3 hectares was 96,562,801 VND and 64,859,105 VND for maintenance, coming to a total capital expense of about 161,421,905 VND.

Figure 5-5 Eucalyptus Europhylla planted by households in the formation of a *cooperative* in Tu Da village, Phu Ninh district, Pu Tho Province.
The portrait is personnel archive, taken in March, 2010.

What about production?

According to a Vinapaco monitoring officer, the production reached 70 m3 per hectare, coming to a total production of (70 m3x 34 ha)= 2,380 m3, which will be harvested in 2013. The Vinapaco Company has guaranteed the market for harvested trees, which will be determined in terms of price per m3 of trees based on the spot market: based on the estimation of tree quality and climate, the tree production will be fruitful and farmers will obtain a profit from this business.

The profit share, according to a cooperative member, will be re-invested into the next planting of trees and other socio-economic needs of members, such as education and health for their children and savings in the bank (Interview, March 8, 2010).

A.8.2.2. Independent farmers

The Company has also cooperated with 70 independent farmers who own about 10-20 hectares of land for tree plantations. Buo Vaw Thu is one of these independent farmers who owns 17 hectares of land in Phu Ninh District and has been working for several years within the planning division of Vinapaco Company.

The land was previously in a critical condition, originally owned by local farmers, but appeared unproductive and infertile, even with cassava crops. When Bu Vaw bought the land five years ago (2005), the price was 20 million VND/hectare. He used about 30

percent of his savings, while the remaining 70 percent of the price was obtained from a commercial bank with interest of 1 percent/month. He says that the total capital he used was 400 million VND to buy the land and manage the planting of trees in 2005 and the credit was to be paid back within 10 years., but he is optimistic that the plantation will provide enough of a profit and could get profit. He planted mostly acacia hybrid on hus land in 2005 (Figure 5-6), a little acacia mangium and bamboo as fencing. He was provided with the seedlings by the **Forest Research Center** (*FRC*) at a price of 600 VND/seed and bought fertilizer at 2,800 VND/kg from the market. Buo Vaw hopes that his plants will be harvested after 8 years (2013) and he estimates that at harvesting time, he will produce 70 m3/hectare, totaling 17 ha X 70 m3= 1,190 m3 (Interview, March 8, 2010). He estimates the price of timber will be 620,000 VND/m3, if the product is directly transported to the Company, however, based on information from a company officer, if the company has to buy the product on the spot (in the plantation site), the price will be reduced to 590,000 VND/m3.

Buo Vaow has decided to sell his timber through directly transporting to the Company, so the price will be about 620,000 VND/m3. The total amount he will make will be 1,190 X 620,000 VND = 737,800,000 VND, earning a profit in 2013 of 737,800,000-400,000,000=337, 800, 000,-

Figure 5-6 Acacia hybrid planted in critical land belong to independent farmer
The Photo is taken as individual archive, in March 2010.

A.10. ***DoF in Phu Tho working with cooperatives***

The role of the provincial DoF in protected, special-use and community forests is significant, because the DoF has an annual budget for conservation forests from the central government. The DoF has a program to actively engage households to plant trees through 48 cooperatives that manage households to actively participate in tree plantation in Phi Tho province. One of these, "cooperative X" ,in Thu Nich village, Phu Ninh district, manages 18 households that own around 0.75-1 hectare each.

The 661 projects scheme obliges all households to plant trees to fulfill a target of 5 million hectares of new forests. The regulation requires the following of households involved in the scheme: (1) the management of land under scheme must be conducted by a cooperative, consisting of several households; (2) the size of land must be at least 1-2 hectares per household; (3) the DoF officer will check the status of the land in order to obtain the government subsidies, such as 1,600/per hectare of free seedlings and fertilizer.

The land registered for the project is 16 hectares and was initially planted in 2009 in Phu Nich village, Phu Ninh District. According to Nguyen Ngoc Than,[15] head of the cooperative, the program has had 3 positive impacts: (1) by planting fast growing trees in 2009, such as eucalyptus urophylla, they are preventing soil erosion and protecting biodiversity; (2) the farmers get the profit from timber harvests after 7 years, estimated to occur in 2016 and (3) it will improve the socio-economic condition of the local community in the future (Interview, March 9, 2010).

However, there are some constraints faced by households in developing tree plantations:
1) There is no guaranteed market for the timber. Until now, no company has provided a guaranteed market for their timber. In this case, the role of the DoF as mediator between households and companies such as Vinapaco and Bapaco is necessary;
2) They need more seedlings and fertilizer for households, requiring assistance from financial institutions, such as banks, aside from the DoF;
3) They also require expert guidance for better performance of the plantation and
4) The commitment of member households within the cooperative must be improved, following the regulations on attending regular meetings to solve their problems and innovate planting in the future.

[15] Nguyen Ngoc Than was born in 1951 and is a retired Vietnam soldier from the 1960-1970s war with America. He was elected as head of the cooperative in Phu Nich because of his leadership qualities and wisdom.

B. Development of Pulp and Paper Industry

B.1. Problems: Challenges and Opportunities for development (1970s-1990s)

Vietnam's first paper machine was established in 1912, with a capacity of 2,500 tons annually (Le Chi Ai 1995:57). In the 1970s there were three large paper factories in North Vietnam: 1) Viet Tri, with a capacity of 10,000 tons per annum, constructed with the assistance of the Chinese government; 2) a 5,000 tons per annum capacity mill and 3) a mill south of Hanoi producing wrapping paper (Jerve *et al.* 1999: 48).[16] There are now also three state owned pulp and paper mills in Vietnam: 1) Bai Bang (55,000 tons per annum) in Phu Tho province in the north Vietnam; 2) Dong Nai (20,000 tons per annum) and 3) Tan Mai (48,000 tons per annum), both in Dong Nai province in the south. In addition there are 100 small-scale pulp and paper mills around the country (Pesonen 1995:17).

Bai Bang Company

Bai Bang company was established in 1974 through SIDA[17] funding of US$ 170 million (World Wood 1974:3). The project was the subject of huge debates in Sweden, especially during the 1970s and 1980s. In order to overcome the negative percetion of this project, SIDA published an evaluation concluded that "Bai Bang has proved to be an example of a sustainable development cooperation project" (Blower *et al* 1990: 165). In total, SIDA contributed US$1 billion to improve Bai Bang mills to producing 55,000 tons per annum. Swedish experts are still obliged to develop Bai Bang mill, because Vietnam does not have enough qualified technicians to conduct the mill operations and provide the necessary spare parts and chemicals (Sayer 1991:239). The first paper machine was completed in December 1980, the second in March 1982 and the pulp mill in September 1982 (Hamilton 1982:12). In April 2000, the mill employed 3,500 workers. In December 2001 it was announced that a further expansion of the mill would be conducted, expanding the plant from a capacity of 55,000 tons of paper per annum to 100,000 tons. Annual pulp capacity will be increased from 48,000 tons to 61,000 tons. This is the first stage of a plan to increase the mill's annual paper capacity to 200,000 tons and pulp capacity to 150,000 tons (Vietnam Panorama www 1).

The products of Bai Bang Mill are mainly distributed to the domestic market and regional markets in Malaysia, Hongkong, Taiwan, Sri Lanka, etc. Vietnam is expected to meet the

[16] See also, Chris Lang. 2000. "Globalization of the Pulp and Paper Industry": The Vietnam-Deforestation, reforestation and industrial plantations (http://www.wrm.org.uy/plantations/information/Lang1.html, pp. 98.

[17] SIDA (Sweden' government Agency for giving Aid) to developing countries, include Vietnam.

demands for foreign currency by exporting paper, and SIDA was actively engaged in promoting this export trade to Korea, Taiwan and Japan (Virta 1996).[18]

Tan Mai Paper Company

In the early 1990s, Tai Mai Mill and Dong Nai Mill were established in Dong Nai Province in the South. Tan Mai company is a state-owned business belonging to Vinapimex with a mill paper capacity of 10,000 tons per annum in 1990 that was later expanded to 48,000 tons per annum in 2000. Newsprint production accounts for 50 to 60 percent of the company sales. The mill originally sourced pine from Lam Dong province, however, as there was not enough pine to supply the mill, machinery in the mill was adjusted to process eucalyptus. From 1999-2001, the Tan Mai company posted more than US$1.1 million in losses, as a result of its dependence on imported raw materials and the fall in the price of paper (Saigon Today 19 June 2001).

Vinapimex Paper Company

Vinapimex is a state-owned paper corporation, established at the end of the 1990s. It is categorized as the largest single producer of paper products, because it owns 11 factories, producing a total of about 170,000 tons a year. In September 2001, Vinapimex announced a plan to expand the pulp and paper industry in Vietnam, investing US$ 1.9 billion and involving 16 new pulp and paper production projects and an additional 693,000 hectares of plantations, thereby increasing Vinapimex's annual paper production capacity from the current 170,000 tons to 419,000 tons (VNA 2001c). According to industry forecasts, demand for paper in Vietnam is predicted to increase by more than 10 percent each year. In 2010, demand is estimated at 1.25 million tons. Vinapimex estimates that US$3 billion needs to be invested in buying new machinery and plantations over the next 10 years, "to bring the industry up to scratch" (*Saigon Times* 30 July 2001); (Chris Lang 2000: 100). According to *Saigon Times* (August 2001), each year the industry is short by 189,000 tons of pulp and recycled paper, and relies on imports to fill the gap. Domestic pulp and recycled paper prices are about three times world prices, a fact that the Saigon Times blames on Vietnam's small production capacity and non-automated mills with obsolete and decaying machinery (*Saigon Times* 29 August 2001).

B.2. Paper industry (2000s)

Since 2004, Bai Bang Paper has upgraded and expanded production to annually 100,000 tonnes of paper and 61,000 tonnes of pulp at internationally competitive quality and environmentally improved to national standards. The Vietnam Paper Corporation, in

[18] Cf Chris Lang, "Vietnam: Deforestation, reforestation and industrial plantations". *Loc Cit.*

November 2006, announced plans to invest almost US$300 million in expansion of the Bai Bang Company, while Vinapaco plans to establish a 250,000 tonnes per annum pulp production line at the Bai Bang site. A further US$100 million will be spent on "material forest zones" to expand industrial tree plantations, covering a total of 160,000 hectares in five provinces.

In May 2006, An Hao Pulp Factory in Tuyen Quang Province was established, planning to produce 130,000 tonnes a year. Japan's Marubeni Corp won a US$130 million contract to build the mill, which is now in the second phase and the government has approved an area of 380,000 hectares of forest to supply the mill. Another project, sponsored by the Saigon Export-Import Company, is an investment of US$150 million to build a 115,000 tonnes per annum pulp mill in Nui Thanh district, in the central province of Quang Nam. To supply the raw material for this mill, Quang Nam authorities have allocated 30,000 hectares of land for acacia and eucalyptus plantations. Another company, also in September 2008, the Tan Mai Paper Company, received permission to build four new pulp and paper operations in Quang Ngai province: a paper mill in Dong Nai province, a pulp mill in Lam Dong Nai province and pulp and paper mills in the central highlands of Vietnam. The projects will produce 550,000 tons of paper and 460,000 tons of pulp per year. Hence, the Tan Mai Paper company plans to establish 10,000 hectares of plantations in Lam Dong province to feed its pulp and paper operations. The company is also carrying out a US$30 million plantation project in Di Linh district in Lam Dong Province.[19]

In January 2007, Hong Kong based Lee & Man Hau Giang Paper Manufacturing, plans to build a 330,000 tonnes per annum containerboard paper mill and a 150,000 tonnes per annum pulp mill in Vietnam. In line with the construction of paper mills, Lee & Man Hau Giang is reported to also be investing in plantation projects in Vietnam. Below are the investors in the pulp and paper industry (Table 5-7).

Table 5-7 Private Companies investing in Pulp and Paper projects and Planned Capacity (1,000 tonnes/year)

Company	Pulp	Paper	Types of Product	Year
1.Vietnam Paper Corp				
Bai Bang Project-the II Phase	250		Bleached Chemical hardwood pulp	2011
Than Hoa Paper JS Co	100	100	BCTMP, DIP, newsprint, PW	2011
Paper machine upgrading		30	Printing/Writing paper	2010

[19] Cf Chris Lang "Vietnam: Paper Shortages, price increases, new mills and more plantations", (http://chrislang.org/2008). Also see Thanh Nien News, 28 June 2008, "Southern firm to build US$36 million pulp factory in Central Highlands".

Bai Bang Paper JS Co		50	PW, newsprint, LWC	10/2009
2. Tan Mai Group Co				
Long Thanh Paper Mill		150	Newsprint	2010
Kon Tum Paper Mill	150	200	BCTMP, coated paper	2011, 2012
Quang Ngai Paper Mill	40	70	CTMP, PW, newsprint, packaging	2010
3. Lee & Man Hau Giang Co	330	420	BJKP; packaging	2011
4. An Hoa Paper Co	130 60	130	BHKP, coated paper BCTMP	2009, 2010
5. Quang Nam Pulp& Paper Co	100		BCTMP	2012
6. My Huong Paper JS Co		45	packaging	
7. Sai Gon Paper JS Co		230	Packaging, tissue, coated paper	
8. Phuong Nam Co	100		BCTMP	2011
9. Viet Thang Paper Co		50	Coated paper	2009

Source:Vietnam Pulp and Paper Association (2009).

In a brief, the government policies on providing easy access to banking, infrastructure, investment mechanisms and tax breaks is encouraging investors to invest in Vietnam. Therefore, there is a correlation between economic growth and the consumption of paper in Vietnam. Consumption in 2008 reached 2 million tones and increased to 2.2 million in 2009. Meanwhile paper production increased from 1,114 million tones in 2008 to 1,133 million tonnes in 2009 (Table 5-8). In general, paper production in 2009 increased only 1.74% compared to 2008 due to a reduction in newspaper production by 66% compared to 2008. In 2009, only 40% of the total capacity was utilized, although printing/writing paper production and consumption increased by 3%. Most producers sold their products at production price, breaking even or at a loss for many months from the fourth Quarter to the early third Quarter. On the other hand, packaging production moved up by 15%, as most packaging enterprises are small-scale, therefore, it is easy to restructure operations to match market conditions. Tissue paper production dropped 6.44% as the 2 tissue paper machines of New Toyo, with a combined capacity of 30,000 tonnes/year, were stopped for repairs, pulling the total output down by 15,000 tonnes. However, since May 2009, the newly installed tissue machines began operating again and have covered this downturn.

Table 5-8 the Comparison of Paper Consumption and Production (tonnes)

Unit	**2008**	**2009**	**2009/2008 (+/-)**
Production	1,114,416	1,133,831	1.74%
Import	1,006,394	1,141,190	11.81%
Export	117,000	60,000	- 48.72%
Consumption	2,003,810	2,215,021	9.54%

Source: Vietnam Pulp and Paper Association, 2009.

Table 5-9 Paper Production and Consumption (Tonne)

Unit	2008	2009	09/08 (+/-)
Production	**1,114,416**	**1,133,831**	**1.74%**
Newsprint	59,816	20,531	-65.68%
Printing/writing paper	254,100	262,500	3.31%
Kraft, packaging	642,300	736,000	14.59%
Tissue	73,000	68,300	-6.44%
Export joss paper	85,200	46,500	-45.42%

Source: Vietnam Pulp and Paper Association, 2009.

Economists quote a government report saying that it will boost the paper industry in an effort to make it a key economic sector in the next decade in order to fulfill paper domestic consumption. The strategy will apply two approaches: inviting foreign investors to build pulp and paper mills in Vietnam and direct investment by the government itself. In terms of foreign investors, examples are Thailand's Siam Cement, which is investing in building a US$142 million paper mill to produce 220,000 mt/year of packaging paper by 2009 as well as a joint venture at the An Hoa Pulp & Paper mill between Hanoi's General Export and Import Co and India's Ballarpur Industries and Thailand's Martin Group is building a pulp mill in the northern province of Tuyen Quang worth US$200 million that will start operating in 2009. Eucalyptus and acacia plantations have already been developed to feed these mills.[20] In terms of direct investment, Vietnam will invest more than USD 1,140 million in implementing 15 projects to produce pulp and paper, including USD 9 million to build a 15,000 tonne tissue paper factory in Cau Doung.[21]

How to overcome paper consumption to production gaps?

In the end of 2009 there was indication that some big economies are showing signs of recovery. Vietnam's economy has overcome difficulties and seems to be recovering, with a GDP growth rate of more than 5.8%. An export, which was in a negative growth rate, is starting to move back towards a positive growth rate, even though foreign direct investments are still low. At the time of the global economic downturn, the Vietnam paper industry has restructured its operation and items. Investment in the paper industry remains continuous, products were sold out and large scale investment projects are ahead of schedule. However, according to Vietnam Pulp and Paper Association, the

[20] See "Vietnam Paper Industry: Flying under the radar", (http://www/glgroup.com/News/Vietnam-Paper-Industry).

[21] See "Paper Industry in Vietnam", News from Embassy of the Socialist Republic of Vietnam in the USA, February 4, 2001.

competitiveness of Vietnam paper products has not significantly improved, and the products are still of lower quality and higher cost than in other regional countries. As a result Vietnam still needs to import pulp and paper products from neighbors, such as Indonesia and Thailand.

The government, represented by the Ministry of Finance, announced a policy to reduce the import tax on paper by between 7 and 12 percent in September 2008, depending on the type of paper.[22] Several newspapers reported that the tax cuts were a result of proposals by the Pulp and Paper Association, however, Vu Ngoc Bao, Secretary General of the Association, told the Vietnam News Agency that the "reduction would seriously affect local paper producers, who were having difficulties reducing production costs in face of rising material costs. Foreign giants such as Japan, China, the US and South Korea challenge the competitive capacity of local producers".[23]

Provision of Raw Material

Due to the effects of a rapid increase in woodchip exports in the past few years, as well as the appearance of new pulp and paper mills, treeless forest and hills are being covered by acacia and eucalyptus and the government has eased this growth with easy access for forest plantation concessions to private companies. This has greatly contributed to the rapid development of the pulp industry in Vietnam. As a result of the development of forestry industries, wood demand is increasing. Vietnamese hardwood imports have increased from 1 million m3 annually in 2003 to almost 4 million m3 in 2008 and 2009.[24] At least 80% of this imported volume is re-exported as finished and semi-finished products such as furniture.

Factories must use FSC-certified wood and attain FSC chain of custody certification if their products are to carry the standard's logo. Because wood product buyers in Europe, the US and Japan have increasingly demanded FSC-certified wood products, so Vietnam has a relatively high proportion of FSC chain of custody certified factories. Bai Bang Company is eager to obtain FSC-certification for it's forest plantations through practicing sustainable forest management, under the guidance of SFMI.[25]

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[22] See "Paper shortage leads to import tax cut", Vietnam News, 5 September 2008.

[23] See "Paper projects kick off to cool down shortage:, Vietnam News, 11 September 2008.

[24] *See "Vietnam: A Forestry Investment Opportunity", (Google: Forestry industry in Vietnam).*

[25] *SFMI is NGOs which actively involve in socialization to obtain FSC-certified forest. It is abbreviation of Sustainable Forest Management and forest Certification under the guidance of Dr. Vu Nham, Former chief cooperation and scientific Department of Vietnam Forest University. Interview with Vu Nham, on March 4, 2010 in Hanoi.*

Another approach to increasing production is by recycling paper, accounting for 67% (2008) of the total amount of raw material used for paper production (except for joss paper, made by semi-chemical pulp), mainly used to produce containerboards, boxboards and tissue paper. 35% of waste paper is also used for newsprint. According to a Pulp and Paper Association officer, the recovery rate of used paper in Vietnam for recycling remains low, only 26%, accounting for 67% of total waste paper recycled (the remainder is imported) (Interview, March 5, 2010).

In February 2007, the MARD started a program to establish 2.4 million hectares of plantations over the next five years in the northern mountainous region. The plantations, according to Hua Duc Nhi, the Vice Minister of MARD, are intended to provide raw material for the pulp industry, which will annually produce 700,000 tonnes of pulp.[26] There is also the Five Million Hectares Reforestation Program (5MHRP), intending to plant one million hectares of industrial tree plantations to feed the pulp and paper industry.

Other actors also support the creation of plantations, such as the German government, which is establishing plantation projects in five northern provinces of Vietnam. The Asian Development Bank (ADB) has approved a US$45 million loan for an afforestation project in the central highlands and the World Bank is funding a Forest Sector Development Project in four central coastal provinces. These projects intend to plant 66,000 hectares of plantations.

[26] See “Vietnam: What is happening in the pulp and paper sector”? in World Rainforest Movement (http://www.wrm.org.uy/bulletin/115/Vietnam. Html).

C. Concluding Remarks

Plantation forestry in Vietnam has developed rapidly since the 1990s and 2000s. 600,000 hectares of plantation forests in 1990 increased to 1.7 million hectares in 2000. This has had a positive impact on domestic and foreign investment, providing cash to boost growth in the domestic economy and strengthening the socio-economic capacity of farmers in district and rural areas. Domestic paper production achieved 900,000 m3 tons in 2005, 1,114,416 m3 tons in 2008 and finally 1,133,831 m3 tons in 2009. The rationale for this success is as follows:

First, the Vietnam government launched an economic reform, shifting from a centrally planned system to a market oriented economy. The main issue in the forestry sector has been the application of a policy of “land distribution” and “timber concession” areas to stakeholders such as households, individuals, the cooperative sector, private companies, state forest enterprises, etc.

Its impact on the livelihoods of local farmers and income generation increased rapidly and the government now obtains annual foreign exchange earnings of US$2.5 billion from forestry industry products.

Second, the government has encouraged domestic and foreign investors to also be involved in a wide range of timber plantation activities and gives incentives such as easy accessibility to timber concession areas, financial institutions, tax relief on import of machineries and more. This policy has attracted investors, cooperative sectors, farmers, NGOs, donor agencies from international banks, such as the World Bank, ADB and foreign agencies such as CIDA, SIDA, JICA, GTZ, UNSAID, CIFOR, CIAR, etc., to actively engage to tree planting in Vietnam. The impact of this policy is that today, eucalyptus urophilla and acacia mangium plantations have increased, with a positive response from stakeholders, participating in the planting of trees on a massive scale. In spite of criticism from NGOs concerning the ecological damage from a wide range of fast growing trees such as acacia and eucalyptus, affecting soils, leading to floods and soil erosion during the rainy season, the government and other stakeholders have been positively engaged in tree planting in conservation and special use forests.

CHAPTER 6 GENERAL CONCLUSION

1.

It is clear that plantation forestry in ASEAN countries (Indonesia, Thailand, Philippines, and Vietnam) does not have an integrated practice of "Sustainable Forestry", covering economic, social and ecological dimensions. Most private companies highlight profit and the avoidance of social conflict with local communities. The *economic and social dimensions* of contract farming lead to job creation and a flow of money into rural communities. Meanwhile, the *ecological dimension,* which highlights forest conservation and maintaining biodiversity, is not common across all private companies, as they prefer to only fulfill respective government and leave the issue of environmental degradation to the government and international donors such as those of JICA, JBIC, CIDA, CIAR, GTZ, USAID, etc.

2.

Indonesia has adopted a strategic policy for the forestry industries, especially pulp and paper, earning the country US$ 4.8 billion of foreign exchange earnings and creating jobs in rural areas. Indonesia is the largest paper producer in Southeast Asia, with 9.2 million m3 in 2009. **APP** (**Asia Pulp Paper**) for instance, is the biggest paper producer in Indonesia and Southeast Asia because: it is a public company with access to capital from domestic and overseas stock exchanges and banks, large timber concessions, promoting research and development to improve the quality of seedlings and an aggressive market strategy overseas, cooperating with foreign partners, such as Itochu Group in Japan and opening factories in China such Ningbo Zhonghua, Gold Huansheng, Gold Hong Ye, Gold East and Hainan Jinhai.

However, the government does not involve local farmers as main actors in plantations through contract farming initiatives, reducing the impact on poverty reduction for local farmers. "Over the last two centuries, capitalism diffused worldwide under the regime of private property rights, and the *tropics* (such as Indonesia) was no exception. Economic actors increasingly regarded land, labor and capital as three main factors of production' (Sugihara, Kaoru 2008:9). As a result, job creation and economic growth in rural areas has not been so rapid because of the availability of credit to smallholders is very low, if not inexistent.

3.

In Thailand, the relative success of plantation forestry highlights economic benefits rather than the environmental impact of plantation forestry. The Thai government developed the pulp and paper industry through providing easy procedures to obtain timber concessions, credit, good infrastructure and tax breaks on the import of machineries and other goods for pulp and paper factories. Private companies, such as Siam Cement Group and Advance Agro established self-financed and managed plantations and through contract farming, leading to job creation and socio-economic growth in rural areas.

4.

By contrast, in the Philippines, where the government does not highlight the economic benefits of plantation forestry, but more emphasizes on environmental issues, most farmers complain of long bureaucratic procedures and the difficulty and cost of harvesting trees and transporting them to timber factories. Farmers and factories are losing economically. Hence, pulp and paper industries considered “backwards” in the Philippines, compared with other ASEAN countries such as Indonesia, Thailand and Vietnam. The Philippines government should provide economic incentives through easier access to loans, because bank officers still consider the forestry sector as high risk and a very long term investment. The government should also improve rural infrastructures; encourage the Department of Forestry, financial institutions and research institutions to provide for easier access to establishing and managing plantations and pulp and paper mills.

5.

In case of Vietnam, the rapid development of pulp and paper production has led to domestic paper production reaching 1.1 million m3 in 2009, although paper consumption also reached 2.2 million m3 in 2009. The government obtains US$2.5 billion foreign exchange earnings from forestry industries. The government introduced trade liberation, whereby investors can rent land for timber concessions, encouraging domestic and foreign investors to become involved in a wide range of timber plantations and giving economic incentives, such as credit, tax relief on imported machineries for establishing pulp and paper factories. However, the government also provided easy access to timber concessions for individual farmers, private companies and government forest enterprises, encouraging private and government companies to practice ‘contract farming’ with individual farmers under cooperatives. This has led to greater job growth and income generation for smallholders in plantation forestry.

6.

There are pro and contra groups on plantation forestry using fast growing trees such as *Eucalyptus camaldulensis, pelita, Europhylla and Acacia mangium.* In the pro group, mostly represented by government officers and private companies, the emphasis is on the creation of jobs and economic boost to rural areas. Those that are contra, which is mostly local NGOs, such as Walhi (Wahana Lingkungan Hidup) and Jikalahari and international NGOs such as WWF and Greepeace argue that private companies are involved in land conflicts with local farmers, land clearing in natural forests and peat swamps, that are then converted into palm oil and HTI plantations as well as the ecological damage caused by monoculture plantations, that absorb more water than native local trees, affecting the fertility of the land and level of water in areas surrounding the plantations.

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