

Chapter 7

Upgrading and Diversification of Industrial Structure in Lao PDR: Prospect and Challenges

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CHAPTER 7

UPGRADING AND DIVERSIFICATION OF INDUSTRIAL STRUCTURE IN LAO PDR: PROSPECT AND CHALLENGES

Leuam Nhongvongsithi and Souknilanh Keola

Abstract

This chapter examines the prospects and challenges in upgrading and diversifying the industrial, manufacturing in particular, structure in Lao PDR. We first identified major potential industries in Lao PDR and examined their historical developments up to the present. We then tried to find out the bottlenecks or requirements for diversifying as well as upgrading the existing industry, based on findings in investment climate surveys specifically conducted for this study.

INTRODUCTION

Lao PDR is the only landlocked country in mainland Southeast Asia, bordering Vietnam to the east, Thailand to the west, Cambodia to the south, China to the north and Myanmar to the northeast. Laos occupies a total land area of 236,800 square kilometers, about two-thirds the size of Vietnam. However, with a population of about 6.2 million in 2008, its average population density was just about 26 persons per square kilometers, by far the lowest in the region (National Statistical Center [2008]). As majority of population live along borders with neighboring countries, it is obvious that

foreign demands and investments could play a deterministic role in the country's pursuit of industrialization and economic growth¹.

Although Lao PDR is surrounded by many relative large economies, access to all directions, on one hand, has always been difficult due to natural and political obstacles such as high mountain ranges, non-navigable river ways and political confrontations. Laos has initiated actions needed to unblocking itself to its neighbors starting with the New Economic Mechanism policy in 1986. It reopened itself to foreign investors and tourists, while also actively participated in the GSM development program initiated by the Asian Development Bank (ADB) in the early 1990s. Becoming a full member of the Association of Southeast Asian Nations (ASEAN) in 1997 was a clear message of the new regime that it will try to achieve economic developments through cross-border cooperation in all directions. Foreign, including joint-venture business operations in the country, increased from virtually none in the late 1980s to 2,470 in 2006 (The Steering Committee on Economic Census [2007]).

1. SOCIOECONOMIC DEVELOPMENT STRATEGY

Within the context of regional economic integration, Lao PDR has been facing numerous difficulties and challenges as it has to integrate itself to the regional and global economy while at the same time struggle to graduate from the least developed countries' (LDCs) club. The government has called for a long-term socioeconomic development strategy and set the ultimate mid-term goal as graduation from the status of LDC by the year 2020. The government has put great efforts in building a comprehensive development strategy framework, which includes the Industrialization and Modernization Strategy, the Six National Development Plan (2006-2010), the National Growth and Poverty Eradication Strategy (NGPES) and sectoral long-term development strategies to achieve this target.

It considers the following factors essential to achieve its 2020 goal: (1) economic infrastructure development with focus on the transformation from a landlocked to a

¹ According to Keola [2008], 100% of Lao population live in provinces (1st administrative level) with international border/borders, while about 52% live in districts (2nd administrative level) with international border.

landlinked country by making full use of the various economic corridors passing through the country; (2) development and strengthening of the private sector by promoting small and medium enterprises (SME), financial, labor and real estate markets; (3) development of natural resource-based industries; (4) promotion of processing industries for domestic consumption and export; and (5) strengthening of human resource development with focus on vocational and technical training to improve the skills level of the local labor force.

1.1. Trade Policy

With rapid development and increasing openness of the economy, Lao trade volume has grown at a very rapid rate in recent years. However, the value of import often exceeds the value of exports by about 50-60 percent. In 2009, the value of exports and imports amounted to US\$1200 million and US\$1600 million, respectively. Recently the main driver of export growth has been the mining sector, mainly copper, which in 2009 contributed to more than 40 percent of export value. Other main export items are garments, wood and wood products, electricity and agricultural products such as coffee, sesame, corn and vegetables. The main imports are processed foods, fabrics, garments, equipments and machinery for construction and agriculture, electric and electronic appliances, medicines and fuels.

The trade regime in Lao PDR has been relatively open following the policy reform that started in 1986. Lao international economic relations have expanded greatly. These relations are not limited to regional economies but also extend to distant developed economies such as USA and the European Union. Currently, Lao PDR has trade relations with more than 60 countries. Lao PDR is now in the process of negotiation with more countries for close bilateral trade relations. Among the main trading partners for Lao PDR at present are the ASEAN nations, China, Japan, EU and USA. Economic and trade relations between Lao PDR and other countries have tremendously improved since Lao PDR became an ASEAN member in 1997. The government also applied for membership to the World Trade Organization in the same year. Lao PDR has so far advanced to the 5th working party meetings, although negotiations are still ongoing. In addition, Lao PDR has also gained Normal Trade Relation (NTR) status with USA in 2005.

As a least developed country, Lao PDR has been granted GSP status by 36 countries including Australia, Canada, China, Japan, South Korea, New Zealand and Switzerland. These GSPs have provided Lao PDR not only the opportunity to expand its production for export but also helped create jobs and contributed to poverty reduction.

1.2. Industrial Policy

The ultimate objective of the Lao government economic development policy is to industrialize and modernize the country (Industrialization and modernization Strategy). To attain this objective, the industrial policy has been adjusted accordingly and in a timely manner. Since mid-1980s, Lao PDR has been undergoing economic transition, including from centrally planned to market-oriented economy, from subsistence to marketized economy and from inward-looking to outward-looking economy. Moreover, Lao PDR adopted trade and investment liberalization policies comparable to those in some advanced Southeast Asian countries to promote trade and investment through the provision of various incentives such as tax holidays and duty drawbacks and the development of export processing or special economic zones.

The focal point of Lao government's industrial development strategies and policies is to promote several kinds of industries that would help achieve the objectives of the country's industrialization and modernization strategies. In brief, these strategies are the following. First, develop small and medium enterprises (SME), which presently account for 97 percent of manufacturing activities. While SME has significantly contributed to job creation, this sector is generally still composed of unorganized businesses, whose competitiveness is rather low and needed to be upgraded. Second, promote and develop import substitution production of selected goods to reduce overdependence on import goods. This should, however, be carried out with clear exclusion of export-oriented industries such as electrical and electronic, garments, etc. Third, promote and develop export-oriented industry, focusing on high value-added products. FDI and the country's ability to attract foreign investors would play a deterministic role in achieving these objectives.

2. STRUCTURE OF LAO PDR'S ECONOMY

Lao PDR's economy had long been characterized as agricultural and subsistence in nature (Luther [1983:10]). However, these have changed drastically in recent years. According to ADB's key indicators, agricultural share in GDP shrank from about 81 percent in 1981 to 30 percent in 2008. External and internal trade share in GDP, a proxy for marketization, sharply increased from 0.07 percent to almost 20 percent between 1990 and 2008.

Mining emerged as a major contributor to GDP; it sharply expanded from less than 0.2 percent to nearly 10 percent in 3 years from 2004 to 2007. Manufacturing sector share in GDP, the focal point of this paper, has, however, gone up and down. Manufacturing shares increased from about 10 percent to 17 percent in the 1990s, before beginning to decline to 9 percent in 2008. Manufacturing sector itself has, however, expanded more from about 85 to 464 million USD during the same period. The sharp decrease of manufacturing in GDP was largely the result of emerging sectors such as mining. Mining is, however, well known as an unsustainable sector because of the inevitable depletion of resources. Whether Lao PDR succeeds in expanding its manufacturing sector or not may largely influence the sustainability of its economic growth.

Table 1: Share of Major Sectors in GDP

	Agriculture	Trade	Mining	Manufacturing	Tariff	others
1990	0.61	0.07	0.00	0.10	0.01	0.22
1991	0.57	0.07	0.00	0.12	0.01	0.22
1992	0.58	0.07	0.00	0.13	0.01	0.20
1993	0.57	0.08	0.00	0.13	0.02	0.21
1994	0.56	0.08	0.00	0.13	0.02	0.21
1995	0.54	0.08	0.00	0.14	0.02	0.22
1996	0.52	0.09	0.00	0.15	0.02	0.22
1997	0.52	0.09	0.00	0.16	0.02	0.21
1998	0.53	0.10	0.00	0.17	0.01	0.19
1999	0.53	0.10	0.01	0.17	0.01	0.19
2000	0.46	0.14	0.00	0.08	0.06	0.26

2001	0.43	0.16	0.00	0.09	0.06	0.26
2002	0.40	0.18	0.00	0.08	0.06	0.28
2003	0.39	0.17	0.03	0.08	0.06	0.28
2004	0.37	0.20	0.02	0.08	0.06	0.26
2005	0.34	0.19	0.06	0.08	0.06	0.26
2006	0.30	0.18	0.13	0.08	0.06	0.25
2007	0.31	0.19	0.10	0.08	0.07	0.25
2008	0.30	0.19	0.10	0.09	0.07	0.26

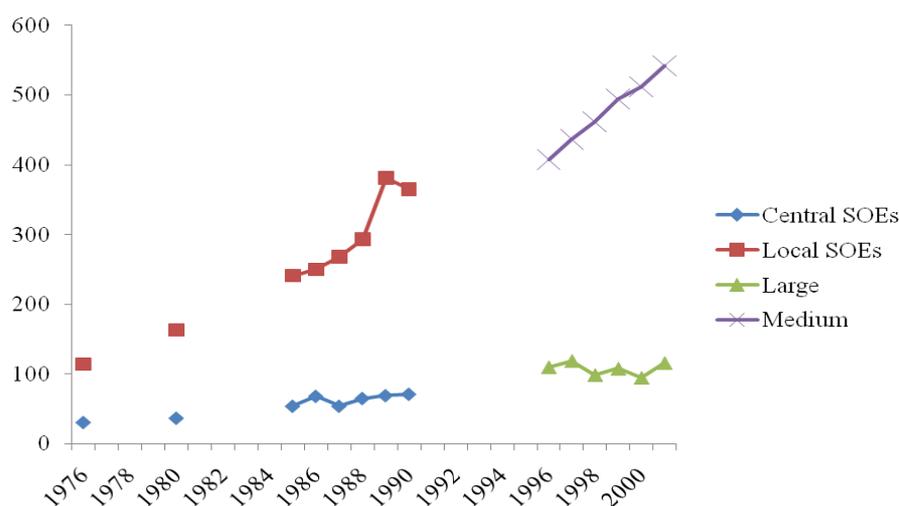
Source: Key Indicators, Asian Development Bank (2009).

2.1 Manufacturing Sector in Lao PDR

2.1.1 Centrally Planned Period

The industrial development history of Lao PDR can be largely divided into two periods. The period from 1975 to 1986 was characterized as centrally planned economic development period, or the so-called socialist-oriented period with a high degree of centralization of economic decision-making. The period from 1986 onwards is characterized by the transition from a centrally planned to a market-oriented economy.

Figure 1: Number of Industrial Establishments by Types from 1976-2000

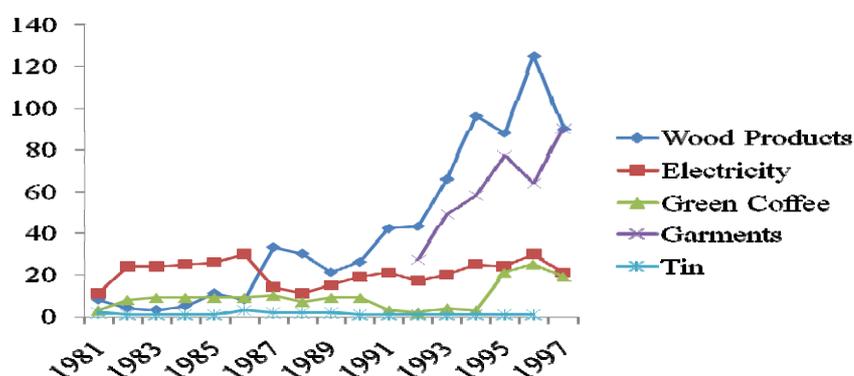


Source: National Statistical Center (1990) (2000) (2001).

During the period 1975-1986, agriculture was the backbone of Lao economy, and accounted for from about 81 to 63 percent of total GDP. While Lao economy heavily depended on imports for virtually all kind of manufactured goods, cross-border trade faced occasional difficulties due to border closure especially to the west, as a result of political confrontations (Bedlington [1981:103]). The manufacturing industry grew slowly and was not able to fulfill local demands. Though the government policy's objective during this period was the promotion of import substitution, there were only a handful of factories operating mostly in Vientiane Capital, where the degree of concentration of demand as well as resources, was by far larger than the rest of the country. Only few state-owned factories managed to grow during this period. Figure 1 depicts the change in number of industrial establishment by level of management from 1976 to 1990, and by size from 1996 to 2001. The number of state-owned industrial establishments was 145, of which 31 belong to ministries and 78 to Vientiane Capital in 1976. The number of central and local managed industrial establishments increased onwards but still did not exceed 500 in 1990.

Wood industries expanded the most during the centrally-planned and towards the end of 1990s. Export of timber accounted for 80.5 percent in 1976 and was number one export item by value between 1987 and 1990 (Luther [1983:21]) (Figure 2). There were around 50 sawmills nationwide, especially in the southern part where large forest reserves were concentrated. At least one large saw mills existed in every province. These saw mills employed thousands of people to produce very simple wood products for the domestic market or for export as raw materials. They generally utilized outdated or backward technology.

Figure 2: Export Structure of Lao PDR between 1981 and 1997



Source: ADB Key Indicators (1999).

In the food and agro-processing sector, Lao state-owned beer brewery and soft drink plants were outstanding in terms of size, technology and employment among then factories in Lao PDR. According to administrative statistics of Ministry of Industry and Commerce, there was also one large tobacco plant, one animal feed factory with production capacity of 5000 tons in Vientiane. In addition, there were around 200 family-based rice mills around the country as well as many cottage food processing activities to produce flour, noodles, bakery salt and others.

2.1.2 Transition Period 1986-Present

The year 1986 can be regarded as the start of industrialization in Lao PDR. It was the year when the government adopted a new economic development policy called New Economic Mechanism (NEM). Practical transition to market oriented economy in manufacturing sectors did not happen until related decrees, laws and regulations were mostly put in place, mostly since early 1990s (Keola [2010]). Decree for the promotion of domestic and foreign investments was enacted in 1988 to stimulate incentives to potential domestic and foreign investors. Lao PDR achieved significant success in economic development and macroeconomic stability evidenced from high growth rate, price stability and considerable increase in domestic and foreign direct investment (FDI), afterwards.

Actual economic reforms began by the beginning of 1990s. Most state-owned enterprises including manufacturing were transformed by way of selling, leasing or concession. Major state-owned food and agro-processing plants such as Lao beer, Lao soft drink, animal feed factory and more than 10 sawmills were transformed into mostly foreign private ownership or joint-ventures. Though the Law on Promotion and Management of Foreign Investment was not enacted until 1994, an administrative decree for its implementation had been in place since 1988, making it possible for foreign investors to begin their operation in Lao PDR since early 1990s. Official statistics of industrial establishments did not categorize firms emphasizing any more by their level of management since latter half of 1990s, but only their size, as most of them were no longer state-owned enterprises (Figure 1). It was quite obvious from Figure 1 that many central-managed SOEs became large enterprise, while local-managed ones became medium industrial establishments after the reforms. The number of medium industrial establishments, or those that hired from 10 to 99 employees, reached 542 in 2001. There were 116 large industrial establishments that employed 100 persons or more in the same year.

Table 2: Number of Business Establishments and Labor by Sector in 2004

	Number	Labor
Mining	37	3,309
Food and agro processing	63	3,439
Garment and leather	68	32,111
Wood products	121	9,094
Paper, publishing, chemical and rubber products	67	2,979
Non-metal products	58	2,633
Metal products and machineries	63	3,373
Furniture	19	626
Electricity and water	36	7,114
Construction	396	10,017
Transport equipment repair and sales	63	2,284
Wholesales and retails	231	4,189
Land, water and air transport	91	2,800
Post and telecommunication	34	3,189
Real estates	82	3,218

Hotel, restaurant, education and health services	200	8,109
Total	1,629	98,484

Source: National Statistical Center (2006).

Table 3: Number of Establishments and Labor by Economic Activities

	Number	Labor
Agriculture, forestry and fishing	4,319	20,277
Mining and quarrying	297	7,708
Manufacturing	24,331	105,234
Electricity, gas	114	3,167
Water supply; sewerage	264	1,824
Construction	628	12,496
Wholesale and retail trade; repair	81,780	135,440
Transportation and storage	3,799	10,741
Accommodation and food services	3,439	17,779
Information and communication	872	3,688
Financial and insurance	299	4,440
Real estate activities	618	1,492
Professional, scientific and technical	359	1,389
Administrative and support services	755	6,320
Education	298	3,896
Human health and social work	375	1,043
Arts, entertainment and recreation	1,013	3,695
Other service activities	3,353	5,094
Total	126,913	345,723

Source: The Steering Committee on Economic Census (2007).

Table 2 shows the number of business establishments including manufacturing according to a survey of the National Statistical Center conducted in 2004. Though not all were covered, the survey certainly has highly likely to include all medium to large enterprises in manufacturing industry. The garment industry was by far the largest employing 32,111 workers in 2004. Export of garment began to appear in export statistics in 1992, and quickly grew to become the second largest export item in towards 1997 (Figure 2). An economic census based on a much larger coverage in 2006 revealed the growing role of manufacturing sector in Lao economy (Table 3). A total of 24,331 establishments employed 105,234 workers, second only to the wholesale and retail

sectors in 2006. While manufacturing accounted for only about 8 percent, it generated about 30.4 percent of jobs by economic establishment of the whole economy in 2007 (Table 1 and 3).

3. Existing Key Manufacturing Industries

The following industries can be regarded as prominent and key industries, based on their significant contributions to national economic development. They have contributed in terms of job and income generations, and thus the realization of poverty reduction and modernization policy of the government.

Table 4: Merchandise Exports and Imports of Lao PDR between 2002 and 2006

	2002	2003	2004	2005	2006
Merchandise exports	362.8	418	536	684	1,143.10
Gold	0.00%	14.38%	10.78%	13.26%	10.31%
Copper	0.00%	0.00%	0.00%	16.39%	35.81%
Electricity	27.87%	27.39%	21.92%	18.27%	10.73%
Timber	31.50%	30.67%	27.03%	22.84%	17.11%
Garments	31.39%	31.08%	28.86%	20.18%	11.15%
Coffee	3.00%	2.68%	2.69%	1.10%	0.86%
Other	6.26%	8.18%	8.62%	7.79%	13.11%
Merchandise imports	722.2	786.1	1,055.80	1,270.20	1,589.30
Petroleum	11.58%	11.40%	11.07%	12.56%	12.93%
Capital_goods	27.29%	32.86%	42.89%	38.48%	43.06%
Electricity	1.00%	1.07%	1.90%	2.06%	1.76%
Garments materials	11.06%	11.02%	10.94%	5.50%	6.21%
Other	49.07%	43.65%	33.20%	41.39%	36.03%

Source: IMF (2008).

Statistics of the Ministry of Industry and Commerce would be used to further break up manufacturing industries. According to summarization by Economic Research Institute for Trade, there are 31,956 registered factories employing 209,220 laborers in the whole manufacturing industry² (Table 5).

² Note that this number is larger than manufacturing in Table 4, where definition of manufacturing is obviously narrower as mining, electricity were not included.

According to Table 5, construction materials employed about 100,000 persons, by far larger than the rest in manufacturing. Food and agro-processing industry came in second place employing 35,000 persons but with much less average number of workers per establishments. There were about 10 persons, while it was only about 2 persons in average in construction materials, and food and agro-processing industry, respectively. Besides power generation, garment seem to be the most labor intensive, in average terms, by having about 300 persons in a factory. Besides already large garment, footwear, electric and electronic, automobiles and motorcycles, employing much less, obviously constitute potential targets for both upgrading and diversification.

Table 5: Outline of Manufacturing Industry in Lao PDR

	Number of Establishments	Number of Employments	Average Number of Employments
Food and Agro-processing	18,855	35,000	1.9
Garment	82	25,000	304.9
Footwear	4	300	75.0
Wood industry	2,200	25,000	11.4
Electric and Electronic	50	3,000	60.0
Plastic industries	20	1,000	50.0
Construction materials	10,300	100,720	9.8
Automobiles, Motorcycles	20	1,200	60.0
Metal Industries	25	5,000	200.0
Power Generation	10	7,000	700.0
Mining industries	30	6,000	200.0
	31,596	209,220	1,673

Source: Summarized by ERIT

3.1 Food and Agro-Processing Industry

Lao PDR is an agricultural economy and agriculture plays a most prominent role in people's life. Currently, 70 percent of the population still relies on agriculture for their survival and livelihood (ERIT). Therefore, food and agro-based processing industry constitutes the most important factors in transforming agricultural products to cash crops for local and foreign markets. While traditional and family-based food processing

activities existed in the country for years, modern food and agro-processing factories were not existed before 2000 (ERIT's Survey for this Research Project, henceforth ERIT's Survey).

Some food and agro-processing factories are now producing fruit and vegetable canned products for export and sugar, soft drink, beer, fruit juice, drinking water, tobacco, cassava or manioc flour, instant coffee and cooking oil for both local and foreign markets. Many types of flour produced from different crops such as sweet potato, manioc, cassava and banana are also exported.

According to ERIT's survey for this research project, these food and agro-processing factories generate a substantial amount of employment. For instance, there are two sugar factories established recently that produce brown sugar from sugar cane for export. The smaller factory creates more than 800 direct and 13,000 indirect jobs for villagers and were said to need about 10,000 tons of raw sugar cane per day. The bigger sugar factory can produce 60,000 tons annually of brown sugar, of which 90 percent is exported and 10 percent is for the local market. Last year, its export value reached US\$ 15 million. The government stimulates and promotes such kinds of food and agro-processing industries by giving incentives and creating a favorable investment climate.

Besides food, another agro-processing growing very fast is the rubber plantation. Several ten thousands hectare of land have been contracted for long term plantation, nearly 100 years in many cases, in northern and southern part of the country. It is said that from 2000 to 2008 about 400,000 hectares have been contracted to rubber plant, fast growing trees, food crops such sugarcane and cassava, nationwide. Most of these crops and trees are yet to be harvest, so they will certainly have great impacts on Lao PDR's economy in any respects.

3.2 Garment Textile and Footwear Industries

In a country with limited domestic demand as Lao PDR, structure of export can be a proper proxy of contribution of an industry. If export of natural resources such as gold, copper and timber were excluded, garment had obviously contributed the most to export. There may be an argument such that value-added created locally by these garment factories were roughly from 10 to 20 percent of its export values, but the same does also hold for the export of copper and gold [Table 4]. Garment is however undoubtedly the

first factory-based industry in Lao PDR that contributed large enough to the economy in terms of export, income and employment generations. By 1st quarter of 2006, there were 59 export-oriented garment factories and 57 sub-contractors employed about 27,500 employees (Phounmalay 2007). The aggregated export values of these garment factories reached about 238 millions USD for the first time in 2007, a sharp increase from 123 million USD in 2006 (Keola 2010).

Lao cotton factory (spinning and weaving), the first domestic textile factory, was established in 1984. This led to the first wave of establishment of garment factories in the early 1990s by domestic and foreign investors after the promulgation of investment promotion decree in 1988. Garment industry has grown to be one of the most prominent sectors in Lao manufacturing industry since then. Garment factories in Lao PDR can largely be divided into mostly foreign invested or joint-venture garment factories which are directly involved in internal trade of inputs and finished products, and locally invested factories which subcontract the former in most cases. Many of foreign affiliated garment factories are relocated from neighboring countries, especially Thailand, and concentrated in Vientiane Capital (Keola 2010).

The number of garment factories, both domestic and foreign invested, reached more than 100 in the turn of the 21st century, but fell to around 82 in 2008. The global financial crisis was perhaps the main cause why some garment factories went out of business in Laos in 2008. However, the financial crisis has also created a trend for textile and garment industry in the country to produce high-quality products for specific higher-ended markets. Besides, Thailand, China and EU, Japan had begun to emerge as major source of investment in garment and footwear industries in Laos since 2007 (Keola 2010). Export of footwear, which employ just a few hundred employees, from Lao PDR to Japan and Europe etc. was about 8 million in 2007 (Comtrade database accessed in March 2010).

In other words, footwear industry is a new though growing industry in Lao PDR. So, having more footwear factories can therefore be taken as both diversifying as well as upgrading of existing industries in Lao PDR.

3.3 Wood Industry

The number of sawmills and furniture factories grew rapidly from about 50 in 1990, to 1,500 in 2004 and 2,200 at present. The wood industry plays an important role in socioeconomic development by creating jobs and generating income. It employs more than 25,000 people to produce wood products for domestic and foreign markets, generating 25 percent of the country's export value and contributing up to 15 percent of budget (ERIT's Estimation).

However, in terms of management and technology, these wood factories are still rudimentary and backward. Most of them use backward technologies and produce very simple wood products for local and foreign markets, or merely export as raw materials to neighboring countries.

Considering its importance in the national economy, the wood industry certainly needs to be upgraded. Currently, the Lao government is implementing an upgrading policy in wood business. The most ultimate purpose of this policy is to assist the wood industry to produce high value-added wood products and, at the same time, reduce the rate of depletion of forest resources. With this upgrading policy, the number of wood factories will be reduced to less than 1,500 because those that cannot upgrade are to be shut down (ERIT). The most serious problem of wood industry in Lao PDR is they concentrate on the consumption of forest resources, without particle system to sustain the business.

Another diversification observed recently in wood industry is the investment of Japanese company that went to Lao PDR in order to secure production base for wood chips needed in its global paper production network. They have received concession from the government for about 50 thousands hectare of land to grow fast growing trees such as eucalyptus and acacia. Trees would be planted in various plots of concession areas, in time order, so raw material for chip would be available from cutting them in cycle without having to exploit natural forests. While the idea of sustainable wood industry has been around for years, this is undoubtedly the first closest to materialization. It is said that the company would begin exporting tree chips soon.

3.4 Electrical and Electronic Industry

The electrical industry in Laos produces and assembles household electrical appliances for the local market and parts and components for export. Some electrical appliance assembling plants were established in the 1990s to produce household appliances such as fans, cooking pots, air conditioners, etc. Currently, there are about 20 such factories in Lao PDR (ERIT).

For instance, one plant was established in Savannakhet province in 1993 to produce different types of fans, air conditioners, cooking pots, irons and refrigerators for export to neighboring markets. Its business grew quite fast; at one point, it employed about 300 workers, while its export value reached US\$30 million annually. However, the factory is now employing only 35 workers, assembling and exporting only US\$500,000 worth of 3,000 electric fans annually (ERIT).

The electronic industry in Laos began in 1997, when a foreign company constructed a factory to support its main overseas operation in Thailand (Keola 2010). Some others followed and there are currently about 10 of them in the country. They can generally be characterized as second factories to support the main ones mostly in the neighboring countries. In general, they concentrate on labor-intensive processes, which do not require state-of-the-art technology, and are highly dependent on imported materials.

These few electronic supporting factories in Lao PDR are however a clear sign that not just garment, but other types of cross-border productions are also viable. One interesting fact worth mentioned here is most of them came to Lao PDR without any GSP such in garment industry. Most of them came to enjoy low language barrier, geographical proximity and wage differences between Lao PDR and Thailand (Keola 2010). While agglomeration of degree as in present Thailand will not likely to happen, some case studies presented above is the evidence that, given some of its location advantage from proximity to Thailand, Lao PDR does possess chance to attract a portion of supporting factories to those 1st or 2nd tier multinational firms of electrical and electronic industry in Thailand.

3.5 Automotive Industry

The automotive industry in Lao PDR began with the establishment of an assembly plant of Suzuki motorcycle in 1991. New Chip Xeng, a Thai investor, followed in 1992 by opening a plant to assemble Honda motorcycle. The Suzuki motorcycle assembler concentrated on the local market while the Honda motorcycle assembler also exported to Vietnam in 1990s. After Honda's assembly plants were also setup in Vietnam, and the entering to market of much lower priced Chinese motorcycles, New Chip Xeng have shifted to becoming suppliers of motorcycle's parts processed in Lao PDR from raw material imported from Thailand, beside assemble motorcycles for local market.

From 2004, seven other assembling plants of Chinese motorcycles were established in the country. Most plants assemble motorcycles from wholly imported parts and components for the local market. There are a few plants, however, that use locally produced parts and components. In addition to assembly plants of Japanese and Chinese motorcycles, there exists one assembly plant which is Korean owned but assembles for a local motorcycle brand. Kolao group, a Korean-invested group established in 1997, began assembling the Kolao motorcycle after 2004. This motorcycle brand is becoming popular in the local market through its sophisticated marketing.

Besides motorcycle, a local investment with the full support of a Japanese wire harness assembler in Thailand, in 2002. This probably is the only factory participating in global production network of automobiles. They are therefore potential sectors for upgrading and diversification.

3.6 Others

Many other industries such as power generation (electricity), mining are also becoming very important in national economy. The modern power generation industry in Lao PDR began when the first hydroelectric power dam (150 megawatts) was put into operation in 1973, by grant from Japanese government, and began electricity generation for export and domestic. From the 1990s to the present, many hydropower dams are already in operation and are also hard currency earners through exporting to neighboring countries. Some are in the process of construction while many others are being planned.

The mineral industries started during the 1990s producing lead, lignite, gypsum, zinc, limestone and tin for local consumption and some quantities for export. Recently, two gold and copper plants were established in the northern and southern parts of the country, producing 200 tons of copper and around 20 kilos of gold per day (ERIT). Before, all products were exported, but now parts are domestically consumed by recently established factories that fabricate electric wires, tools, parts and components of electronic equipment. At the mean time, around 100 mining projects are in the process of investigation and exploration. This means more mineral production plants will began operation in the future.

As beginning of operation of one major hydro-electricity generation dam or mine translates roughly to several hundreds to billion USD of export, these two are undoubtedly important for Lao PDR's economy. They are however irrelevant to the objective of this report, in the sense that neither investment climates nor service link costs play significant role in investors' decision making in these industries. They generally go to where there are minerals or suitable for dam constructions. Moreover, contracts between the government and them have generally been signed according to case by case negotiations.

Other manufacturing industries found in Table 5, such as construction materials, metal and plastic industries are generally import-substituted industries. Two cement plants were established in Vientiane province in the late 1990s were meant to supply local construction projects cements as substitutes to those imported from Thailand. The same holds for plastic factories established in late 1990s. About 20 are operating and they are mainly situated in populated areas such as Vientiane Capital, Savannakhet and Champasak, to also substitute imports from Thailand. It is more than obvious that potential gain from participating in global production network, or export oriented manufacturing industries, outweigh import substitute ones in Lao PDR where local demands are limited. If import substitutions are to be promoted, we believe that it should rather focus on the imported intermediate inputs, as all export-oriented industry in Lao PDR still heavily depend on imported intermediate inputs.

4. COMPARISON OF COST STRUCTURES BETWEEN EXISTING AND NEW INDUSTRIES

Since the research question of our study is the prospects and challenge Lao PDR faces in upgrading and diversifying its industries, it is just logical that our arguments should have the two dimensions of upgrading and diversifying.

Lao PDR is an agricultural country, where most of the people live and rely on agriculture. As a consequence, family-based food and agro-processing activities have for a very long time existed in the country. In addition, people also produce traditional textile and garments for family use as well as for selling to nearby markets or middle trader. In addition, though still small in numbers, some export-oriented garment, food and agro-processing factories have been in operation in Laos at least since the early 1990s. These can therefore be categorized as existing industries, making our argument for the question on how Lao PDR could upgrade them.

On the other hand, manufacturing of electrical, electronic, automotive (automobiles and motorcycles) as well as their parts and components in Lao PDR could only be traced to very few assembling factories operating since the 1990s. They are still by far smaller in number when compared to establishments in the garment, food and agro-processing sectors. We will therefore regard them as both existing and new industries in the country, and focus on how to diversify and upgrade them.

It is also obvious that FDI will play deterministic roles in the upgrading and diversifying of industrial structure in Lao PDR. With limited local demands and the fact that most export-oriented enterprises in Lao are either wholly or partly foreign-owned, it is rational for one to assume that these foreign companies will also be the ones to play a larger role in upgrading or diversifying the industrial structure in Lao PDR by relocating part or their entire operation to the country.

Table 4 presents the outline of firms surveyed by ERIT for this research project. 10 garment including one footwear, 6 electronic, 6 automotive, 5 agro-processing, 5 plastic, 3 wood, and 2 steel firms. Out of which only 15 are 100 percent local investment, concentrate in import-substituted industries such as plastic and some garment firms.

Table 4: Outline of Surveyed Firms

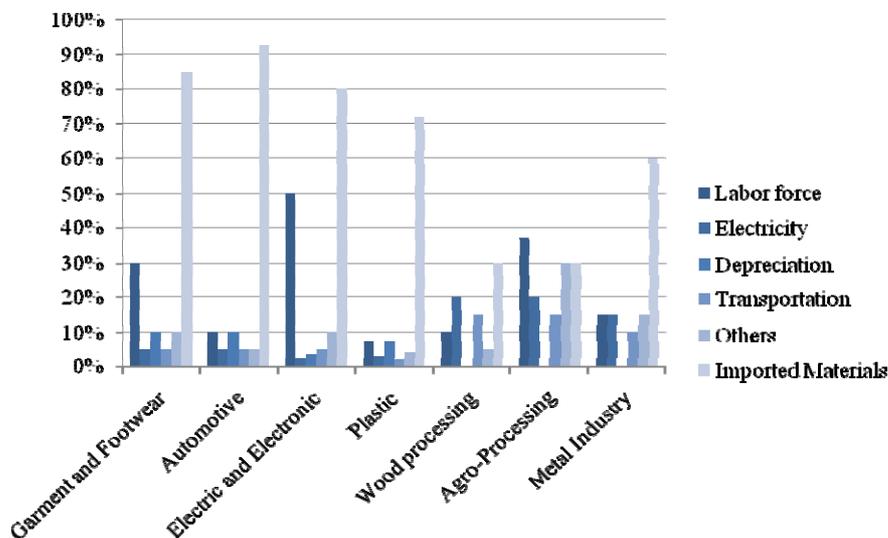
Year	Capital structure	Products	Reg. Capital (\$ mil.)	Output	Sale (\$ mil.)	Labor
1984	100% Local	garment	0.30	10,200 pieces	5.00	98
1989	100% Local	Plastic	0.50	900 tons	1.00	126
1989	100% Local	Plastic	0.80	2000 tons	3.00	180
1991	100% Taiwan	Wood	0.62	150,000 tons	0.40	307
1991	Japanese, Thai and Local	motorcycle	0.45	6000 motorcycles	7.20	40
1992	75% Swedish and 15% Local	furniture	1.30	Many tons	1.00	69
1992	100% Thai	motorcycle	0.50	10,000 motorcycles	9.00	180
1993	100% French	garment	0.30	300,000 pieces	1.50	160
1993	100% Local	Fans	0.40	40,000 per year	0.50	35
1993	70% Local and 30% Thai	garment	0.93	14,000,000 pieces,	6.00	762
1993	100% Taiwan	electrical	0.20	150,000 pieces.	3.50	120
1994	60% Thai and 40% Lao	agro	0.44	Thousand tons	1.50	190
1995	100% Local	water	0.45	Mineral Water 100,000 liters	2.70	250
1997	100% Korean	automotive	20.00	3224 assembled cars.	20.00	616
1997	100% Korean	motorcycle	20.00	30,000 motorcycles	15.00	616
1997	100% Japanese	electronic	1.20	40,000,000 pieces		700
1997	100% Local	telecom	0.45	300 tons	0.20	15
1998	100% Local	garment	0.75	50,000 pieces of Jackets	0.40	60
1999	100% Local	plastic	0.12	5760 tons	5.00	123
2000	100% Japan	garment	0.90	100,000 pairs of socks	3.00	250
2000	100% Local	garment	1.50	2.5 million pieces	6.30	516
2000	100% Local	wood	0.20	24 tons	3.00	70
2002	100% Japanese	electronic	0.10	10 million of pieces.	0.10	100
2003	100% Local	cassava	6.00	777 tons	0.30	125
2004	70% Local and 30% Thai	plastic	2.50	1800 tons.	2.00	47
2004	100% Chinese	motorcycle	0.92	6000 motorcycles	3.00	100
2004	100% Local	coffee	0.50	24 tons	3.00	50
2005	100% Local	steel	1.00	2000 tons of steel.	5.00	90
2005	80% Vietnamese and 20% Local	steel	2.00	2500 tons	5.00	35
2005	60% Thai and 40% Lao	motorcycle	0.60	parts of 12,000 motorcycles	0.60	24
2005	100% French	garment	0.50	5000-8000 pieces of jackets	2.00	170
2006	100% Thai	sugar	20.00	60,000 tons of brown sugar	15.00	400

2007	Thai and Japanese	garment	0.75	275,000 pieces	0.75	245
2007	100% Thai	plastic	1.50	1,250 tons	2.00	159
2007	100% Local	garment	1.40	4 million pieces	0.50	615
2007	100% Japanese	electronic	2.00	12,000,000 pieces	0.10	200
2008	100% Japanese	shoes	3.80	300,000 pairs	1.50	164

Source: Surveys between November and December 2009 by ERIT.

Whether Lao PDR will be considered as a destination of relocation or fragmentation will generally depend on what it has to offer to the multinational firms particularly in terms of cost cutting. While there may be many factors that would affect the relocation decision, as well as local investors' decisions to start up a business, we would concentrate on cost structures of surveyed firms in order to find a glimpse of answer to these questions. ERIT has conducted surveys by asking firms to evaluate what Lao PDR needs to improve its investment climates, as well cost structure of their products. While the answer to question on cost structures were that the person do not have the exact figure, we had tried to persuade them to give them according to their feelings. This is important in a way that the figures they provided were what managers, in most cases, felt about their cost structures. As some of cost structure by industry calculated by ERIT stuffs did not add up to 100 percent, we have however left the figures as they were in order to precisely reflect their evaluations, in Figure 3.

Figure 3: Cost Structure of Surveyed Firms by Industrial



4.1 Import of Parts, Components and Raw Materials

It is a well known fact that most industries in Lao PDR have a high dependence on imported parts, components and raw materials. The most striking parts of cost structures in Figure 3, was perhaps large share of imported inputs. Imported inputs accounted for from 50 percents above in cost structure of all industries except agro-processing and wood. Still the shares of imported inputs are as high as 30 percents. Imported inputs accounted for more than 80 percents in garment and footwear, more than 90 percents in automotive and about 80 percents in electrical and electronic industries.

Though with rather small samples, the figures of imported intermediate inputs shares are more or less the same with figures from other studies. More availability of local intermediate inputs would certainly reduce costs for manufacturing industries within the country, and make it or attractive destinations as location for investments.

4.2 Labor Costs

Workers in Lao PDR generally have much lower nominal wage rates in comparison with their counterparts in advanced ASEAN countries. The worker's minimum wage as stipulated in the labor law is 300,000 kip (around US\$40), although in reality the

minimum wage paid is 600,000 kip (around US\$70). The average wage of managers, middle managers and engineers, lies between US\$200 and US\$400, but it could be as high as thousands dollars in some cases.

The share of wage in production cost varies across industries. In the garment industry, wages accounted for around 30 percent in production cost. Wage share in food and agro-processing industries was also around 30 percent. In electrical and electronic industries, wage accounted for around 40 percent, while in automotive it represents less than 10 percent. In other industries such as wood and metal, the share of wage to production cost was less than 10 percent.

Food, agro-processing and electronic industries interviewed in our surveys were mostly export-oriented, while the automotive and metal industries were largely domestic oriented. One interesting trend in wage share to cost in the Lao case is that they tend to be higher in export-oriented firms and lower in domestic-oriented firms.

The shares of wage in garment and footwear, and electric and electronic is however higher than expected. Whether or not costs of imported intermediate inputs are borne by firms in Lao PDR can largely influence the shares of wage in cost structures.

4.3 Transportation

Transport and logistics remain big issues in Lao PDR. Transportation and logistics inside the country are still not well developed. In addition, the nearest sea ports are still several hundred kilometers away, and in foreign soils. As a result, transport cost accounts for a relatively large share in the cost structure in Lao PDR.

For instance, in the garment industry, transport cost accounted for around 7 percent of production cost. The automotive and electronic industries also show more or less the same level of transport cost share in the cost structure. The plastic industry has the smallest transport cost share of 3 percent in production cost. Transport cost share were the highest in wood and agro-processing industry, about 14 percents.

Though based on a small sample, 7 percent of transport cost share, in garment industry, is already very high by international standard. They can make many potential investors to think twice whether or not to invest or relocate to Lao PDR. Our survey results have nevertheless confirmed the low competitiveness of transport cost in Lao PDR.

4.4 Electricity

Lao PDR produces and sells electricity to its neighboring countries. Electricity is one of the main exports of the country. In general, there are no electricity supply problems in Lao PDR and the cost is also as low as 2 to 3 cents (USD) per kilowatt hour.

In the garment industry, electricity accounts for a small factor in the cost structure. It represents only 3 or 4 percent of the total cost of products. This is true for automobile and even lower for the electronic industry. However, electricity cost accounts for a very high percentage, between 17 percent and 18 percent, in wood, agro-processing and metal industries.

Though not serious, blackouts do cause some problems to production lines. We confirmed in our interviews in garment factories in Vientiane Capital that blackout does happen several times a year.

5. INDUSTRY-SPECIFIC LOCATION ADVANTAGES

Firms generally relocate in other areas to cut cost or maximize profit. The CLMV countries are generally known for their relatively lower wage rates. This is, however, obviously not enough to generate big flows of FDI. Being between fast growing economies such as Thailand, Vietnam, China and Cambodia have already give Lao PDR a great potential to economically grow. Connectivity is what made Lao PDR unable to materialize this great potential up to the time being.

Many economic corridors developed since 1990s began to unblock Lao PDR to its fast growing neighbors. We have witnessed great changes after many cross-border connectivity infrastructures were put in places, between Lao PDR and its neighbors. None of the following location advantages can be materialized without right hard/soft infrastructure to unblock Lao PDR, and in the right places.

5.1 Garment and Footwear Industry

Based on our recent survey, relatively lower wages and privilege from GSP constitute the main location advantage in garment and footwear industry in Lao PDR. Many

garment and footwear factories seeking GSP privilege relocated to Lao PDR. Many Thai investors moved to Lao PDR during the early 1990s to enjoy the GSP from EU, while many also left when EU penalized Lao PDR for not submitting the necessary application to take advantage of this privilege (Keola [2010]). Currently, a significant number of Japanese affiliated garment factories have relocated to the country obviously to enjoy its new privilege access to the Japanese market.

5.2 Food and Agro-Processing Industries

As Lao PDR is an agricultural country, the development of food and agro-processing industries has many obvious advantages. Many necessary inputs are already available locally although many are not sufficient in quantity. Given Laos' relatively large land area, the potential expansion of production of inputs for food and agro-processing is also great.

Nonetheless, constraints exist. Most raw materials for food and agro-processing industries are available seasonally. They are also not sufficient because they are done in subsistent manner and largely dispersed. If large scale farming or small scale in concentrated areas can be materialized, the location advantage of food and agro-processing industries in Lao PDR is undoubtedly great.

5.3 Electrical and Electronic Industries

Electrical and electronic products play an important role in people's lives all around the world. It is a large industry in the global market with a high degree of fragmentation. The availability of cheap labor is an advantage for Lao PDR to participate in these electrical and electronic production networks. Agglomeration of multinational producers in Thai/Lao-speaking Thailand also makes Lao PDR a potential place for relocating supporting factories.

5.4 Automotive Industry

Though very small in numbers, the automotive industry has existed in Lao PDR since the early 1990s. They were, however, assembly factories aimed entirely for the local market. Given their relatively larger sizes and weights compared to electrical and electronic products, cross-border fragmentation may not happen as easy as electronic

industries. Few have, however, begun operation in early 2000s, all of which have participated in cross-border production network of cars and motorcycles with countries in the region such as Thailand, Vietnam and Cambodia. Given Lao PDR's geographical location between growing regional production bases, there is certainly room for the automotive industry to grow to.

6. DEMANDS AND NEEDS FOR IMPROVING INVESTMENT CLIMATE

Based on our surveys, the needs of and demands from the business community are still numerous. There is therefore large room for improvement in investment climates. Better investment climate will not only attract FDI but will also foster local business and industries.

6.1 Quality of Labor Force

Though relatively abundant labor force is still available in Lao PDR, those with necessary skills are still far from sufficient. Many higher educational institutions in Lao PDR have not produced graduates with skills needed by the private sector. Professional and vocational training schools should be expanded further to train different skills according to business needs. Furthermore, many firms complain about the attitude of local workers. It may take time for the agricultural work force in Lao PDR to be ready for industrialization. Raising people's understanding of industrialization is necessary to instill correct attitudes and teach people about the value of discipline to achieve industrialization.

6.2 Licensing Procedures

Licensing procedures have been considered a problem by most firms in Lao PDR. The issue pertains not really on the fees but the time it takes to apply and the places that have to be visited.

6.3 Import and Export Processes

Import and export processes need to be further improved by reducing the number of documents required to be completed. They should not consume too much time or be a big burden to firms in terms of cost.

6.4 Transport Infrastructure and Logistics

Transport and logistics are the most important challenges for the country as it has no direct access to seaport. Within Lao PDR, the transport system and logistics are not developed. Even in Vientiane Capital, which is the most advanced and industrialized part of the country, the distance to the Thai seaport where most exports and imports to and from Lao PDR are carried out, is already 650 km.

6.5 Electricity

Electricity supply is not a problem in Lao PDR. The country produces sufficient supply of electricity for domestic industrialization and for export. The smallest problem raised in the surveys is the need to resolve the blackouts in some parts of the country. The price of electricity is very low and therefore advantageous for all kinds of industries.

6.6 Soft Infrastructure

In terms of legal framework, institutions or regulations, Lao PDR has always been modifying and adjusting its legal framework or regulations to attract more investment into the industrialization and modernization of the country. This has been reflected in the increasing investments in different economic sectors, particularly in industries. To attract more foreign investment, related laws and regulations should be improved further by giving more incentives and privileges to potential investments in the industrial sector.

6.7 Financial Investment Climate

In Lao PDR, according to recent surveys, access to credit is a critical issue. Credit is rare and interest rate is high. This is not beneficial especially for small and medium enterprises. The Lao government is trying to improve the situation by coordinating with and talking to the concerned financial institutions to resolve the problem together.

6.8 Special Economic Zones.

Based on lessons from fast-growing countries, the establishment of special economic zones (SEZs), where incentives and privileges are offered, can be an effective way to develop industrial clusters. Many types of these special zones, which can be anything from free trade zones (FTZ), export processing zones (EPZ) or even sophisticated bonded warehouses, have been widely established in economically advanced Southeast Asian countries. The need for the same facility in Lao PDR is expressed in the surveys.

7. CONCLUDING REMARKS AND SOME POLICY RECOMMENDATIONS

This chapter examined the prospects and challenges in upgrading and diversifying the industrial structure in Lao PDR. It also examined some location advantages of the country to see if more industrial blocks could potentially relocate from more advanced ASEAN countries and newly industrializing countries to Lao PDR.

Contrary to general perception that it would be difficult for agricultural based and least developed countries such as Lao PDR to attract diversified industries, the reality is that a number of industries are already present, though not many. Lao PDR is undoubtedly in the process of industrialization. The most prominent expanding industries seem to be forestry, food and agro-processing, followed by garment, construction materials, and to some extent, electrical, electronic and automotive industries.

Reducing production cost is essential for Lao PDR to move forward with industrialization in a sustainable way. The biggest problem found in our survey was imported intermediate inputs and transport costs. Being far from the seaport is something that will not change. What it can do is to make the most out of cross-border cooperation through many existing and soon-to-be-installed economic corridors.

REFERENCES

- Asian Development Bank [1999] Key Indicators of Developing Asian and Pacific Countries 1999, Volume 30, online edition.
(http://www.adb.org/documents/books/key_indicators/1999/default.asp accessed in March 2010)
- _____ [2009] Key Indicators for Asia and the Pacific 2009, online edition.
(http://www.adb.org/documents/books/key_indicators/2009/default.asp accessed in March 2010)
- Bedlington, Stanley S. [1981] “Laos in 1981: Small Pawn on a Larger Board,” Asian Survey, Vol. 22, No. 1, A Survey of Asia in 1981: Part I. (Jan., 1982), pp. 88-98.
- IMF [2008] “Lao People’s Democratic Republic: Statistical Appendix,” IMF Country Report No. 08/340, October 2008.
- Keola, Souknilanh [2010] International Fragmentation in Laos : Patterns, Progress and Prospects” in Hiratsuka and Uchida (Eds.), Input trade and production networks in East Asia: London: Eduard Elgar. Upcoming in 2010.
- Luther, Hans U. [1983] Socialism in a Subsistence Economy: the Laotian Way, Chulalongkorn University (Jan., 1983).
- National Statistical Center [1990] “Basic Statistics about the Socio-Economic Development in the Lao P.D.R. for 15 years (1975-1990),” Ministry of Planning and Investment of Lao P.D.R, Vientiane Capital, 1990.
- _____ [2000] “Basic Statistics of the Lao P.D.R.,” Ministry of Planning and Investment of Lao P.D.R, Vientiane Capital, 2001.
- _____ [2001] “Annual Statistics 2001,” Ministry of Planning and Investment of Lao P.D.R, Vientiane Capital, May 2002.
- _____ [2007] “Statistical Yearbook 2007,” Ministry of Planning and Investment of Lao P.D.R, Vientiane Capital, Jun 2008.
- Phounmalay, Noulack, 2007. “Coping with restrictive policies and maintaining competitiveness: Lao PDR” Regional Dialogue on Restrictive policies on the

Textiles and Clothing Trade in Asia and the Pacific CEIBS, Shanghai, 9-10 April, 2007. (http://www.unescap.org/tid/mtg/weaving_lao.pdf accessed March 2010)