

Forest and plantation development in Laos: history, development and impact for rural communities

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SUMMARY

This paper presents a historical review and overview of the Lao forest sector. Previous research and forestry related policy documents of Laos indicate that forest management has evolved through six stages. Initially, natural forests were used by local people for basic needs. Little was destroyed or degraded. The second stage was greatly influenced by French colonisation. The third was a period when natural forests made major contributions to national economic growth, when natural forests were increasingly and widely harvested. Remaining phases involved growing criticism of Lao forest management practices from international organisations and the Laos National Assembly. Recently, private investment in tree plantations has increased. Overall, ineffective policies and inefficient institutional agencies have seriously constrained Lao forest management. Policy instruments such as concessions to plantation development need to be modified and balanced by the promotion of outgrower schemes. Plantation investments should be encouraged to follow international standards, guidelines and codes of practice.

Keywords: Lao forest, plantation, forest policy, community, history

Forêt et développement des plantations au Laos: histoire, développement et impact pour les communautés rurales

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Une vue d'ensemble du secteur forestier du Laos est présentée, et l'histoire de la gestion forestière est passée en revue. Des recherches antérieures et des documents de politique associés indiquent que la gestion forestière du Laos a évolué en six étapes. Au début, les forêts naturelles étaient utilisées par les populations locales pour pourvoir à leurs besoins de base. La destruction et la dégradation étaient alors infimes. La seconde étape était fortement influencée par la colonisation française. La troisième vit les forêts naturelles offrir une contribution majeure à la croissance économique nationale quand les forêts naturelles étaient largement récoltées, et ce, d'une manière croissante. Les étapes restantes furent témoin d'une critique croissante des pratiques de gestion forestière du Laos, provenant d'organisations internationales jusqu'à l'assemblée nationale du Laos. Les investissements privés dans les plantations d'arbres ont récemment augmenté. Une politique inefficace et des agences nationales inefficaces ont généralement sérieusement restreint la gestion forestière du Laos. Les instruments de politique allant des concessions au développement de plantations ont besoin d'être modifiés et équilibrés par la promotion de plans de sur-croissance. Il faudrait encourager les investissements dans les plantations à suivre les standards, les lignes de conduite et les codes de pratique internationaux.

Bosques y plantaciones en Laos: historia, desarrollo e impacto sobre las comunidades rurales

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Se presenta una perspectiva general del sector forestal de Laos en el contexto de un resumen histórico de la gestión forestal. Las investigaciones anteriores y los documentos normativos sobre silvicultura indican que la evolución de la gestión forestal ha pasado por seis etapas diferentes. Al principio, los bosques naturales fueron utilizados por la comunidad local para satisfacer sus necesidades básicas, y hubo poca destrucción o degradación de los recursos. La segunda etapa se destacó por la fuerte influencia de la colonización francesa, y la tercera fue un período en que los bosques naturales fueron talados a gran escala cada vez más, así contribuyendo de forma importante al crecimiento económico nacional. Las fases más recientes han sido caracterizadas por críticas cada vez mayores de las prácticas laosianas de gestión forestal por parte de organizaciones internacionales y la Asamblea Nacional de Laos, y en los últimos años se ha presenciado un aumento en las inversiones privadas en plantaciones de árboles. En términos generales, las políticas ineficaces y las agencias institucionales ineficientes han tenido un efecto negativo importante sobre la gestión forestal en Laos. Los instrumentos de política, como por ejemplo las concesiones para el desarrollo de plantaciones, deben ser modificados y compensados por la promoción de programas para subcontratistas. En lo que se refiere a las inversiones en plantaciones, se debería fomentar el cumplimiento con las normas, pautas y códigos de práctica internacionales.

INTRODUCTION

Forest management in many countries has undergone similar historical stages of development (Lane and McDonald 2002, Pretzsch 2005): (1) *traditional hunter-gatherer society*; (2) *exploitive colonization, settlement and commercialization*; (3) *wood resource protection*; (4) *multiple use management*; to (5) *sustainable forest management*. Lane and McDonald (2002) have conceptualised these stages using case studies from the western world's experiences of forest management. Pretzsch (2005) formulated his model on an understanding of tropical forest experiences. While the model is relatively new in the field of forestry, it had its origin in the well-known theory by Rostow (1960, 1971, 1990) concerning the different stages of economic growth in the development of many countries.

Much remains unclear in regard to the links between forest management policies and socio-economic development of a particular country. However, the model is an important step in understanding the economy and environment in a particular country, and enables one to illustrate the historical and the complex interaction between the socio-economic and environmental problems of forest management over time (Lane and McDonald 2002). Rostow (1960) also pointed out that the general model can help us better visualize how a particular country shifts from traditional to industrial society.

This paper investigates the evolution of forest management in Laos and analyses the introduction of plantation forestry and its implications for the Lao economy and environment. Analysis includes the policies and internal and external forces driving forest management in Laos. Before considering these issues, a brief summary of the Laos forest sector and forest plantation development is required to put them in context.

THE FOREST SECTOR IN LAOS

The Laos forest area is 16.14 million ha, comprising mostly modified natural forest (14.43 million ha) and 223 000 ha of plantation¹ (FAO 2006). All natural forests are owned by the national government, which plays a key role in their management. Trees in plantations are owned by a variety of domestic and foreign owners through direct investment by forest industry companies, farmers, and private individuals.

During much of the past century, Laos has witnessed a dramatic decrease in its natural forest. According to the most recent record by the Lao Department of Forestry (DOF), the total area of forest² dropped dramatically from 70% of the land area or approximately 17 million hectares in 1940, to 11.6 million hectares in 1982, and to only 41% (about 9.8

million hectares) in 2002 (Figure 1). In contrast, the area of potential forest³ increased quite rapidly from about 8.5 million ha to about 11 million hectares during the same period. The permanent agricultural land also witnessed a significant increase, from about 700 000 ha in 1982 to about 1.2 million ha in 2002.

FIGURE 1 Forest land use change during 1982-2002



Source: DOF (2009a)

In recent years, the Government of Laos introduced a number of policy instruments and incentives to boost forest cover by promoting the development of forest plantations throughout the country. For instance, one of the main forest policies is to restore forest cover to 70% by the year 2020 (MAF 2005). As a consequence, the area of plantations especially rubber plantations increased significantly from just less than 1 000 ha in 1990 to over 200 000 ha in 2007, an expansion largely funded by foreign direct investment. However, tree plantations are likely to be only a small part (perhaps 500 000 hectares) of the overall forest restoration plan of 7 million hectares. Most of these plantation estates are expected to provide social and environmental benefits to local communities and their economies. Despite the increase in forest protected areas, the outcomes of plantation expansion continue to be criticised by conservation groups, non-government organisations and most recently by the members of the Laos National Assembly. Some critics argue that the establishment of plantations on degraded forest and agricultural land generates a negative impact on local communities and their livelihoods.

Even though the Government of Laos has strongly encouraged foreign investment in tree plantations, there are still several constraints affecting the plantation investment climate. These include: unclear legal and administrative processes, policies and regulations concerning various kinds of rights: concessionary, land-uses, tree ownership, management, harvesting, transport, market, trade and many others as well as those of rural communities.

¹ The major proportion of forest plantations in Laos includes rubber plantations.

² While FAO (2004) defines the forest as a piece of land containing of more than 0.5 hectares with trees higher than five meters and a crown cover of more than 10 percent, in contrast, the DOF definition, it refers to the forests with crown cover over 20%. As a result, the areas defined by FAO are much higher as they also include woodlands which are not considered as forest by DoF.

³ Potential forest refers to degraded and unstocked forest with a crown cover below 20%

Recently, the Government has participated in both national and regional workshops on the implementation of the Voluntary Guidelines for Responsible Management of Planted Forests and has initiated a process to develop a National Guideline for sustainable plantation development to ensure that plantations bring about positive economic, social and environmental outcomes to all Lao communities.

FOREST PLANTATIONS IN LAOS

Forest plantations have existed in Laos for well over 90 years. Rubber (*Hevea brasiliensis*) and teak (*Tectona grandis*) plantations were introduced into Laos in the early 1900s by French colonialists. Eucalyptus species were introduced in the late 1960s. The majority of plantations from the early 1900s to 1990s were planted on a small scale, mainly for experimental purposes. However, recently there has been increasing investment in plantations by private, national and multi-national companies.

According to Ovington *et al* (1968) cited in Lacey (1994), plantations of teak, a native species, were developed in Luang Prabang Province in 1915 by the French. However, the areas of teak plantations were small because there were no incentives to expand plantations at that time (Xayvongsa 2001). Natural forests were abundant in good quality timbers, and the transport network was not developed for exporting timbers from one place to another (Stuart-Fox 1995). In this period, the large natural teak forests of northern Laos exclusively belonged to the royal family while planted teak was a way for ordinary people to get access teak woods. Currently, the area of teak plantations in Luang Prabang Province has increased to over 10 000 ha, mostly owned by private smallholders (Midgley *et al.* 2007).

Eucalyptus plantations were introduced through the Lao-Australian Reforestation Project in the early 1970s. Initially, the plantations were developed to identify the best species, provenances and establishment methods. The main species planted were *Eucalyptus tereticornis* and *Eucalyptus camaldulensis*. Today, the remaining trial plots, which are located in DongDok campus of the Faculty of Forestry⁴, Nongteng and Nonglom⁵ are probably some of the oldest remaining trials of these species in the world.

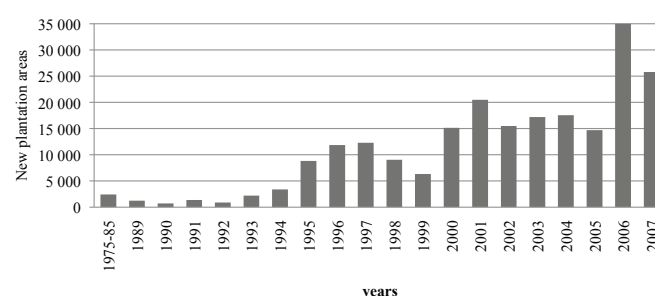
In recent years, investment in rubber plantations has been favoured. Since 1990, over 140 000 ha of rubber plantations in Laos have been established, with an expected increase to 300 000 ha by 2020 (MAF *et al.* 2009).

While teak and rubber plantations have been extensively planted by the smallholders in the Northern part of Laos, *Eucalyptus camaldulensis* and *Acacia mangium* plantations have been increasingly planted by multi-national companies in the central and southern parts.

Tree plantations have risen rapidly since the mid-1990s

(Figure 2). In 1990, the area was just under 5 000 hectares, most of which were fast-growing species namely eucalypt and acacia plantations planted mostly by foreign direct investors such as Burapha Agroforestry Co., Ltd. and the New Zealand BGA-Laos Plantation Forestry Ltd. (currently known as Oji- Lao Plantation Forestry Co., Ltd.). In 2007, the area of tree plantations was increased to over 200 000 hectares, which consists of mostly rubber plantations.

FIGURE 2 New forest plantation areas in Laos during 1975-2007



Sources: DOF (2007) and MAF (2005a)

According to the report by the Ministry for Planning and Investment of Laos (Voladet 2009), the number of applications and approvals of foreign direct investment in plantations is growing (Table 1). In total, 123 applications for foreign direct investment for agribusiness, with an investment value of almost US 0.7 billion, have been approved or are being currently considered. Most of this is in plantations with the favoured species of fast growing species: rubber, eucalyptus, agarwood, jatropha and oil palm.

A wide range of investment and ownership arrangements exist for plantations in Laos. For instance the most recent study by Castella *et al* (2009) has identified seven arrangements

TABLE 1 Approved foreign investment for agriculture project 2001-2007

Year	Number of projects	Investment value (USD)	Accumulated investment value (USD)
2001	13	18 616 250	18 616 250
2002	6	13 988 000	32 604 250
2003	16	17 321 800	49 926 050
2004	19	75 704 017	125 630 067
2005	21	17 352 240	142 982 307
2006	39	458 518 711	601 501 018
2007	9	63 338 533	664 839 551
Total	123	664 899 551	

Source: Voladet (2009)

⁴ The Faculty of Forestry (FOF), National University of Laos was formerly called "Forestry Training Centre", which was set up with support and cooperation with the Australian Government in 1970s.

⁵ Nongteng village is located 14 Km north of the Vientiane Capital while Nonglom is 15 Km east of Savanakheth Province of Laos.

TABLE 2 *A typology of rubber regimes, 2009*

Rubber regimes	Land	Labour	Capital	Market	Technology
Smallholders 5+0 (with own capital)	○	○	○	○	○
Smallholders 5+0 (with government officials)	○	○	○	○	□ ○
Contract Farming 4+1 Smallholders (credit)	○	○	○	□ ○	□
Contract Farming (3+2)	○	○	□ ○	□	□
Contract Farming (2+3)	○	○	□	□	□ ○
Contract Farming (1+4)	○	□ ○	○	○	□ ○
Concession Farming	□	□	□	□	□

Note: ○ = farmer inputs; □ = company input

Source Castella et al (2009)

for rubber plantations (Table 2). Each arrangement has been classified based on the contribution of production factors by farmers or companies, namely land, labour, capital, market and technical knowledge. For instance, while the so-called 2 + 3 contract farming model is one type of outgrower schemes in which the farmer contributes land and labour (2) and the company/investor supply technology, finance and markets (3), while the 0 + 5 concession model implies that farmers are excluded from ownership. Three main arrangements for planting have been identified: individual household planting, contract farming and concessions (MAF *et al.* 2009).

All planting arrangements are driven by regional markets and global trends. The large proportion of woods from tree plantations is currently exported to neighbouring countries where wood-based industries and sea ports exist. Because there is an excessive expenditure associated with tree plantation and wood industries such as transport costs, custom clearance costs, official and unofficial charges and so on, plantation owners can only obtain low or no profit margins from tree plantations (Committee for Planning and Investment *et al.* 2006). However, there is an opportunity for Laos to develop vibrant and modern wood-based industries, which are funded by foreign investors. The promotion of all types of planting schemes is important in attracting foreign investment to the sector and providing reassurance of adequate and secure supply of raw materials to wood-based industries.

Even though the Government of Laos offered a strong support and promotion for planting by smallholders, i.e., the 2 + 3 Model, the model was not successfully implemented and adopted. This model requires small farming communities and households to invest labour, land and capital on their plantations rather than rice or short rotation cash crops, and have to wait up to seven years for economic return on their investment. As a result, only few farmers with sufficient food and land can participate in this model.

In order to address technical, financial and administrative problems often faced by smallholder tree planters, the farmers' representative organisations⁶ have been recently established to help communicate with local communities. Their main responsibility is to provide smallholders with market information and administrative advice (Midgley 2007).

FOREST MANAGEMENT PHASES IN LAOS

Forest management of Laos has had six phases of development: traditional forest use, exploitative colonisation of forest use, forest resource-based economy, internationalisation of forest policy, transitional phase of forest policy, and privatisation of land and forestland.

Traditional forest use in Laos to 1893

Traditional society in Laos consisted of an economic structure with limited production functions⁷. Forests were mostly used for basic human needs and there was only minor trade in the local market. The majority of the Lao population was highly dependent on forest and non-timber forest products (NTFPs) for their subsistence. In some places NTFPs such as styrax benzoin⁸, resins, sticklac, cardamom, bee wax and many wildlife products such as ivory, rhinoceros horns, pangolin scales, porcupine quills and a variety of hides and skins were traded locally amongst the Lao population as well as with the neighbouring countries (Stuart-Fox 1998: 49). In many places highland hunters and gatherers exchanged their forest and agricultural products with the lowland population. Family and clan relationships played a vital role in the traditional society. While women were responsible for house chores and rice cultivation, men were mainly responsible for hunting and fishing (Garnier and Tips 1996: 84).

⁶ Lao Tree Plantation and Cash Crop Business Association (LTPCCBA) and the Sustainable Tree Plantation & Livestock Promotion Association (STPL)

⁷ The method of production in this type of economy is regarded as low productivity. In addition, the relations of production and social interactions were fixed by the kinship system.

⁸ the resin extracted from *Styrax tonkinensis* and used for incense.

The Lao population was relatively small and dispersed throughout the country. The fact that the technology of timber harvesting at this time was limited may be the main reason why forest remained dominating the whole country. For instance the Lao population in the seventeenth century was estimated to be about 1.5 million people including the population on the north-eastern Thailand⁹ (Tarling 1992: 119). Wildlife hunting and shifting cultivation were the main occupation of Lao people in that time, especially the local population. In this period even though the land was under the ownership of the Lao crown, in reality, the allocation and transfer of land and forestlands were determined by custom and tradition.

For many centuries, Laos was known for its extensive cover of tropical rain forest. As Garnier (1866-1868) stated in the Mekong Exploration Commission report during 1866-1868:

Indeed, our whole story could be said to take place in a single unending forest. We entered it in Cambodia, and we were not going to be out of it before we set foot on the soil of China, eighteen months later. Plains, hills, mountains were covered with tropical vegetation everywhere...the villages and the rice fields surrounding them seemed to be only islands lost amid an immense ocean of greenery. The cultivated land is nothing compared with the extent of the woods.

Garnier and Tips (1996: 219)

Exploitive colonization of the Laos forest (1893-1975)

Laos was colonised by the French in 1893. The majority of forest and forestlands were directly and indirectly controlled by the colonial administration. Traditional forest use (the monarchs forest use right) was restricted by an agreement between the King of Luang Prabang¹⁰ and the colonial administration in 1917 (Evans 2002: 47). Major changes in Lao forest management and policies in the colonial period include the establishment of colonial forestry institutions to manage the forest and forestland and the introduction of a tax system, property rights, plantations, and regulatory framework to limit the use of natural forests by the local population. These shifts aimed to transform the traditional economy into a capitalist one.

There were two main colonial periods: the early French colonial period (1893-1945) and the Indochina war period when the United States was also involved (1945-1975).

During the early French colonial period, Laos was regarded as one of five territorial states of Indochina¹¹ colonised by the French. The forest and forestland in central and southern Laos were directly controlled by French Indochina. Even though the Northern territory belonged to

some members of the royal family, they were still under the indirect control of the colonial administration (Evans 2002; Gunn 1990) who directly and indirectly shaped the forest policies and rules. For example, exploiting the timber from natural forests was one of the main forest policies in the period. According to Lévy (1974) cited in (Gunn 1990: 27), about 12 000-15 000 logs, particularly teak, were harvested by the French entrepreneur (Compagnie de l'est asiatique francaise) with the support of the colonial State Forestry Service established in 1926. These timbers were floated down the Mekong to Saigon, Vietnam. The 1930 introduction of the new forest code (Code Forestier) in Indochina had highly negative impacts on rural communities (Cleary 2005: 361). This code prohibited rural communities from practicing the shifting cultivation, which had been and remains the main occupation of the rural population.

The French administration also encouraged the establishment of coffee, rubber and teak plantations in the early 1900s. As mentioned in the previous section, the purpose of these plantations was primarily experimental and they were planted on small scale. By 1945, approximately 20 000 hectares of rubber plantations were established in Laos with the hope of exporting rubber products overseas (Gunn 1990: 28). However, this programme, which was interrupted by extreme conflicts during the Indochina war, was unsuccessful except for the coffee plantations on the Bolaven Plateau of Laos. While more and more natural timbers and forest products were removed, no capital generated from these natural resources was invested in the Lao economy (Stuart-Fox 1995). The revenue generated from the exploitation went to the French colonial power and the non-Lao workforces.

As part of the Indo-China region, the Lao economy was automatically linked to the regional and the world market. However, the French administration still had many difficulties in modernising the economy. Stuart-Fox (1995) described how the French administration tried to exploit the natural resources in Laos. First, the infrastructure in Laos was poor so the construction of roads and a railway would facilitate the exploitation of natural resources for sale to the outside world. Second, the population was small and the workforce insufficient, so immigrants had to be attracted from neighbouring countries. Third, in addition to the immigration policy to increase the workforce, capital was required and the French administration believed that the capital would materialise when the other two goals were achieved. However, this development plan was interrupted by war and a brief Japanese occupation in 1945, culminating in 1975 in the replacement of the royalist government by a new Government of Laos.

During the Indochina war, the Laos forest witnessed a

⁹ Laos, formerly called "the kingdom of Lan Xang, lasted from 1345 to 1707 and included territory on both banks of the Mekong, notably the entire Khorat plateau, now comprising north-eastern Thailand. see STUART-FOX, M. 1995. The French in Laos, 1887-1945. *Modern Asian Studies* 29(1): 111-139.

¹⁰ Luang Prabang, one of the seventeen provinces of Laos, is located in the northern Laos.

¹¹ Five territorial states of the French colony consist of Cochinchina, the protectorates of Annam, Tonkin, Laos, and Cambodia.

tremendous decrease in forest cover, losing about one-fifth of the total forest area. Two main factors contributed to this loss. First, the Indochina war had severe effects. According to Mordaunt (2007), more than two million tonnes of bombs were dropped on Laos in the secret US campaign between 1964 and 1969. Furthermore, many forest areas were used as army camps, military roads, sources of food and income and a battlefield between the Indochina and American forces. These directly and indirectly impacted on the natural forests (Fujita *et al.* 2007). Second, in Laos like many Southeast Asian countries, the industrial forestry sector had undergone a rapid growth between the late 1960s and early 1970s. Forest management in this period was extremely difficult to regulate and control, leading to an exponential growth of illegal logging in the natural forests.

Forest resource-based economy (1975-1986)

Even though there were extensive areas of closed forest remaining in 1954, there was a high rate of deforestation and heavy logging operations in the 1950s (Sandewall *et al.* 2001). The French immigration policy, which increased labour forces in Laos, also induced further destruction and degradation. The majority of the population, including the immigrants, almost entirely practiced shifting cultivation and depended greatly on forests. There were increasing numbers of immigrants, greater pressure on forestlands and the shifting cultivation fallow cycles were also shortened. These combined factors helped to accelerate the natural forest destruction and degradation (Sandewall *et al.* 2001: 59). More importantly, more and more primary forest was exploited without reforestation. Consequently, the area of natural forest had dramatically decreased from 64 percent in the 1960s to 47.2 percent in 1989 (World Bank *et al.* 2001).

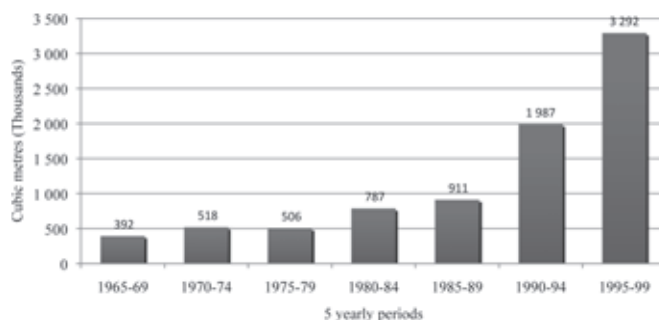
In this period, natural forest resources were a major contributor to national economic growth. The intent of the Government of Laos was to maximise income from its existing natural forests. The forest harvesting and operation were directly managed by nine (later reduced to six) state forest enterprises under the control of provincial forest authorities and under the Ministry of Industry, Handicraft and Forests at the central level (Lerche and Rao 1984). A minimum of 300 000 hectares of the natural forest was allocated to each enterprise for harvesting and management.

After 1960, log production from natural forest increased considerably (Figure 3) from around 400 000 cubic metres in the period 1965-69 to just under one million cubic metres in 1985-89. During this time, exports of wood constituted the main source of national revenue. Lerche and Rao (1984) reported that the revenue from wood export contributed US\$8.7 million or 45% of the total national value of exports of US\$19.4 million in 1979. Timber extraction in the course of development projects such hydro-electricity, mining and other infrastructure projects contributed to increased log production.

Despite the high contribution of the forestry sector to the national economy in this period, this income did not percolate to local communities. All state forest enterprises

employed highly mechanised harvesting machines in their forest operation. Furthermore, there was little re-investment of revenues in rural communities, with the Government favouring development of the transport and communication sectors. National expenditure on transport

FIGURE 3 *Log production volumes during 1965-99*



Sources: World Bank *et al.* (2001)

and communication sector accounted for 33% of the total in 1984-86 and almost half (43%) in 1992 (Bourdet 1994).

Plantation establishment between 1975 and 1980 was relatively small and mainly for experimental purposes as mentioned above. Only 1 200 ha were planted, primarily *Eucalyptus camaldulensis*, *Tectona grandis*, *Cassia siamea*, *Peltophorum dasyrachis* and *Holoptelea integrifolia* (Lerche and Rao 1984).

Internationalisation of forest policy (1986-1996)

The fourth phase, from 1986 to 1996, can be described as internationalization of forest policy. Forest policy in this period was significantly influenced by dramatic economic reform from a centrally planned to a more market-oriented economy, which was officially called “the New Economic Mechanism”. The introduction of New Economic Mechanism was accompanied by a series of economic and policy reforms, including a steady elimination of price controls; discarding socialist cooperative farming; improvement of the banking and financial system; institutional reform and elimination of the government’s monopoly on trade; reduction of state-owned enterprises; the introduction of defined property rights; integration of the Lao economy in global trade and competition; and the development of factor markets (Bourdet 1994; World Bank 2007). The first national forestry conference was held in 1989 with participation of national and international organizations. The conference focused on pressing issues affecting the primary forest and finding on solutions for its protection. Following the conference, the Tropical Forest Action Plan (TFAP), funded by international organizations namely, the World Bank, Asian Development Bank (ADB), United Nations Development Programme (UNDP), Food and Agriculture Organization of the United Nations (FAO), and Swedish Bilateral Assistance (SIDA), was approved and adopted as the National Forestry Action Plan by the Government of Laos in 1991. Based on the recommendation under TFAP, a

series of forest policy instruments were introduced aiming to protect the remaining natural forest as well as to restore the extent of forest to its original cover of 70% of 1940. One of the six activities stipulated in the National Forestry Action Plan was to promote the establishment of forest plantations with preference for fast-growing species on degraded forest land (ADB 2001, 2005; Tsechalicha and Gilmour 2000).

In 1993, some eighteen National Biodiversity and Conservation Areas (NBCAs) or National Protected Areas were established by the issue of the Prime Minister's Decree No. 164 (Berkmüller *et al.* 1995; Robichaud *et al.* 2001; Sanonty 2002). Between 1995 and 1996, another two NBCAs were declared. Today, NBCAs cover 12.5% of the total land area or equivalent to 3.2 million ha.

In 1994, the Land and Forest Allocation Programs were initiated by the issue of the Prime Minister's Decree No. 186. The Land and Forest Allocation Programs policy was a tool to classify land and forest areas into different categories: protection, conservation, production, and regeneration. According to MAF (2005), the objectives of Land and Forest Allocation Programs were two-fold. Firstly, it aimed to identify and allocate property rights to potential agricultural land and degraded forest to households for agricultural production and tree planting respectively. Secondly, village communal land was to be classified and zoned into management categories. The Land and Forest Allocation Programs played a vital role as a basis for the formulation of forestry law in 1996 and as a legal framework for promoting plantations (Tsechalicha and Gilmour 2000). This is because the decree is very favourable toward supporting industrial plantations for both domestic and foreign investors. For instance, plantations which contain more than 1 100 trees per hectare were exempted from land tax and free from royalty payments i.e. government charges on import and export. However, this policy incentive has a negative impact on plantation arrangements which employ agroforestry systems because they do not have these high numbers of trees.

In this period, the ADB supported tree plantation development by providing loans to smallholders and private enterprises for the establishment of industrial tree plantations on about 9 000 hectares of degraded forest land in four provinces of Laos. This project loan had two technical assistance components relating to the Institutional Support projects for Agriculture Promotion Bank and the Department of Forestry. The ADB (2005) assessed the overall results of these projects as unsuccessful. This was due to the lack of sufficient and high quality technical extension support, financial advice and market information.

Despite the strong influence of international organizations regarding deforestation and forest degradation, log production from natural forest continued to increase considerably in this period. There were both internal and external reasons for this increase. Internal forces include the lack of effective and efficient institutions to manage the primary forest in a sustainable manner, leading to corruption and illegal logging. External forces include the obligation in which forest timbers were sold to lending countries namely

Vietnam and China, to reduce the national debt (Anonymous 2000).

Transitional Phase of Forest Policy (1997-2001)

The fifth phase can be divided into two sub-periods. The first period (1997-99) saw declining private investment in tree plantations. While many factors, including the Asian financial crisis in 1997, affected tree plantations in this period, researchers and consultants identified the lack of efficient and effective institutions as the main factor. For example, URS Australia Pty Ltd (2001), commissioned by ADB, studied constraints affecting tree plantation investment in Laos during this period and identified the highly bureaucratic system for approval and reporting as the major obstacle to the development of industrial tree plantations. World Bank (2007) and CPI *et al.* (2006) also reported that the procedures of business operations in Laos were too complex and time-consuming to facilitate the start of a new business. A report by Fortech (1999) indicated that if the Government of Laos did not remove this constraint, direct foreign investment would be discouraged and/or the ADB would withdraw plantation funds if plantation establishment was not increased.

However, the period 2000 to 2001 witnessed rising direct foreign investment in forest plantations, especially fast-growing trees. Factors that drove this investment included:

- the increasing areas with potential for plantation development as a result of shifting cultivation or unsustainable harvesting (as mentioned above),
- a relatively low population density,
- the establishment of infrastructure such as the ASEAN highway linking Laos to Thailand, China, and Vietnam,
- an improvement in the business and investment environment and
- the legal and policy framework included foreign investment promotion and forest related-laws and the Land and Forest Allocation Programs policy.

Moreover, the land rent for planting in Laos was lower than in neighbouring countries (Schumann *et al.* 2006) and the costs of other production factors were competitive (URS Australia Pty Ltd. 2001).

Privatisation of Land and Forestland (2001 to present)

The main thrust of the current forest policy of the Government of Laos aims to turn land into capital, as was attempted by the French during the colonial period. The National Land Management Agency has been given authority to allocate concessions of degraded forest lands for agricultural business and tree plantations. According to the recent decree of the Prime Minister on state land lease or concession (Article 28), the National Land Management Authority has the right to grant concessions for the degraded forest land over areas from 150 ha to 15 000 ha for each project. An area more than 15 000 ha must be approved by the National Assembly

Standing Committee.

At the time of writing, the debate on major amendments to the new investment promotion and forest laws, especially the granting of the concession to multi-national forest industry companies have polarised members of the Laos National Assembly. The recent decision made by the Government was to temporarily suspend concessions of land more than 1 000 hectares because of the growing criticism from members of the National Assembly (Times Reporters, 2009). This indicates the strength and importance of the National Assembly in the allocation of plantation concessions.

Private investment has become the dominant source of funding, mostly involving direct foreign investment

TABLE 3 *Company rankings of global forest industries in terms of international sales*

2007 Ranking	Company	2007 Sales (US\$ bill)
1	International Paper	21.9
2	Stora Enso	18.3
3	Kimberly-Clark	18.2
4	Svenska Cellulosa	15.7
5	Weyerhaeuser	13.9
6	Oji Paper	10.7
7	Metsaliitto	10.5
Unlisted	Asia Pulp and Paper	4.5*
Unlisted	Aditya Birla (Grasim)	8.3

Source: Pricewaterhouse Coopers (2008)

by companies such as the Japanese Oji-Laos Plantation Forestry Company Ltd. (LPFL)¹², Stora Enso, Aditya Birla, and others from China, Thailand and Vietnam (Table 3).

According to the world ranking of the forest industry survey 2008, some of the largest global forest companies such as Stora Enso (2) and LPFL (7) are developing the forest plantation in Laos. For instance, LPFL currently owns over 10 000 hectares of eucalypt plantations and it aims to develop another 40 000 ha on its 150 000 hectare concession for fast-growing tree plantations.

DISCUSSION

Impact of increasing global demand for wood products on forest and plantation development in Laos

Exogenous factors driving the development of tree plantations in Laos are deeply varied, complex and interlinked. De Fégely (2005) set out three major influences on the global demand

for primary wood products: 1) population, economic growth and demographic transitions, 2) technological changes, and 3) environmental issues.

Population, economic growth and demographic transition are probably the most important ones stimulating world demand for primary wood products. The global population is estimated at 6.8 billion in July 2009 and will probably reach 9.1 billion by 2050; most of this growth will be in developing countries (United Nations et al. 2009). Meanwhile, the global economy is growing and this will continue in the long-run projection in spite of the recent global economic disruption, which has slowed growth in 2009. Growth will be concentrated in developing economies. The World Bank has recently projected that per capita GDP in developing countries will rise by as much as 4.6 percent annually between 2010 and 2015 (World Bank, 2009: 47). This, together with the trend of population growth, will enable developing countries such as China, India and many others with transitional economies, as well as their developed counterparts, to continue to increasingly consume wood products. De Fégely (2005) also reports that the world demand for paper-making fibre will surge by roughly 2.0 percent annually an increase from 320 million metric t (mt) in 2003 to 490 million mt by 2020. Most of this demand will occur in developing countries with transitional economies, especially China. As indicated, the number of Chinese-owned forest plantation projects in Laos has grown significantly in recent years and China is now one of major investors in the Lao plantation sector.

Technological change is another exogenous factor behind the surge in global wood demand. "Technological shift" refers to an improvement, change and innovation in technology in all the process of the production chain, moving from the forest raw materials to the final products. Some key changes include the development of engineered wood products, improvement of timber recoveries through development of enhanced timber processing, drying and manufacturing methods, and the development of appropriate quality control procedures. While these technological processes can improve wood processing efficiency and thus reduce amount of logs used, they can also increase the demand for wood products. The contemporary development of electronic media has resulted in a proliferation of printed papers (De Fégely 2005).

Likewise, environmental considerations also directly and indirectly affect the global demand for wood products. Consumers, scientists, politicians, national and international organisations have been increasingly concerned about such environmental matters as climate change, biodiversity, soil conservation and water retention. These concerns not only affect consumers' demand for wood products, but also the supply of wood from natural forests and plantations. On the

¹² Oji- Lao Plantation Forestry Co. Ltd. (LPFL) is a joint venture plantation project between Japan's Oji Paper Ltd., holding an 85 percent share and the Government of Laos (15 per cent shareholder). Oji paper began the project in 2004, with a takeover of the New Zealand BGA-Laos Plantation Forestry Ltd. Oji Paper is one of the biggest producers of the global pulp and paper products and is the largest paper company in Asia.

demand side, consumers, particularly in developed countries, are increasingly concerned about whether the wood products they consume harm the environment. Developed countries prefer to increase their forest reserves and limit logging from their natural forests. However, this has indirectly led to accelerated forest degradation and destruction in their developing counterparts, because while timber production has shifted to developing countries, management capacity in these countries has only been maintained or has declined. Consequently, natural forests in these countries are being widely and unsustainably exploited at a rapid rate as a result of illegal and unsustainable logging of forest products and a high influx of unsustainable developmental projects.

Overall, there are three critical factors, which have negatively impacted the forestry sector in Laos. First, there is the lack of communication amongst various Ministries, Ministry-equivalent agencies and administrations at District, Province and National levels. Responsibility allocation among these stakeholders remains a complex issue. Second, the Government of Laos has set a goal to alleviate poverty and to stop shifting cultivation by 2010, and has aimed to become a developed country by 2020. In order to reach this goal, the Government has tried to maximise the income from forest resources in order to finance the development of the country without efficient institutional agencies in place to promote effective and sustainable management of the natural forests. Third, the forest authorities¹³ do not yet have policy instruments in place for sustainable management of the national forest resources (as distinct from harvesting rights). As a result, these combined factors and forces may lead to unsustainable management of natural forest resources in the long-term.

Socio-economic effects of forest plantation development in Laos

The rapid increase in forest plantations during the current period has engendered growing controversy among non-governmental organisations, international researchers and the Laos National Assembly.

Some analysts insist that the establishment of plantations has the potential to bring social and economic benefits for rural development. For instance, Manivong and Cramb (2008) conducted a financial analysis of farm forestry in Northern Laos and found that farmers can earn a high economic return from planting rubber. This benefit will assist the Lao government to achieve its National Growth and Poverty Alleviation Strategy. URS Australia Pty Ltd (2001) reported that the direct employment from industrial forest plantations, such as in planting and harvesting activities, contribute economic benefits to rural development in Laos. Furthermore it has the potential to supply plantation wood to both the domestic and export markets. Rigg (2006) argued that despite the negative impact, some benefits are

associated with the government policies:

- Possibility of greater income and welfare for farmers.
- Attracting public and private sector services.
- Encouraging rural people to enter the marketplace and diversify their income.
- Finding alternative sources of income to degraded forests.

He also warned that while some people may be better off by taking these new opportunities, others may be worse off and continue to be dependent on decreasing and degrading forests.

On the other hand, other researchers argue that the plantations create a negative impact on local economy and communities. Research, mostly from the conservation and non-government organisations, indicates that, where high levels of development occur locally, there are likely to be serious ecological, economic and social consequences. Vandergeest (2003) argues that the Land and Forest Allocation Programs policy will cause displacement and impoverishment in Laos. Local villagers will be forced to abandon their traditional agricultural practices and move into permanent and commercial farming. Barney (2008) studied the implications of industrial forest plantation development in central and southern Laos and pointed out that plantation forestry leads to new ecological and social issues, such as the transformation of the primary forest to plantations and conversion of degraded forest on which local villagers depend for their subsistence. Another qualitative study by Baird and Shoemaker (2007) argue that several programmes and policies related to internal resettlement, such as the Land and Forest Allocation Programs policy and other land reform policies, will accelerate the poverty of rural Laos and cultural distortion.

Indeed, recent forest plantation developments reveal that there have already been negative effects of tree plantation developments on local communities and their ecosystem when forest-related laws are not enforced and institutional agencies weak. In Central part of Laos, for instance, there are examples of natural secondary forests being harvested and converted into tree plantations without the consent of local communities or forest owners. Some examples of the conversion of the natural secondary forests into rubber plantations also appeared in some Northern provinces of Laos such as Luang Namtha and Oudomxay Provinces. Because the economies of rural communities are tightly interlinked with subsistence production sector such as swidden farm, grazing lands and non-timber forest products, plantation concession rights granted to large companies can negatively impact the income sources of rural communities which live in, and adjacent to, the plantation areas when there is lack of effective policy tools and efficient governance.

Nevertheless, in many places in Laos and neighbouring countries, tree plantation developments not only provided

¹³ Forest authorities refer to the Ministry of Agriculture and Forestry at National level, Provincial Agriculture and Forestry Offices at Province level, and District Agriculture and Forestry Offices at District level.

socio-economic values but also a various range of environmental goods and services. For instance, in Had Ngao Village, Luang Namtha Province, Northern Laos, rubber plantations are well-accepted by rural communities as they provide significant environmental and economic benefits to rural communities and their environment. Smallholder teak plantings in Luang Prabang Province also bring the economic benefits to rural communities (Midgley *et al.* 2007; Xayvongsa 2001). Employment opportunities are important but form only a part of the package of benefits offered by plantation forestry. Additional examples of successful and profitable smallholder involvement in commercial rubber and eucalypt plantations in Northeast Thailand and southern China offer confidence that Lao smallholders can effectively engage with investors to contribute to flows of commercial wood and supplies of natural rubber latex and for the smallholder growers to benefit considerably from this activity through sales of produce.

A recent study by Shi (2008) reports that there were only a few plantation companies in LuangNamtha, Northern Province of Laos using the 2 + 3 model whereas the concession 0+5 model was widespread and popular amongst investors. The concession model is often blamed for causing adverse consequences on local communities and the ecosystems for two main reasons. The first is due to the ineffective and inefficient institutional arrangements mentioned earlier. Lack of careful land survey and the lack of local participation in the land and the forest allocation process lead to conflicts between plantation forestry owners and local communities. Unclear property rights for land are the second reason. Investors are able to take control on the communal degraded forest land. The Land and Forest Allocation Programs does not make customary land use rights clear due to a lack of local participation in the process as well as inadequate financial and human resources from local authorities (Fujita and Phanvilay 2008).

CONCLUSION

This paper uses an economic development theory, which was originated by Rostow (1960) and later by Lane & McDonald (2002) and Pretzsch (2005), in order to examine trends in forest and plantation development in Laos. The advantage of this model is due to its comprehensive framework, which can help us to visualise similar predictable sequences of stages of development and changes that a particular country has experienced from traditional to industrial society and these have particular applications for Laos. It also allows us to better understand historical and the complex interactions between the socio-economic and environmental problems of forest management in Laos over time. However, a major limitation of the model is that it fails to provide us with optional developments because in reality there may be various possible directions of different stages of economic developments from one country to another.

The transformation of the Lao economy from the traditional to capitalist colonial period created dramatic shifts

in forest management in Laos, including the introduction of institutions to manage the abundant natural forest.

Unlike other Indochina states, especially in the Vietnamese region such as Tonkin (North), Annam (Central), and Cochinchina (South), the French colonial plan to establish a modern railway and road system linking Laos and other countries collapsed, which might be one of the main reasons why the natural resources of Laos remained unexploited during the colonial period.

Following this period, when the former Kingdom of Laos was replaced by the Government of Laos in 1975, the exploitation of the natural forest resource played a vital role in accelerating national economic growth of Laos, but very little of these benefits were distributed to the local communities. Later, the Government of Laos introduced the "New Economic Policy" in the late 1980s and abandoned a centrally planned economy system. Forest management in Laos then began to be influenced by the international organizations. While many other external factors might be attributable to the degradation and destruction of the Lao forest, there are three critical factors that have negatively affected the Lao forestry sector. These factors include the lack of efficient institutional agencies and effective policy instruments as well as the communication amongst different institutional agencies at District, Province and National levels. As the Government began to appreciate the negative impact of over-exploitation of natural forests, protected forest areas was established with the support of many conservation and international organizations. Furthermore, tree plantation developments, from small to large scale, have been promoted by the Government of Laos with financial support from the ADB.

Despite the new land and forest laws and regulations introduced with the support of international organisations, criticism of the industrial plantation development has grown, because of perceived adverse effects on local communities and ecosystems.

Indeed, the establishment of forest plantation has a high potential for improving the national economy and creating wealth for rural communities. But it can also lead to adverse environmental, socio-economic impacts when the policies are ineffective and capacities of the forest-related institutions inefficient. Much still remains to be done to ensure that forest plantation development can bring about positive outcomes to the Lao environment and rural communities. The Government of Laos needs to enforce the forest-related laws, adopting sustainable forest management practices, and encouraging all plantation investments to be consistent with international standards, guidelines and codes of practices related to planted forests and trees such as FAO's voluntary guidelines for Planted Forests and Trees, ITTO guidelines for the establishment and sustainable management of planted tropical forests, CIFOR code of practice for industrial tree plantation development in the tropics. Furthermore, the Government, international organisations and plantation industries will also need to work closely together in order to ensure that local communities benefit from plantation development. Specifically, transitional difficulties faced by

local communities in moving from current land use practices to plantation forestry need to be addressed. Incentives and policy instruments are needed to encourage the combination of out-grower schemes and concessional plantations and to more effectively integrate timber plantations with traditional agricultural livelihoods.

ACKNOWLEDGEMENTS

The authors acknowledge constructive and helpful comments from Professor Emeritus Ian Ferguson at the Melbourne School of Land and Environment, the University of Melbourne. In addition, we would like thank Dr. Roger Hurcombe at the Academic Enrichment Services, the University of Melbourne and anonymous reviewers of this paper.

REFERENCES

- ADB 2001. *Technical assistance to the Lao PDR for preparing the tree plantation for livelihood improvement project*. Asian Development Bank.
- ADB 2005. *Lao industrial tree plantation project*. Project number: 20067 and loan number: 1295 (final report), Asian Development Bank
- ANONYMOUS 2000. Aspects of forestry management in the Lao PDR. *Watershed* 5(3): 57-64.
- BAIRD, I.G. and SHOEMAKER, B. 2007. Unsettling experiences: internal resettlement and international aid agencies in Laos. *Development and Change* 38(5): 865-888.
- BARNEY, K. 2008. China and the production of forestlands in Laos: a political ecology of transnational enclosure. In: NEVINS, J. and PELUSO, N.L. (eds.) *Taking Southeast Asia to market: commodities, nature, and people in the neoliberal age*. Cornell University Press, 280 pp.
- BERKMÜLLER, K., SOUTHAMMAKOTH, S. and VONGPHET, V. 1995. *Protected area system planning and management in Lao PDR: status report to mid-1995*. Lao-Swedish Forestry Cooperation Programme and IUCN, Vientiane.
- BOURDET, Y. 1994. Fiscal policy under transition: the case of Laos. *Europe-Asia Studies* 46(6): 1039-1056.
- CASTELLA, J.-C., BOUAHOM, B., ALBERNY, E. and DOUANGSAVANH, L. 2009. *Emergence of diverse rubber institutions from local negotiations in Laos*. In *ASEAN rubber conference 2009: the 5th conference and exhibition*, Vientiane, Laos. 26 pp.
- CLEARY, M. 2005. Valuing the tropics: discourses of the development in the farm and forest sectors of the French Indochina, circa 1900-40. *Singapore Journal of Tropical Geography* 26(3): 359-374.
- COMMITTEE FOR PLANNING AND INVESTMENT, NATIONAL STATISTICS CENTRE and UNITED NATIONS DEVELOPMENT PROGRAMME 2006. *International trade and human development Lao PDR 2006: the third Lao PDR national human development report*. BlueGrass Design Co. Ltd. & SongPol Press Ltd. 216 pp.
- DE FÉGELY, R. 2005. *Forests for woods sake: the demand for primary wood products to 2020*. In BROWN, A.G. (ed.), *Forests, wood and livelihoods: finding a future for all*, Parliament House, Canberra. 91 pp.
- DOF 2009a. *Roles of Department of Forestry* by DEPARTMENT OF FORESTRY, Unpublished.
- DOF 2009b. *Statistics on national harvesting permitting and planning* by DEPARTMENT OF FORESTRY, Unpublished.
- DOF 2007. *Forestry sector development report for 2006-2007 (draft)*. Department of Forestry, Ministry of Agriculture and Forestry, Vientiane, Lao PDR.
- EVANS, G. 2002. *A short history of Laos: the land in between*. Short history of Asia, Allen & Unwin, Crows Nest, N.S.W. 251 pp.
- FAO 2006. *Global forest resources assessment 2005: progress towards sustainable forest management*. FAO forestry paper, Food and Agriculture Organization of the United Nations, Rome. 320 pp.
- FORTECH 1999. *Constraints on industrial tree plantations in Lao PDR*. Consultancy report for the Lao PDR government and the Asian Development Bank, Forestry Technical Services (Fortech), Canberra, Australia.
- FUJITA, Y. and PHANVILAY, K. 2008. Land and forest allocation in Lao People's Democratic Republic: comparison of case studies from community-based natural resource management research. *Society & Natural Resources* 21(2): 120-133.
- FUJITA, Y., PHANVILAY, K. and DONOVAN, D. 2007. Past conflicts and resource use in post war Lao PDR. In: JONG, W.D., DONOVAN, D. and ABE, K.-I. (eds.) *Extreme conflict and tropical forests*. Springer Netherlands, Dordrecht, Netherlands, vol. 5. 184 pp.
- GARNIER, F. and TIPS, W.E.J. 1996. *Travels in Cambodia and part of Laos: the Mekong Exploration Commission report (1866-1868), volume 1*. White Lotus, Bangkok. 346 pp.
- GUNN, G.C. 1990. *Rebellion in Laos: peasant and politics in a colonial backwater*. Westview Press, Boulder. 224 pp.
- LACEY, C.J. 1994. *Forestry and forest research in Lao PDR*. A report prepared for the Lao-Swedish Forestry Program.
- LANE, M.B. and MCDONALD, G. 2002. Towards a general model of forest management through time: evidence from Australia, USA, and Canada. *Land Use Policy* 19(3): 193-206.
- LERCHE, C. and RAO, Y.S. 1984. *A note on forestry sector in Lao PDR*. Regional Office for Asia and the Pacific, Food and Agriculture Organisation of the United Nations, Bangkok, Thailand.
- LÉVY, P. 1974. *Histoire du Laos*. Presse Universitaires de France, Paris.
- MAF 2005. *Forestry strategy to the year 2020 of the Lao PDR*. Ministry of Agriculture and Forestry, Vientiane,

- Lao PDR. 89 pp.
- MAF 2006. *Agricultural statistics 1976-2005*. Department of Planning, Ministry of Agriculture and Forestry, Vientiane, Lao PDR. 116 pp.
- MAF, NAFRI, NLMA, NAFES, LIWG, IUCN, IRD and GTZ 2009. *Rubber development in the Lao PDR: ensuring sustainability*. In *ASEAN rubber conference 2009: the 5th conference and exhibition*, Vientiane, Laos. 26 pp.
- MANIVONG, V. and CRAMB, R. 2008. Economics of smallholder rubber expansion in Northern Laos. *Agroforestry Systems* **74**(2): 113-125.
- MIDGLEY, S. 2007. *Position paper on tree plantation sector development in Lao PDR for Forestry Strategy 2020 Implementation Promotion Project*. Salwood Asia Pacific Pty Ltd., Canberra, Australia.
- MIDGLEY, S., BLYTH, M., MOUNLAMAI, K., MIDGLEY, D. and BROWN, A. 2007. *Towards improving profitability of teak in integrated smallholder farming systems in northern Laos*. ACIAR Technical Reports, Australian Centre for International Agricultural Research, Canberra, Australia. 95 pp.
- MORDAUNT, K. (Writer) 2007. Bomb harvest. In WILCZYNSKI, S. (Producer). Australia: Lemur Films, Film Buff Productions, Australian Film Commission and New South Wales Film & Television Office.
- OVINGTON, J.D., MACGRATH, K.P., FLORENCE, R.G. and WARING, H.D. 1968. *A report under the Australian Colombo plan aid programme*. Department of External Affairs, Canberra.
- PRETZSCH, J. 2005. Forest related rural livelihood strategies in national and global development. *Forests, trees and livelihoods* **15**(2): 115-127.
- PRICEWATERHOUSECOOPERS 2008. *Global forest, paper & packaging industry survey: 2008 edition – survey of 2007 results*.
- RIGG, J.D. 2006. Forests, marketization, livelihoods and the poor in the Lao PDR. *Land Degradation & Development* **17**(2): 123-133.
- ROBICHAUD, W., MARSH, C.W., SOUTHAMMAKOTH, S. and KHOUNTHIKOUMMANE, S. 2001. *Review of the national protected area system in Lao PDR*. Lao-Swedish Forestry Programme, Department of Forestry, Vientiane, Lao PDR. 112 pp.
- ROSTOW, W.W. 1960. *The stages of economic growth, a non-Communist manifesto*. University Press, Cambridge. 178 pp.
- ROSTOW, W.W. 1971. *The stages of economic growth: a non-communist manifesto*. 2nd edn, Cambridge University Press, Cambridge. 253 pp.
- ROSTOW, W.W. 1990. *The stages of economic growth: a non-communist manifesto*. 3rd edn, Cambridge University Press, Cambridge; New York. 272 pp.
- SANDEWALL, M., OHLSSON, B. and SAWATHVONG, S. 2001. Assessment of historical land-use changes for purposes of strategic planning: a case study in Laos. *AMBIO: A Journal of the Human Environment* **30**(1): 55-61.
- SANONTY, S. 2002. Forest policy reviews in Lao PDR. In: ENTERS, T. and LESLIE, R.N. (eds.) *Forest policies and forest policies reviews*. EC-FAO partnership programme, Bangkok, Thailand, 113 pp.
- SCHUMANN, G., NGAOSRIVATHANA, P., SOULIVANH, B., KENPRASEUTH, S., ONMANIVONG, K., VONGPHANSIPRASEUTH, K. and BOUNKHONG, C. 2006. *Study on state land leases and concessions in Lao PDR*. Land Policy Study No. 4 under LLTP II, Lao-German Land Policy Development Project, Vientiane, Laos.
- SHI, W. 2008. *Rubber boom in Luang Namtha: a transnational perspective*. A report prepared for GTZ RDMA, GTZ/RDMA, Vientiane, Laos.
- STUART-FOX, M. 1995. The French in Laos, 1887-1945. *Modern Asian Studies* **29**(1): 111-139.
- STUART-FOX, M. 1998. *The Lao kingdom of Lan Xang: rise and decline*. White Lotus, Bangkok, Thailand. 234 pp.
- TARLING, N. 1992. *The Cambridge history of Southeast Asia*. vol. 1:2, 2 vols., Cambridge University Press, Cambridge; Melbourne. 297 pp.
- TIMES REPORTERS. 2009. *Government again suspends land concessions*, *Vientiane Times*, 02 July 2009.
- TSECHALICHA, X. and GILMOUR, D. 2000. *Forest rehabilitation in Lao PDR: issues and constraints*. IUCN: The World Conservation Union.
- UNITED NATIONS, DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS AND POPULATION DIVISION 2009. *World population prospects: the 2008 revision*. Highlights, Working Paper No. ESA/P/WP.210, New York.
- URS AUSTRALIA PTY LTD. 2001. *Supporting plantation development in Laos*. URS Australia Pty Ltd, Victoria, Australia.
- VANDERGEEST, P. 2003. Land to some tillers: development-induced displacement in Laos. *International Social Science Journal* **55**(175): 47-56.
- VOLADET, S. 2009. *Sustainable development in the plantation industry in Laos: an examination of the role of the Ministry of Planning and Investment*. Trade knowledge network, International Institute for Sustainable Development, Winnipeg, Manitoba Canada. 34 pp.
- WORLD BANK 2007. *Lao PDR private sector and investment climate assessment: reducing investment climate constraints to higher growth*. 39237-LA, Poverty Reduction and Economic Management Sector Unit, The World Bank.
- WORLD BANK, SIDA, MINISTRY OF FOREIGN AFFAIRS AND GOVERNEMENT OF FINLAND 2001. *Lao PDR production forestry policy: status and issues for dialogue*. vol. I, 2 vols., Main report, World Bank, Sida, Ministry of Foreign Affairs and Government of Finland, Vientiane, Laos. 43 pp.
- WORLD BANK. 2007. *Doing business 2008 Lao PDR*. The World Bank and the International Finance Corporation, Washington, D.C. 74 pp.
- WORLD BANK. 2009. *Global economic prospects 2009*:

- commodities at the crossroads*. World Bank, Washington, D.C. 180 pp.
- XAYVONGSA, L. 2001. *Assessment of teak related farming systems in Luang Prabang, Laos*. Institute of Tropical Forestry and Forest Products, Dresden University of Technology, Germany, Dresden, Germany. 167 pp.