Chapter 6

Industrial Studies

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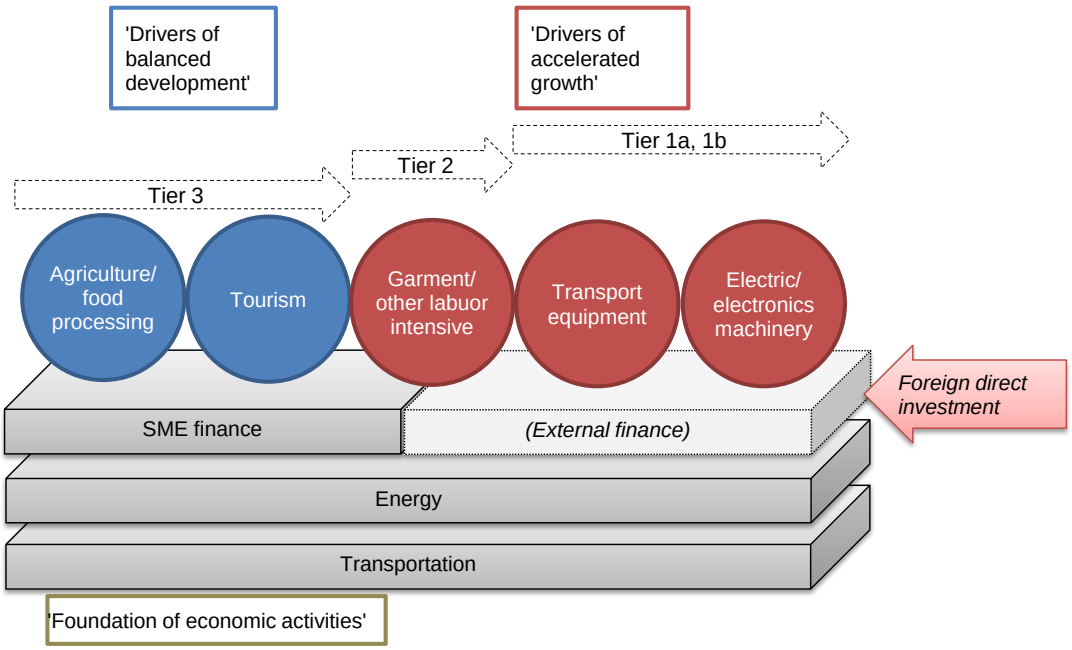
Chapter 6

Industrial Studies*

Introduction

Each economic sector has its unique structure, characteristics, and potential. With this in mind, the following eight sections discuss Lao PDR's eight economic sectors independently: (1) agriculture and food processing, (2) mining and energy, (3) garment and other labour-intensive industries, (4) electrical and electronic machinery, (5) transport equipment (automobiles and motorcycles), (6) tourism, (7) finance, and (8) transportation. These eight sectors, from agriculture and food processing to transportation, could be broadly categorised and positioned in relation to each other as shown in Figure 6.1.

Figure 6.1. Categorisation of Selected Economic Sectors



SME = small and medium-sized enterprise.
Source: Daiwa Institute of Research Ltd. (DIR).

* A concise summary of policy implications in this chapter is presented in Conclusion and Recommendations. For more detailed summary, see Appendix at the end of this report.

The first category is the foundation of economic activities. The energy and transportation sectors are indispensable for the development of other sectors and should therefore be prioritised. The finance sector, or small and medium-sized enterprise (SME) finance in particular, also serves as a basis of operation for domestic SMEs.

The next category is the drivers of balanced development in Lao PDR – agriculture and food processing, and tourism. These two sectors would have a substantial presence in Tier 3 cities and towns, remaining essential in terms of balanced development of the country.

The last category is drivers of accelerated growth. Export-oriented manufacturing falls into this category, and contributes to the economy through incorporation into international production networks. Garment and other labour-intensive manufacturing would benefit Tier 2 cities along with hard and soft infrastructure development. Although transport equipment and electrical/electronics machinery are yet to develop in Lao PDR, participation in regional production networks would bring greater growth once agglomerations develop in Vientiane and other main cities.

As for export-oriented manufacturing sectors, Lao PDR could rely on foreign direct investment (FDI) as a source of finance and technology. Energy and transportation would be key to attracting investment in the sector, together with industrial estate development and investment facilitation (i.e. tax incentives, trade facilitation, one-stop service at Special Economic Zones [SEZs], etc.).

Although not illustrated in Figure 6.1, it is worth noting that exports from mining and hydropower projects would continue to be an indispensable source of revenue as well as a steady driver of economic growth. Nonetheless, Lao PDR would need to depend more on the sectors illustrated above for sustained future development, as discussed

in the following sections. Hereafter, each section presents the current situation of the targeted sector, outlines promising scenarios, and discusses challenges in realising them.

In particular, it is imperative to promote the manufacturing sectors, i.e. sectors (3) to (5) listed at the start of this introduction. The numerical examples in the box below show (i) a labour shift from the agriculture to manufacturing sector and (ii) an improvement of labour productivity is expected to increase gross domestic product (GDP). Let us investigate these two points in greater detail.

First, since the productivity gap between agriculture and manufacturing is huge, even a simple labour shift is likely to have a positive effect on GDP given a constant productivity. Second, a productivity improvement especially in the agricultural sector is likely to generate redundant labour force given the current production level. If such workers are employed in the manufacturing industry, which retains a relatively high productivity and is generally short of labour force, GDP will increase. In addition, when the productivity of the manufacturing sector is also enhanced, the positive effect of the labour shift on GDP will be further magnified.

The key to economic development is basically promoting manufacturing industries through industrial policies. In conclusion, the fundamental strategy of industrial policies as a framework should be based on these two directions: a labour shift from agriculture to manufacturing and a productivity improvement.

Numerical Examples of the Lao PDR Industrial Structure

Table 6.1 represents GDP, employment, and labour productivity (GDP/Employment) of Lao PDR in 2013. Although labour force should be strictly estimated by total labour hours, we simply utilise total workers due to limited access to data.

Table 6.1. GDP, Employment, and Labour Productivity (2013)

	GDP (thousand US$)	Employment (workers)	Labour Productivity (thousand US$/ worker)
Agriculture	323,797 (27%)	2,315,492 (66%)	0.140
Manufacturing	131,917 (11%)	247,899 (7%)	0.532
Construction and	527,669 (44%)	920,055 (26%)	0.574
Services	215,864 (18%)	21,921(1%)	9.847
Power and Mining			
Total	1,199,247 (100%)	3,505,367 (100%)	0.342

GDP = gross domestic product; US$ = United States dollar.
Source: World Bank (2014a); calculated by the author (Ambashi).

(1) Labour shifts from the agriculture sector to the manufacturing sector given the current productivity level.

The difference in labour productivity between the agriculture and manufacturing sectors is calculated as 0.532-0.140=0.392 (thousand US$/worker). If there is such a shift of 10 thousand workers, GDP in Lao PDR will increase by 3,920 (thousand US$). Thus, the impact on total GDP will be (3,920/1,199,247)*100=0.33 percent. Likewise, a shift of 100 thousand workers shift will positively affect GDP by 3.3 percent in a proportional way.

(2) Labour productivity of the agriculture sector increases to that of the total economy given the current GDP level of the agriculture sector.

In this case, the productivity level of the agriculture sector will improve from 0.140 to 0.342. The current level of GDP in the agriculture sector can be generated by 323,797/0.342 = 946,775 workers. Thus, the agriculture sector can potentially decrease its workers to 2,315,492-946,775 = 1,368,717 workers while maintaining the current production level. If we assume that these workers move to the manufacturing sector, we can expect an increase in GDP by 0.532*1,368,717 = 728,157 (thousand US$). In other words, total GDP will increase by 728,157/1,199,247*100 = 60.7 percent.

Furthermore, when the labour productivity of the manufacturing sector is increased by 10 percent to 0.585 (thousand US$/worker), the impact on GDP is estimated to be 66.8 percent.

6.1. Agriculture and Food Processing

6.1.1. Overview of agriculture and food processing

6.1.1.1. Overall agricultural production

The agricultural sector in Lao PDR is the country's largest economic activity in terms of labour force. It employs 2.32 million people, or 66 percent[17] of the national workforce, and broadly includes livestock farming, fisheries, and forestry. Because workers tend to work shorter hours than in other sectors, the total amount of hours worked was 61 percent of total labour input in 2013, according to a calculation by the World Bank (2014a).

Given the importance of the sector, the Lao PDR government intends to transform traditional agriculture into a commercial sector with high value-added (MAF, 2010). However, in the past decade, the investment level from both local and external investors has hardly increased. The sector mostly comprises of small enterprises or family businesses that supply local or niche markets. As a result, labour productivity remains low. According to the World Bank (2014), the amount of output measured as value added in the agricultural sector accounted for only 27 percent of the total economy in 2013. When compared with other sectors, this poor agricultural productivity is striking. It is estimated to be less than one-third of the productivity of the manufacturing, and construction and services sectors. Figure 6.2 presents the estimated labour productivity for the three main sectors.

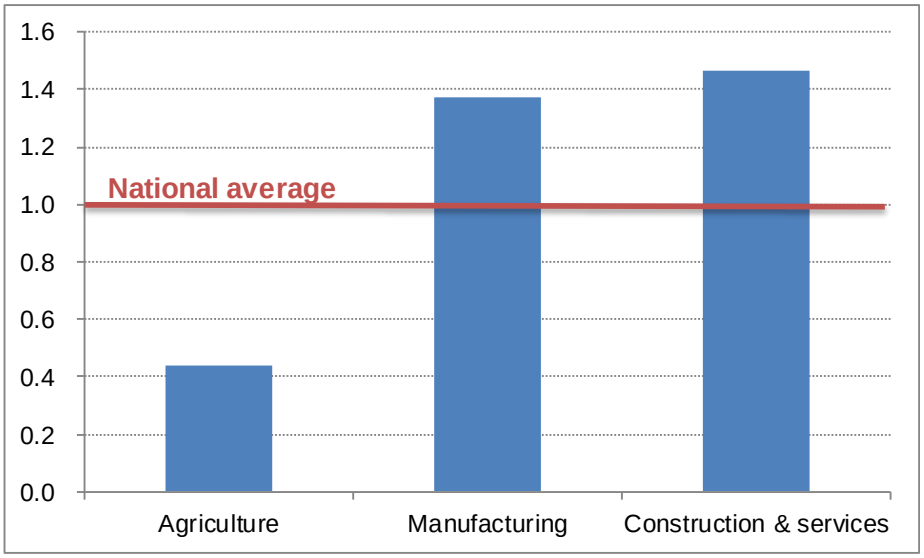
Within the broadly defined agricultural sector, the crop and livestock subsector has 83 percent of sectoral production whereas fisheries and forestry account for only 12 percent and 5 percent, respectively.[18] Hence, the remainder of this section focuses on the crop and livestock subsector. Rice, maize, and coffee are the three most

[17] The figure is taken from World Bank (2014a). The figure provided by Economic Research Institute for Trade (ERIT) is 85 percent.

[18] Data for 2013, from CEIC database.

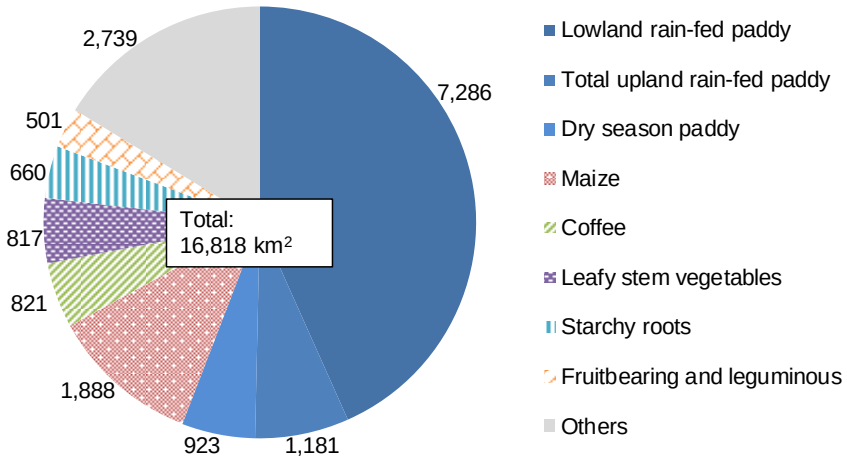
planted crops in Lao PDR. Among a total crop-planted area of 16,818 km^2, three kinds of rice paddy account for 9,395 km^2, or 56 percent. Lao PDR achieved national self-sufficiency in rice by 2000, and its production surplus was expected to reach 500,000 tonnes by 2015 (World Bank, 2014a).

Figure 6.2. Estimated Labour Productivity in Each Sector (2013)



Note: National average is set at 1.00 for reference. The mining, electricity, water, and gas sectors are excluded from the Figure but included when calculating the national average.
Source: DIR calculation from the World Bank (2014a).

Figure 6.3. Planted Areas by Crop (2013, km^2)



Source: Ministry of Agriculture and Forestry, Lao PDR; compiled by DIR.

However, the most popular cash crop for export is coffee, which is mainly grown in the southern provinces. Its planted area has expanded and reached 821 km^2 in 2013. Figure 6.3 provides a visual representation of the country's planted areas by crop.

6.1.1.2. International trade in agricultural products

While Lao PDR remains an agrarian economy, agriculture is still subsistent in nature across the nation. Because the country imports a significant amount of meat and processed/packaged food, its trade balance for agricultural products has a deficit of more than US$1 billion, excluding wood.

Table 6.2 presents data regarding the country's total and agricultural exports. The export of agricultural products was more than US$1 billion in 2014, accounting for 38 percent of total exports. However, wood represented US$783 million, or 77 percent of exports (Standard International Trade Classification [SITC], 24). Putting wood aside, only US$237 million of exports remain.

Table 6.2. Total Exports and Those of Agricultural Products (US$ million)

SITC	Description	2010	2011	2012	2013	2014
[TOTAL]	Total all products	1,746	2,190	2,271	2,264	2,650
	Total agricultural products	427	650	663	808	1,020
	Total agricultural products (excl. wood)	157	212	241	234	237
[247]	Wood in the rough or roughly squared	92	190	159	265	560
[248]	Wood simply worked, and railway sleepers of wood	173	241	253	294	202
[231]	Natural rubber & similar gums, in primary forms	20	27	47	65	56
[071]	Coffee and coffee substitutes	38	72	60	49	46
[054]	Vegetables	14	21	33	29	38
[044]	Maize (not including sweet corn), unmilled	27	25	26	28	26
[245]	Fuel wood (excluding wood waste) and wood charcoal	4	7	10	15	21
[061]	Sugar, molasses and honey	18	25	25	22	21
[042]	Rice	6	3	10	8	8
[121]	Tobacco, unmanufactured; tobacco refuse	3	4	5	1	8
[292]	Crude vegetable materials, n.e.s.	6	6	6	5	6
[222]	Oil seeds and oleaginous fruits (excluding flour)	4	6	6	4	5

Note: 'Agricultural products' refers to SITC 0-, 1-, 2-(excl. 27-, 28-) in Rev.3. 'Wood' refers to SITC 24.
Source: UNCTADstat, compiled by DIR.

Despite the overwhelming presence of paddy fields in Lao PDR, rice exports are just US$7.7 million, or 3 percent of agricultural exports (excluding wood). Rubber (US$56.0

million), coffee (US$46.1 million), and vegetables (US$38.2 million) are the primary products for overseas markets, followed by maize and sugar.

Table 6.3 presents data regarding the country's total and agricultural imports. The imports of agricultural products were US$387 million in 2014, or 12 percent of total imports. Among various products, edible meat (SITC, 01) accounted for US$106 million, which is more than a quarter of total agricultural imports. The feed for animals is imported because of an insufficient domestic supply. The supply of milk also depends on imports and accounted for US$18 million in 2014.

Table 6.3. Total Imports and Those of Agricultural Products (US$ million)

SITC	Description	2010	2011	2012	2013	2014
[TOTAL]	Total all products	2,060	2,404	3,055	3,020	3,300
	Total agricultural products	231	303	361	323	387
	Total agricultural products (excl. wood)	231	303	360	323	387
[012]	Other meat and edible meat offal	12	43	44	52	71
[001]	Live animals other than animals of division 03	10	9	24	34	44
[098]	Edible products and preparations, n.e.s.	30	33	37	39	43
[011]	Meat of bovine animals, fresh, chilled or frozen	2	18	37	18	31
[111]	Non-alcoholic beverages, n.e.s.	20	28	42	25	30
[081]	Feeding stuff for animals (no unmilled cereals)	15	17	20	20	28
[048]	Cereal preparations, flour of fruits or vegetables	14	21	19	20	25
[022]	Milk, cream and milk products (excluding butter, cheese)	16	17	16	14	18
[071]	Coffee and coffee substitutes	16	13	11	12	12
[122]	Tobacco, manufactured	10	7	9	11	11
[061]	Sugar, molasses and honey	12	19	26	9	10
[231]	Natural rubber & similar gums, in primary forms	7	5	9	7	9
[059]	Fruit and vegetable juices, unfermented, no spirit	8	6	6	6	9
[112]	Alcoholic beverages	14	20	18	10	8
[062]	Sugar confectionery	4	5	6	4	5
[042]	Rice	8	7	4	3	5
[016]	Meat, edible meat offal, salted, dried; flours, meals	1	3	8	14	5

Source: UNCTADstat; compiled by DIR.

As well as its import dependency on livestock products, Lao PDR also imports various processed/packaged products, the ingredients for which are procured domestically (e.g. beverages and cereals). The main reason for the imports is the limited capability of food processing facilities in the country, as described below.

6.1.1.3. Overview of food processing

Despite the agrarian nature of Lao PDR's economy, the food-processing industry is in a nascent stage of development. With regard to labour input, the total number of workers at all food-related factories was only 21,217 in 2010 (Japan International Cooperation Agency [JICA], 2012b), which is less than 1 percent of agricultural workers. Moreover, 12,370 workers, or 58 percent of this total, were engaged in rice milling, leaving the total number of the others at less than 9,000. Among current food processing industries, the largest is drinking water production (3,066 workers), followed by sugar production (1,126 workers).

Whereas traditional and family-based food processing has existed for a long time, modern food processing factories did not appear until 2000 (Ngongvongsithi and Keola, 2010). With a few exceptions of formerly state-owned facilities such as the Beerlao factory (the Lao Brewery Co. Ltd.), most establishments represent relatively new investments in areas such as sugar and coffee factories. Table 6.4 presents the details of the food processing industry in Lao PDR.

6.1.2. Lao PDR government policies

6.1.2.1. Existing policies (7th Five Year Plan)

The Lao PDR government (hereafter, the government) recognises the problem of low productivity prevalent in the agricultural sector and intends to move part of the workforce to the manufacturing industries and services sectors, where average productivity is more than three times that of agriculture. By promoting this move, an increase in the average income and a reduction in poverty are expected. According to the Seventh Five-Year National Socio-Economic Development Plan (the 7th Five Year Plan, 2011–2015), the government aimed to reduce the agricultural labour ratio from 75 percent to 70 percent. This target seems to have been achieved.

The government has also placed emphasis on a productivity increase in agriculture through the following measures, as mentioned in the 7th Plan.

Table 6.4. Existing Food Processing Factories (2010)

Type of Industry	Factories				Workers
	Large	Medium	Small	Total	
Rice milling	3	7	9,016	9,026	12,370
Drinking water production	7	15	422	444	3,066
Sugar production	2	0	0	2	1,126
Beer production	3	1	1	5	915
Ice production	4	2	197	203	624
Slaughter house	1	1	115	117	574
Liquor production	1	4	9	14	470
Salt production	1	3	1	5	442
Sweet corn/palm seed	3	11	13	27	372
Fruit/vegetable juice	1	1	2	4	368
Tapioca starch production	3	0	0	3	204
Bread/sweets production	0	2	12	14	132
Various noodle production	0	3	23	26	126
Tea processing	0	3	7	10	117
Traditional noodle production	0	0	41	41	65
Coffee processing	2	0	1	3	63
Cooking oil production	0	0	1	1	55
Fruit/vegetable processing	1	0	3	4	43
MSG production	0	0	3	3	40
Soda production	1	0	2	3	24
Soybean processing	0	0	1	1	7
Ice cream production	0	0	3	3	7
Meat processing	0	0	1	1	5
Paddy cover crush	0	0	1	1	2
Total	33	53	9,875	9,961	21,217

Source: JICA (2012b); data screened by DIR.

(1) Efficient Allocation of Land

Given the country's low population density and its history of communism, some land is yet to be allocated to local farmers. The 7th Five Year Plan recognised the scope for improvement and began a land classification plan at both macro and micro levels. The land classification plan's target was to issue 1 million land certificates during 2010–2015. By clarifying land titles, the government intended to eradicate shifting cultivation.

To fully utilise land, the government also approved land concessions for wider economic activities as well as agriculture. In the agricultural sector, land concessions have encouraged commercial crops such as sugarcane, jatropha, and coffee. Livestock farms have also been established to utilise the land. Table 6.5 provides further details.

Table 6.5. Agricultural Land Concession Deals and Total Land Area

Product	Deals	Total area (km^2)	% of total area
Sugarcane	10	350	25%
Livestock	58	315	23%
Jatropha	49	252	18%
Coffee	59	191	14%
Cassava	34	147	11%
Rice	12	23	2%
Fruits & vegetables	31	20	1%
Other	107	103	7%
Total	360	1,400	100%

Source: Schönweger et al. (2012).
Note: Of 360 deals, 51 lack area data and thus are not included in the total area.

(2) Improvement of Land Productivity

By implementing best practices nationwide, the government is trying to increase land productivity. An example is the systematic rice intensification (SRI) system for rice-growing farmers in which 7–8 tonnes/ha of harvest have been achieved in two districts in Luang Prabang Province, whereas the national average is 3.88 tonnes/ha.

Irrigation is another key to improving productivity and livelihoods. The 7th Five Year Plan aimed to expand irrigation for 50 percent of rice, commercial grain, and fruit tree cultivation areas.

(3) Collective Production Groups for Processing and Marketing

By strengthening grass roots production groups in regions, the government has encouraged the establishment of new forms of collective production groups. These groups are integrated with service, sale-purchase, processing, communication, treasury, and credit systems in accordance with the 7th Five Year Plan.

(4) Domestic Rice Supply and Trade Prohibitions

As well as efforts to improve productivity, the government has given priority to ensuring the sufficient supply of goods to the domestic market, as stated in the 7th Five Year Plan. With regard to domestic rice supply, the government began securing a national rice reserve in 2009. By enacting a policy of imposing export bans, the government has also suppressed farmers' incomes and their incentives to attain export quality.

Rice export bans have been imposed by provincial governors who have direct responsibility for them and who use their discretionary powers. The provincial governors have a mandate to ensure political stability through local rice availability, especially for urban consumers, by managing price volatility. Thus, the governors impose export bans, or even inter-provincial trade bans, when these are needed.

6.1.2.2. Expected policies (the 7th Five Year Plan)

With regard to 2016–2020, Lao PDR will be implementing the Eighth Five-Year National Socio-Economic Development Plan (the 8th Five Year Plan), the draft of which had passed through several rounds of public hearings when this report was being written. Because the main goal is to meet least developed country (LDC) graduation criteria, the agricultural sector is meant to reduce its share of GDP to 19 percent, thereby contributing to a reduction, in due course, of the economic vulnerability index (EVI).

6.1.3. Features in comparison with neighbouring countries

As mentioned in the prior subsections, Lao PDR's agricultural sector has diversified from subsistence agriculture. Commercial crops have increased and the agro/food-processing industry has yet to realise its potential.

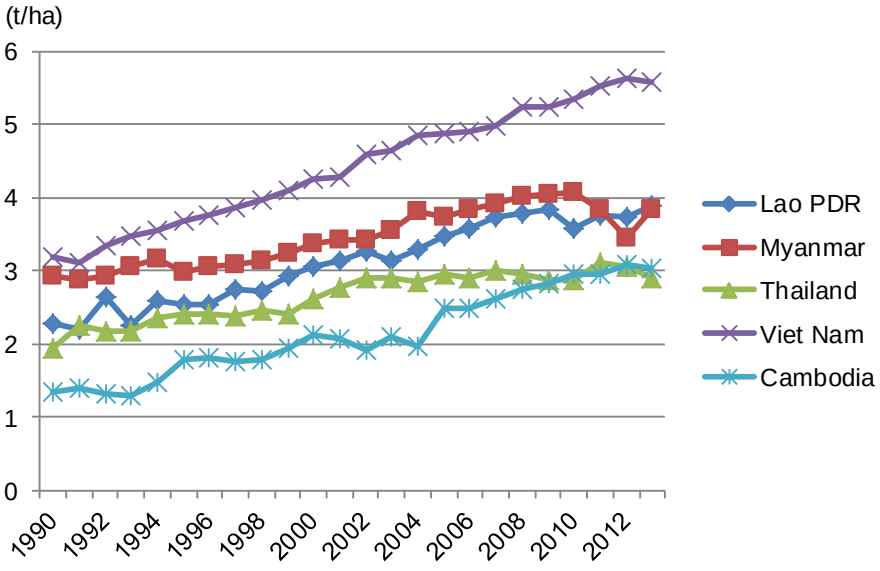
This subsection discusses rice and coffee production. These two crops represent Lao PDR's subsistence and commercial agriculture, respectively.

6.1.3.1. Rice

Lao PDR's average rice yield was 3.88 tonnes/ha in 2013, which is about equal to that of Myanmar (3.84 tonnes/ha). When compared with neighbouring countries, this yield is much lower than that of Viet Nam (5.57 tonnes/ha), but above the levels of Thailand (2.91 tonnes/ha) and Cambodia (3.03 tonnes/ha).

Historically, Cambodia, Lao PDR, Myanmar, and Viet Nam (the CLMV countries) have been second-wave adopters of green revolution technologies. Furthermore, Lao PDR's rice yield has traditionally been the lowest among CLMV countries, and was as low as 0.8 tonnes/ha in the 1960s. Rice yield has now reached almost five times the original level, surpassing Cambodia and on a par with Myanmar. However, as in the rest of Asia, yield growth has recently been slowing in CLMV countries because of the exhaustion of green revolution technologies, particularly with regard to seeds (Rillo and Sombilla, 2015).

Figure 6.4. Rice Yields in Lao PDR and Neighbouring Countries

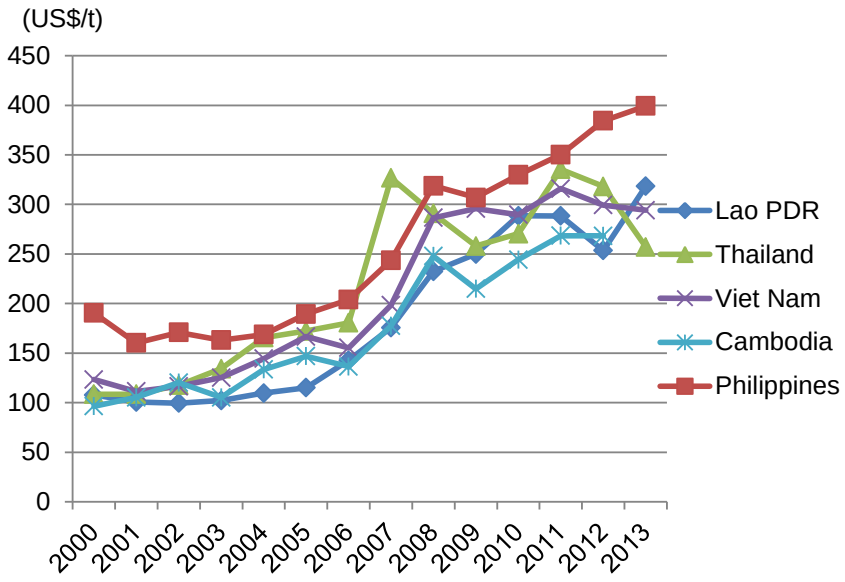


Source: FAOSTAT; compiled by DIR.

Existing yield gaps among Asian countries are mainly attributed to the countries' varying landscapes, soil qualities, and the provision of investment (particularly with regard to irrigation) for agricultural production (Rillo and Sombilla, 2015). Figure 6.4 provides a graphical representation of rice yields from 1990.

The producer's price for rice has been somewhat subdued in Lao PDR partly because of export control. When control is relaxed after a good harvest, the price of rice tends to spike when the rice stock becomes scarce after a surge in official exports. Figure 6.5 presents details of the price of rice from 2000.

Figure 6.5. Producers' Price of Rice in Lao PDR and Neighbouring Countries



Source: FAOSTAT; compiled by DIR.

When considering export potential, Lao PDR's poor rice mill sector is an obstacle. The report of the Food and Agriculture Organization (FAO) of the United Nations suggests that Lao paddy rice prices are more competitive at farm gate than those of Viet Nam and Thailand, but they lose competitiveness after the milling process. Lao PDR suffers from low milling quality and significant costs arising from small and inefficient operations.

6.1.3.2. Coffee

In contrast with rice, coffee in Lao PDR is produced mainly for the overseas market as a commercial crop. Despite its relative importance for Lao PDR's agriculture, the country's world market share still remains small. According to statistics of the International Coffee Organization, Lao PDR accounts for only 0.3 percent of total production among coffee exporting countries.

An examination of the world market for coffee production shows that Brazil and Viet Nam together have half of overall production. Usually, coffee production is labour intensive, as it is difficult to mechanise the harvest. With 2.6 million people said to be engaged in Vietnamese coffee production, Lao PDR is not in a position to compete on production volume. Rather, Lao PDR's comparative advantage lies in its fertile soil of high altitude plateaus in the southern part. Unlike most parts of Viet Nam, the Bolaven Plateau in Lao PDR is suitable for growing Arabica beans, which are traded at a higher price than Robusta. Table 6.6 presents the production figures of coffee exporting countries.

Table 6.6. Coffee Production of Major Exporting Countries

Country	Production (tonnes)	Share
Total	8,595,180	100.0%
Brazil	2,720,520	31.7%
Viet Nam	1,650,000	19.2%
Colombia	799,980	9.3%
Indonesia	621,900	7.2%
Ethiopia	397,500	4.6%
India	331,020	3.9%
Honduras	324,000	3.8%
Mexico	234,000	2.7%
Uganda	228,000	2.7%
Guatemala	210,000	2.4%
Lao PDR	30,000	0.3%

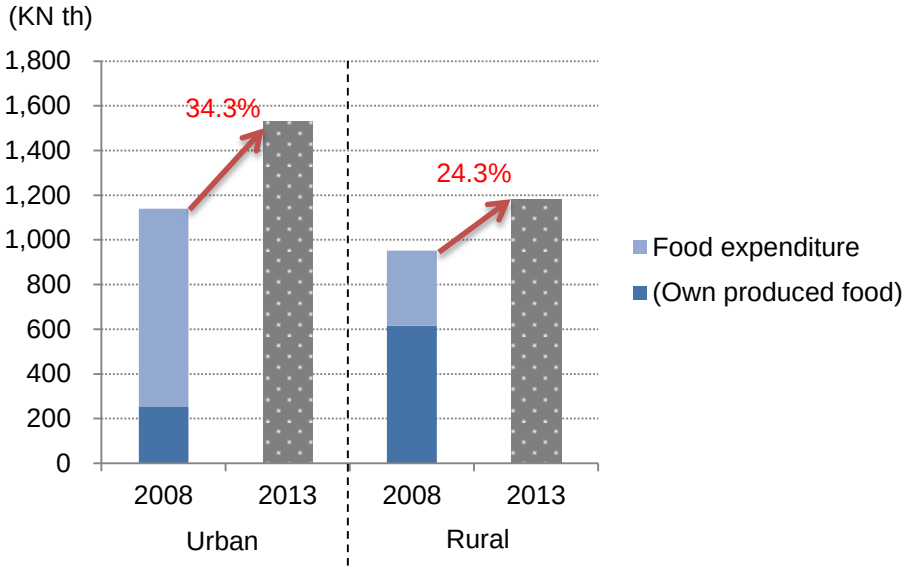
Note: Data shown is of Top 10 countries and Lao PDR, thus does not account for 100 percent of total world production.
Source: International Coffee Organization; compiled by DIR.

6.1.4. Promising scenarios

6.1.4.1. High value addition through 'Sixth Industrialisation'

Given the rising purchasing power in urban areas in Lao PDR, its agriculture sector should benefit from delivering high-value final products to well-off consumers who consume mostly imported products. One key is the agriculture sector's active involvement in food processing (secondary industry) and distribution (tertiary industry). This strategy is referred to as agriculture's 'sixth (or senary) industrialisation' in East Asia, for it maximises agriculture's value added by 'multiplying' secondary and tertiary industrial processes.

Figure 6.6. Monthly Average Household Food Expenditure in Urban/Rural Lao PDR



Note: Categories of food expenditure in 2013 are not available.
Source: CEIC, compiled by DIR.

Under the rapid economic development, Vientiane and other cities provide a growing market for Lao PDR's agricultural sector within the country, even if export to Thailand or Viet Nam remains costly. Monthly average household food expenditure in urban areas accounted for 1.53 million Laotian kip (KN) in 2013, which is 29 percent higher than that of an average rural household (KN1.18 million). Moreover, urban

expenditure increased by 34.3 percent in 2008–2013, while that of rural areas experienced relatively slower growth of 24.3 percent. As urban households purchase most of the food consumed (as opposed to rural ones), market opportunities are growing in Lao PDR.

Expansion into food processing and distribution is a promising way for farmers to benefit from the opportunities. High-end urban grocery outlets can be owned and/or operated by farmers under their own brands as emerging examples (exhibited in Figure 6.7). Vegetables and meat are locally produced in Lao PDR, well packaged and delivered to Vientiane, and eventually sold at much higher prices than at local wet markets. These farmers' businesses can potentially expand to and/or collaborate with restaurant operations using their own brand name, and such restaurants would function both as a distribution channel and a strong advertisement tool. Serving city dwellers would bring opportunities to Lao agriculture, as long as products' quality and logistics channels are ensured.

While these examples of 'sixth industrialisation' show a possible option for large-scale farmers, it is not easy for Lao smallholders to enter the processing and distribution business individually. To establish a brand, small farmers will need to form an association or a cooperative. With the long-awaited Decree on Cooperatives (Decree No.136/PM, 5 March 2010) in force, farmers have a legal foundation for establishing a producers' cooperative as a legal entity. Although it requires management of internal cohesion and growth, cooperatives can develop their own infrastructure of warehouse, transport systems and value-added processing (Castella and Bouahom, 2014), which is a key element of 'sixth industrialisation.'

Figure 6.7. Local Products Distributed through Own-Brand Modern Channels in Vientiane

Source: Photos taken by DIR.

In addition, formation of consumers' cooperatives could assist agriculture's 'sixth industrialisation' by providing a solid distribution channel for high-quality local products to health/environment conscious consumers. In the case of Japan, 131 community-based retail cooperatives serve more than 20 million members, and more than 80 percent of their sales consist of fresh foods and grocery (Japanese Consumers' Co-operative Union, 2015). In fact, many 'sixth-industrialised' agro-producers nominated consumers' cooperatives as a utilised distribution channel in the Japanese government's case studies (Ministry of Agriculture, Forestry and Fishery, Japan, 2015). As urban consumers' awareness grows in Lao PDR, the government could encourage formation of such cooperatives for the benefit of both agro-producers and consumers.

6.1.4.2. Efficient rice production through a 'best practice package'

Efficient rice production is an indispensable issue for national development. Because a large number of people are engaged in growing rice for survival, improving efficiency would provide a surplus of labour that could engage in more productive industry/services sectors, while improving the life of the remaining rice farmers. There are several possible investment options. A recent study (Eliste et al., 2012) in collaboration with FAO concluded that nationwide implementation of a 'best practice package' would result in the most efficient return on investment.

Introduction of new seeds is a common investment choice for developing countries, but Lao PDR has already taken that step. Given that most farmers have already adopted improved varieties of rice (65–80 percent in wet season paddies and almost 100 percent in dry season paddies) (Eliste et al., 2012), there remains a relatively small chance for dramatic improvement through the simple introduction of new seeds. With this in mind, Lao PDR needs to take further steps.

One way is to make capital investments in irrigation schemes that enable farmers to grow rice in the dry season. Dry season paddies record a high average yield of about 5 tonnes/ha in Lao PDR. However, initial investment would be considerable.

The combination and implementation of extension advisory packages – the creation of a 'best practice package' – would lead to the most efficient return on investment in Lao PDR (more than 10 kg of extra production per US$1 investment) (Eliste et al., 2012). As mentioned in the 7th Five Year Plan, the implementation of best practice in less efficient villages would be a practical policy. There is also room for productivity improvement by rotation of improved seeds and better usage of fertiliser, which would result in an additional yield of 3.7kg and 2.5kg per US$1 investment, respectively. Table 6.7 presents the key results of five options for investment.

In the medium to long term, capital investment in irrigation schemes would yield the

highest return per planted area (ha), as they allow farmers to grow rice again in the dry season in addition to current wet season farming. Also, dry season paddies provide high average yield. Building new irrigation schemes is expected to result in more than 4 tonnes of additional yield per hectare. Although it requires relatively large investments, it would be a promising investment choice as arable land is limited.

As Eliste et al. (2012) suggested, Lao PDR is now capable of producing more rice than the country needs, even in a difficult year. Because the government encourages the dissemination of best practice, it should also abolish or at least loosen its trade control of rice. Once Lao farmers are provided with better access to overseas markets, they could invest the proceeds in the establishment of new irrigation schemes, which could lead to an additional yield of 4.3 tonnes/hectare during the dry season.

Table 6.7. Key Expected Results of Five Main Investment Options by Eliste et al. (2012)

No.	Investment Model	Scope of Investment in 2013−15				Efficiency Indicators		
		No. of households	Area (ha)	Incremental production (tonnes)	Public Investments (US$)	Paddy kg/ha	Paddy kg/households	Paddy/spending (kg/US$)
1	Three-year rotation of R3 seed	124,865	216,133	139,824	38,020,766	647	1,120	3.7
2	Improved fertilizer usage	166,211	286,420	125,433	49,863,181	438	755	2.5
3	Best practice package	125,961	214,951	408,919	38,348,951	1,902	3,246	10.7
4	Irrigation scheme rehabilitation	29,000	20,300	178,133	87,000,000	3,233	6,399	2.0
5	New irrigation scheme	31,246	53,817	230,758	273,772,144	4,288	7,385	0.8

Note: R3 seed is an improved type of planting seed (third generation or replication of pure planting seed often produced under certified larger-scale field conditions).
Source: Eliste et al. (2012).

6.1.4.3. High-quality commercial crop production at local cooperatives

Given the global market for various types of commercial crop, high-quality products provide a good source of income for farmers and a source of hard currencies for Lao PDR. However, global market access cannot be secured unless production reaches a substantial amount at a standardised quality level. To improve the life of smallholder farmers, formation of local producers cooperatives is a promising way forward.

Although wood has been a major export product, Lao PDR should focus more on the

sustainable export of commercial crops. Considering the country's hilly landscape with fertile soil, Lao PDR has a comparative advantage in terms of high-quality production rather than low-cost mass production. At the same time, government policy should focus on improving the welfare of small and medium-sized landholders because they are indispensable for balanced nationwide development.

In this regard, the formation and support of local producers' cooperatives are essential if farmers are to improve quality, brand their products, and access the world market at a fair price.

6.1.4.4. Development of a new value chain (e.g. dairy products)

In the mid to long term, Lao PDR should develop a new value chain from agriculture to food processing so that domestic value added will be maximised. This report takes dairy products as an example.

Dairy products are relatively new in the Greater Mekong Subregion because they have not been traditionally consumed. However, Viet Nam and Thailand established production under government initiatives in 1960 and 1976, respectively. Viet Nam's Vinamilk, in particular, has grown to be the biggest agro-industry company in the country.

Lao PDR imports US$18 million of milk, cream, and dairy products, but the country's highlands could offer a competitive environment for developing dairy farms, which are best located in cooler areas. Dairy cows are sensitive to heat, and their production will decrease if they suffer from heat stress. The temperature–humidity index (THI)[19] is a widely used measure, and the threshold for heat stress for dairy cows is 72 (or lower, depending on the type of cow).[20] A one-unit increase in THI would decrease

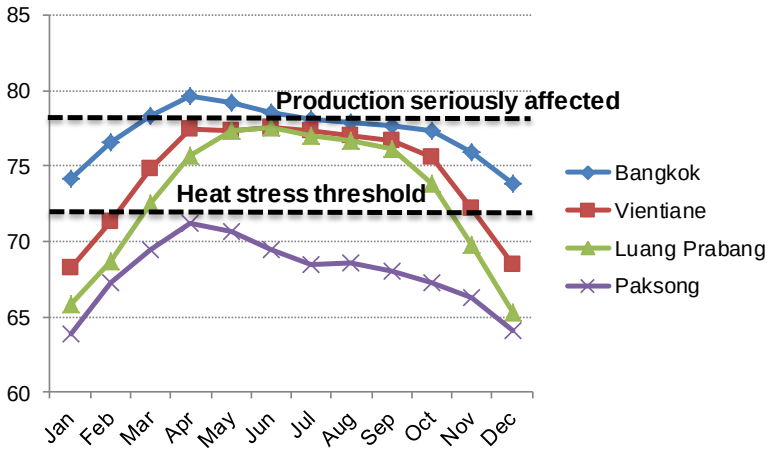
[19] THI is calculated from air temperature and relative humidity using the following equation:
THI = (dry bulb temperature oC) + (0.36 x dew point temperature oC) + 41.2.

[20] Dairy Australia website: http://www.coolcows.com.au/go-on-alert/thi.htm.

milk production by 0.26 kg/day[21] or 10g of milk solid/day.[22] As Figure 6.8 shows, Lao PDR's plateau areas, such as Paksong in Bolaven Plateau, have a comparative advantage over hot lowlands.

Dairy production needs to be in accord with value chain development because raw fresh milk quickly sours unless properly processed. Because such combined development requires a certain amount of capital investment, the government could take the lead, as in Thailand and Viet Nam.

Figure 6.8. THI and Heat Stress Threshold for Cows



THI = temperature–humidity index.
Note: Because dew point temperature data was not available for Paksong, DIR used a conservative estimate (2 degrees below its dry bulb temperature) for calculation. The gap between the two temperatures is more than 2 degrees at any time in the other three locations (the average difference is 4.6 degrees).
Source: DIR calculation from UN Data and climate-data.org, with information from Dairy Australia.

Even without a stable domestic supply of milk, dairy processing SMEs are emerging in Lao PDR.[23] The companies interviewed now import raw milk from Thailand and powder milk from New Zealand. Entrepreneurs realise Lao PDR's potential to develop domestic milk supply and have already identified possible locations. It is essential that the government supports their initiatives by promoting domestic milk production.

[21] Ibid.
[22] Dairynz website: http://www.dairynz.co.nz/animal/health-conditions/heat-stress/.
[23] Such as the Xao Ban Group and Vienvien Beverage & Food, both of which DIR has interviewed.

6.1.5. Future challenges

6.1.5.1. Capacity building to grow technology

The agriculture sector dominates the labour market but consists of labour with low productivity, using different small plots for plantation, with limited use of machinery for agriculture development. Working in farms is considered vulnerable employment owing to low wages, with hardship conditions and limited access to social welfare and demand for rights protection from the workplace compared with other types of employment. To overcome the status quo, farmers' capacity building is essential.

New varieties of crops and livestock cannot be grown and developed immediately. A coffee farm owner suggested that several years are needed for agricultural technology and the skills of the workforce to catch up with those of other countries. A vegetable processing company expects that it will take years to raise the quality of contracted farms' vegetables to meet the desired standard.

As the example of Bolaven Plateau CPC suggests, it would take more than 10 years for a new agricultural project to be fully competitive in the international market. Because capacity building for new projects involves such long periods, the government should, for the time being, encourage the productivity improvement of existing crops by disseminating best practice. For instance, the establishment of agricultural technical colleges and high schools would be required for such capacity building and sharing of best practices.

6.1.5.2. Procurement of packaging

With regard to the food processing industry, most businesses interviewed suffer from the high cost of imported packaging materials. Development of a packaging material industry should be in accord with other manufacturing industries because a packaging industry serves sectors of all kinds.

6.1.5.3. Cold chain

To fully realise the agricultural potential of Lao PDR, the development of cold chains is essential. Most dairy products, for example, cannot be distributed without them. Furthermore, highland organic vegetables cannot be sold at a high price in neighbouring countries unless they are transported in a good condition. It is worth mentioning that cold chain logistics have been developed in Thailand. Thus, Lao PDR should follow a precedent and focus on securing domestic facilities with support from other countries.

6.2. Mining and Energy

The brightest prospects for Lao PDR in this decade are the rapidly expanding hydropower and mining sectors, which have grown from next to nothing in the mid-1990s to become major components of national wealth.

6.2.1. Overview on Mining and Energy

6.2.1.1. Overview on Mining

The development of the mining sector began at the start of the gold production in the Sepon mine in 2003. The mining sector has only recently emerged as a major driving force of the economy, with production increasing from US$8 million in 2002 to over US$1.3 billion in 2011.

The mining sector has become a pillar of the country from two perspectives. First is in terms of the large amounts of tax revenue it provides. Government revenue from taxes, royalties, and fees equalled approximately US$90 million in 2008, representing roughly 20 percent of total government receipts. By 2020, mining production accounted for 20–30 percent of government revenue (World Bank, 2010).

Second, in terms of the high export value. The total value of mineral exports was over US$4 million, comprising about 60 percent of the country's total exports. Mining exports from Lao PDR are mainly to Thailand (65 percent of total copper exports), Viet

Nam (17 percent), China (7 percent), Malaysia (5 percent), and the Republic of Korea (henceforth, Korea) (5 percent). Mineral transportation is currently limited to shipments or transhipments to Thailand and Viet Nam. A planned railway between Lao PDR and China would provide both high-speed passenger travel and more cost-effective cargo shipments that would tend to dominate the transport system.

Key minerals are copper, gold, and silver. Copper dominates mineral exports, with an estimated value of US$681 million in 2013, followed by gold at US$148 million in the same year (Bank of the Lao PDR, 2013).

Two large-scale mines account for over 90 percent of the country's total mining production: the PBM Phu Kham copper–gold operation located 120 km north of Vientiane and the MMG Sepon gold and copper mine, which is located near Sepon in Savannakhet province. An Australian company (Oxiana Resources) originally started mining at Sepon; the mine was sold to a Chinese company (China Minmetals Corp.) in 2009. However, new investments in exploration and development will be required to prevent production, export, and tax revenues from falling as mine closures occur. The NNA (Japanese news media specialising in Asia) reported on 4 February 2014 that the development and gold production at the Sepon mine was halted in December 2013 because of increased cost. The operator of a large mine that has been in operation for many years needs to keep an eye on the possibility that the mine may be close to depletion.

To date, 69 domestic and foreign companies have been given exploration contracts, and 19 of these are at the stage of preparing for exploration and constructing processing factories, whereas 50 have already been extracting, processing, and

Table 6.8. Production Volume Data by Minerals in Lao PDR

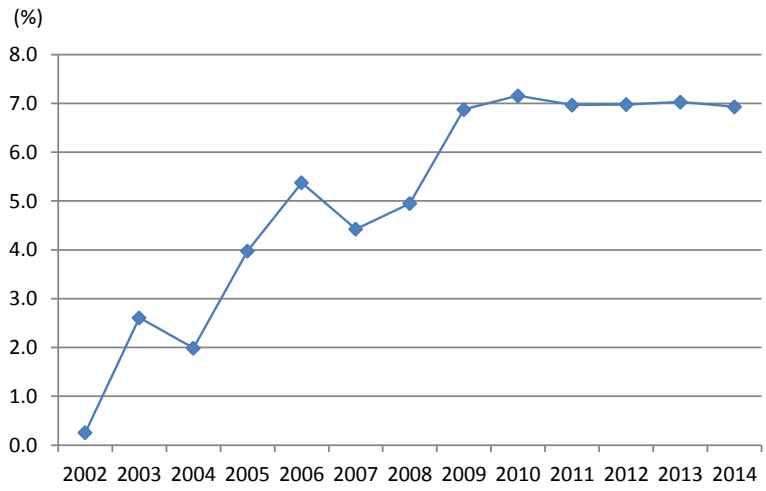
Name of Mineral	Unit	2006	2010	2011	2012	2013	2014
Anthracite	Tonnes	62,000	211,721	166,609	129,927	104,260	97,148
Lignite	Tonnes	319,242	501,622	511,700	575,387	403,925	22,352
Zinc	Tonnes	4,000	5,000	5,320	5,250	5,000	-
Gold alloys (Sepon)	Kg	12,439	4,742	3,595	3,249	3,838	-
Gold (Phongsaly)	Kg	-	-	-	-	-	0.68
Copper	Tonnes	60,758	64,322	78,01	87,258	89,88	87,768
Copper ore (Phu Bia)	Tonnes	-	298,730	280,711	288,154	319,712	345,250
Copper ore (Meuang Long)	Tonnes	-	3,793	3,348	3,395	q 2,500	2,902
Tin ore	Tonnes	2,249	2,270	2,921	4,360	1,000	700

Kg = kilogram.
Source: Department of Mines, Ministry of Energy and Mines, Lao PDR, 'Annual Report', compiled by ERIT.

exporting. Most of them are small and medium-sized enterprises (SMEs). Large-scale projects, such as Lane Xang Minerals and Phu Bia Mining Ltd., have a production value of over US$500 million per year. Important mines for new exploration during the period include Kali salt in Thong Mang, Vientiane province, and potassium salt in Khammouan province.

Lao PDR's mining sector consists of five main groups: (1) metal minerals (base metals, iron, precious metals, and rare metals); (2) industrial minerals; (3) construction materials and dimension stones; (4) gems; and (5) solid fossil fuels. Until the early 1990s, only small mines and artisanal gold mines were in operation because of insufficient surveys and research on underground mineral resources. At present, more than 570 areas in Lao PDR contain available minerals. Nonetheless, only 139 points with 55 mineral products have priority from the government in terms of exploration.

Figure 6.9. Share of GDP Accounted for by Mining



GDP = gross domestic product.
Note: using constant price in 2002.
Source: Asian Development Bank (ADB) (2015); compiled by DIR.

The Lao mining sector grew rapidly and became one of the key industries in the country; but future growth prospects seem limited. Although the mining sector's share of gross domestic product (GDP) rose to 6.9 percent in 2009 from 0.3 percent in 2002, it appears to have reached a ceiling in 2009 (Figure 6.9). Actually, from 2001 to May 2008, the government approved over 180 mining projects of more than 100 companies, mostly foreign owned, in the provinces of Vientiane and Khammouan. However, in 2014, this number decreased to 107 mining projects by 69 companies, given that some projects had been completed or had expired (MEM, 2014).

The underlying factor for limited growth was the issuance of a temporary suspension (moratorium) on new concession screening. The first and second moratoriums were for 2007 and 2009–2010, respectively, and the third moratorium was said to be for 2012–December 2015. But based on the interviews conducted locally, the future outlook is uncertain, as some say that the moratorium has been indefinitely extended. The reason for the latest moratorium is to re-examine matters such as the concession systems and the environmental problems attributed to the improper handling of mining waste. The section on government policy (Section 6.2.2) discusses the moratorium.

6.2.1.2. Overview on Energy

Lao PDR has significant indigenous resources for power generation (Table 6.9). The main energy resources are wood fuel, coal, and hydropower. Forest areas covering more than 41 percent of the total land area are a substantial source of traditional energy supplies (Ministry of Agriculture and Forestry [MAF], 2014), but hydropower constitutes the most abundant and cost-effective energy resource. The vision of the government is for the country to become 'The Battery of Southeast Asia' (Ministry of Planning and Investment [MPI], 2015). Recently, more than 70 hydropower projects are in progress at various stages of construction. Over 140,000 ha of forests have been earmarked for hydropower dam construction. The government hopes to transform the country into 'the battery of Southeast Asia' by exporting the electricity it generates, mainly to Thailand and Viet Nam.

With abundant hydropower resources, electricity generation in Lao PDR soared from 315 MW in 2005 to 1,793 MW in 2014, an increase of more than five times, along with electricity consumption, as shown in Figure 6.10. This figure does not even include independent power producers (IPPs) and the 1,070 MW of electricity generated at the Nam Theum 2 (NT2), a hydroelectric dam located on the Nam Theun River, which exports most of the generated electricity. With the success of NT2, the export of electricity has steadily increased.

Lao PDR has already signed a memorandum of understanding with Thailand to supply 7,000 MW of power and with Viet Nam to supply 5,000 MW by 2020. Thereafter, electricity exports will increase more than sixfold between 2004 and 2010 and ninefold by 2020. To meet these targets and the expected demand from China, 30 small, medium, and large hydropower plants will be constructed between 2005 and 2020.

The foreign investor companies that are driving the current Lao hydro boom are from Thailand, China, Viet Nam, and Malaysia, and they work through the World Bank and the Asian Development Bank (ADB). The Lao hydropower development plan contains 77 new large dams. In addition to the 10 operational hydropower plants, 12 more are under construction and were scheduled for completion by 2015, whereas nearly 31 are in the advanced planning phase at various stages of development.

These hydropower projects include NT2 and the extension of the Theun Hinboun and Nam Ngum II and III projects. The largest project is the NT2 dam and power station (1,070 MW). NT2 can be regarded as a successful case from the following three points of view. First would be the stable sales to Thailand and the low-cost financing arrangements backed by such stable sales. Second is the fact that they gained support from international agencies, such as the World Bank and ADB. Third, in addition to becoming a stable means to obtain foreign currency, it remains a cost-effective project for the Government of Lao PDR (GOL).

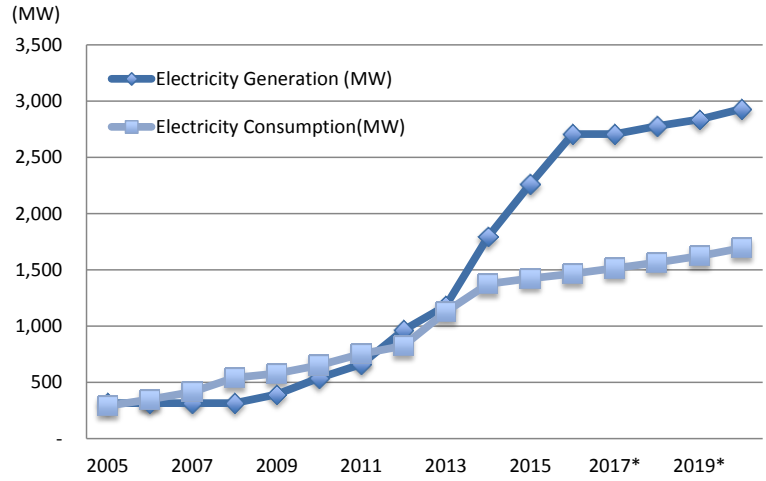
The cost of the NT2 project was US$1.45 billion, and 70 percent was financed through loans. The remaining 30 percent was funded through the joint venture of Nam Theun 2 Power Company (NTPC) consisting of Electricité de France (35 percent of the shares), the GOL (25 percent of the shares), Electricity Generating Public Company (EGCO) of Thailand (25 percent of the shares), and Italian–Thai Development (15 percent of the shares).

Table 6.9. Primary Energy Resources of Lao PDR

Resource	Reserves	Potential for Use in Power Generation
Oil and Gas	Two exploration concessions in Central and Southern Lao PDR. Mapping and geophysical investigations, including deep drill holes, are being conducted (2,560 m).	Possible in the longer term (10–15 years) if sufficient reserves are found. At present, it is 100 percent imported, and as of 2014 the total import was 558 million litres (motor gasoline, diesel, jet fuel, bunker oil, and lubricant).
Coal (Lignite)	Major resource located at Hongsa in Northwest Lao PDR. There is about 810 million tonnes of proven reserve, of which over 530 million tonnes are deemed economically recoverable. Energy content is 8–10 MJ/kg, with a relatively low sulfur content of 0.7–1.1 percent.	Sufficient reserves for about 2,000 MW installed capacity. Coal mining activities in Lao PDR are small to medium-scale operations. There are 19 coal projects (three general surveys, eight explorations, and eight exploitations) conducted by eight foreign companies and five local companies.
Coal (Bituminous and Anthracite)	Reserves, mainly anthracite, dispersed in various fields throughout Lao PDR. Exploration is ongoing. Total proven reserve to date is about 100 million tonnes. Energy content is 23–35 MJ/kg.	Current annual production of 130,000 tonnes are used for local factories or export. Possible long-term option for around 500 MW installed capacity, depending on the results of exploration.
Solar	Annual solar radiation received in Lao PDR is approximately 1,800kWh/m^3, but this is possibly less in mountainous areas. This corresponds to conditions in Southern Europe (Italy, Spain).	Photovoltaic modules already used for small-scale (e.g. 100 W) remote applications.
Wind	No significant known reserves.	Limited potential for power generation (600 MW to be developed by Thai investors in southern Lao PDR to be exported to Thailand).
Geothermal	No significant known reserves.	Limited potential for power generation.
Biomass (Agriculture Waste)	Biomass resources dispersed throughout the country.	Current share of biomass (mainly wood fuel) in total energy consumption is about 88 percent. Wood-fired cogeneration (heat and power) plants could be economic for self-supply in wood processing facilities.
Hydropower	Average annual precipitation is about 2,000 mm. Total runoff is around 240,000 million m^3. Theoretical hydropower potential is 26,000 MW (excluding mainstream Mekong).	Exploitable hydropower potential, including share of mainstream Mekong, is around 23,000 MW. The GOL has set up the national targets for household electricity (standard usage), which are 70 percent and 90 percent for 2010 and 2020, respectively.
Renewable Energy	Currently, Lao PDR is improving the strategic policy for renewable energy. The policy has emphasised hydropower and should be focusing more on producing feedstock for biofuel, which has potential in the country.	The goals for 2025 state that the production of renewable energy should reach 30 percent of total energy in the country for use in production, agriculture, forestry processing, and industry. The specific goal for biofuel is set at 10 percent, especially for replacing imported fossil fuel.
Nuclear Energy	The GOL fully supports nuclear energy development, including the safety and environment-friendly aspects, for electricity generation.	

m = metre; MJ = megajoule; kg = kilogram; MW = megawatt; kWh = kilowatt-hour; m^3 = cubic metre; W = watt; GOL = Government of Lao PDR.
Source: MEM (2008, 2014); compiled by ERIT.

Figure 6.10. Electricity Generation and Consumption for a 15-year Period



MW = megawatt.
Note: The values after 2016 are forecasts.
Source: EDL, Lao PDR, compiled by DIR.

More than 90 percent of the electricity generated is supplied to the Electricity Generating Authority of Thailand (EGAT), and the remainder is supplied within Lao PDR. Selling most of their electricity to Thailand is beneficial for NTPC as it reduces the commercial risks associated with electricity purchasers. Foreign exchange risk can be reduced as well, given that electricity is sold to Thailand in foreign currency. About 40 percent of the electricity purchased by Thailand is in US dollar tariff/settlement, while about 55 percent is in Thai baht tariff/settlement (some are in US dollar tariff and Thai baht settlement). In other words, although it is a domestic project, NTPC can suppress the risk to a level close to that for a project in Thailand and it results in low-cost financing.

Needless to say, the fact that multilateral and bilateral agencies such as the World Bank, ADB, and import–export banks in countries like France provided the finance, worked to their advantage in terms of raising funds. Presumably, such support worked out largely because this project is positioned as one of the regional initiatives called the Association of Southeast Asian Nations (ASEAN) Power Grid (APG; described later), in addition to Lao PDR being a least developed country (LDC).

Having invested US$250 million in equity, the government expects revenue of more than US$2 billion from concession fees, dividends, and taxes over the concession period of 25 years. Assuming that the US$2 billion is received evenly every year, the internal rate of return (IRR) reaches 32 percent, making the investment extremely effective. In addition, given that the amount of electricity sold to Thailand as NTPC is about US$200 million, it has become a stable means to obtain foreign currency.

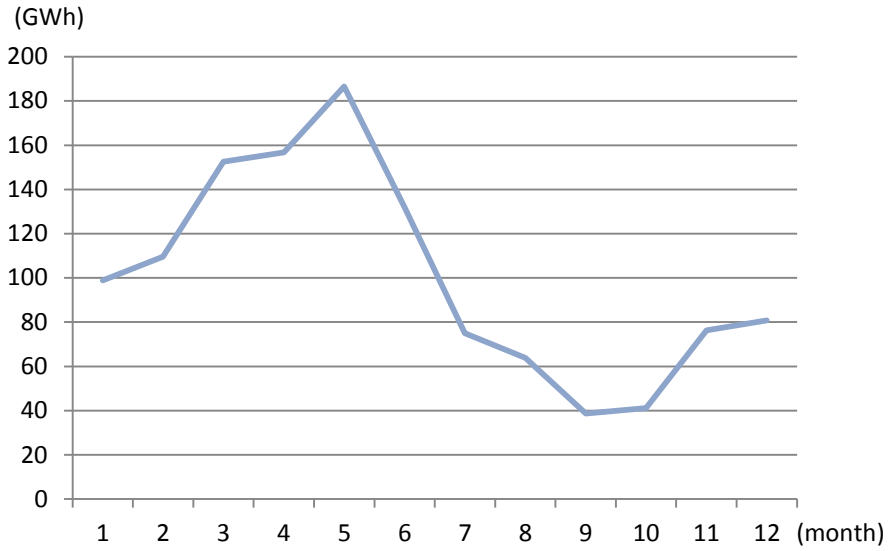
In terms of issues of the electricity sector, we note that electrification is still under way, that some electricity is being imported, and a certain amount is being exported. In the energy plan of Lao PDR, the rapid expansion of rural electrification is one of the major priorities of the government, which has a goal of electrifying 90 percent of the country's households by 2020 (70 percent by 2010 and 80 percent by 2015). As electrification moves to more remote areas, on-grid electrification becomes more costly, which has led the government to promote off-grid options, with an emphasis on renewable energy technologies.

Electricity import is quite seasonable, as shown in Figure 6.11. Electricity is imported primarily from Thailand (partially from China and Viet Nam). This is partly because electricity generation is largely dependent on hydropower generation, and electricity runs short during the dry season. It is not that all dams at hydropower plants go dry during the dry season. The problem is that power interchange between areas that face electricity shortage during the dry season and areas with excess electricity cannot be achieved because of poor system connections among the northern, central, and southern areas.

In terms of coal, the Hongsa coalfield accounts for the bulk – 510 million tonnes – of the 600 million tonnes of reserves in Lao PDR. Hongsa is expected to produce 12 million tonnes per year, and thus there is a plan for coal-fired power generation (1,878 MW) to utilise its coal. Although this power generation could become a source of base

load electricity, which is a weakness of Lao PDR, Hongsa Power Company and the government signed a contract in 2009 to sell electricity to EGAT in Thailand for 25 years. Phonesack Group is also exploring coal in Kaleum in Sekong province, and once the exploration has succeeded the company plans to construct a coal-fired power plant. (According to their website, the plan is for two 300 MW units.) Although it is smaller than Hongsa, it could contribute to base load electricity to some extent as it comprised about 40 percent of electricity demand in 2014.

Figure 6.11. Monthly Electricity Imports in 2013



GWh = gigawatt hours.
Source: EDL, Lao PDR, 'Electricity Statistics in 2013', compiled by DIR.

Crude oil and natural gas are not produced domestically. All petroleum products are imported. The amount of imported petroleum products (HS code 2710, petroleum oils, not included) reached US$915 million in 2014. This is equivalent to 13 percent of the entire value of imports (US$6,802 million), thereby accounting for 8 percent of Lao PDR's 2013 GDP of US$10,788 million.

As the economy develops, gasoline and diesel consumption will further increase. In addition, the price of oil is expected to increase gradually over the medium to long term. According to the Medium Term Oil Market Report 2015 by the International

Energy Agency (IEA), the oil price will be US$73 per barrel by 2020. Going forward, curbing imported petroleum products will become one of the key issues.

6.2.2. Lao PDR Government Policies

The government has identified both the mining and hydropower sectors as fundamental drivers of progress towards achieving the Millennium Development Goals (MDGs) by 2015 and graduating from the list of least developed economies by 2020.

6.2.2.1. Mining policy

As it accounts for a large share of GDP, mining is an important industry. However, the government has cautious policies on mining because of past problems, such as environmental issues that arose from developing mines and bidding on the development rights for the purpose of resale. A typical example is a moratorium. The first and second moratoriums were for 2007 and 2009–2010, respectively. Although the third moratorium is supposed to be from 2012 to December 2015, local interviews suggest it may have been indefinitely extended. The latest moratorium is related to the re-examination of environmental problems and the concession system.

In terms of environmental problems, improper handling of mining waste has been brought to light. As regards the re-examination of the concession system, Decree No. 13/PM banned for export unprocessed minerals; and it seems that the discussion is focused on the effective usage of mineral resources. There is also a protectionist movement regarding foreign investment restrictions. The currently existing small mines need to improve their management; new small mines should be developed mainly by Lao investors to enable more than 10 percent of the profits in the mining sector to be earned and distributed locally.

In Indonesia, exporting unprocessed minerals has been banned since January 2014, in accordance with the law concerning mineral and coal mining businesses (2009 Law No. 4). To sum up the consequences of the export ban: (i) the amount of minerals exported from Indonesia dropped sharply in the short term, with negative impacts such as a deterioration of the trade balance and decreased employment among mineworkers; (ii) some benefits were reaped, including attracting refineries and conducting feasibility studies during the 5-year grace period since the law amendment in 2009, and obtaining investments for nine refineries from Xi Jinping, the President of the People's Republic of China, in 2013. The reason for success was their firm intention to not allow any exception (especially regarding nickel ore);[24] and (iii) the policy might not be sustainable on a long-term basis if a conflict arises with the World Trade Organization (WTO).[25]

Continuing to ban the export of unprocessed minerals in Lao PDR is expected to affect attracting refineries. Negative short-term effects are likely; attracting businesses will not succeed if there is a perception that they might allow exceptions in response to such negative effects, and it is not sustainable in the long run because of trade conflicts.

6.2.2.1. Energy policy

Although Lao PDR has no comprehensive energy policy (JICA, 2012b), the government does have the 7th Five Year Plan (2011–2015), with six main items in terms of electricity policy: (1) acquire foreign currency by exporting electricity, (2) improve the rate of electrification by expanding the grid and enhancing distributed power sources, (3) fulfil the domestic demand for electricity, (4) maintain electricity rates at a sustainable level, (5) operate Electricité du Laos (EdL) based on commercial principles, and (6) reduce the dependence on imported fuel.

[24] See 'Current topics' (2014/9/4; Japanese) issued by Japan Oil, Gas and Metals National Corporation (JOGMEC).
[25] For example, see the article 'Indonesia Mining Law and WTO rules' in *Jakarta Post*, dated 22 June 2015.

Table 6.10 shows Lao PDR'S hydroelectricity plan towards 2020. By that time, the total projects approved will number 77. This vision is consistent with the supporting policy of development plans from development partners or donors, such as ADB, the International Monetary Fund (IMF), and the World Bank (Ministry of Planning and Investment [MPI], 2013). For instance, the key elements of ADB's support for Lao PDR, especially for the development of the hydropower subsector, are as follows: (1) financing hydropower projects, including those through public–private partnership, coupled with technical assistance that focuses on legal and financial matters; and (2) necessary technical and financial assistance to manage the environmental and social implications of large hydropower projects better. The second point reflects the need to ensure that Lao PDR would struggle to manage the cumulative environmental and social impacts of hydropower development, while its neighbouring countries benefit from cheap power imports.

Lao PDR's electricity exports to Thailand, Viet Nam, and Cambodia are also consistent with the overall policy of ASEAN, which has been promoting the APG project since 1997. The APG ultimately aims to form a standardised power grid for all of Southeast Asia by first starting with cross-border power interchange between two countries and gradually expanding it to subregional power interchange. As of May 2015, 16 projects were in progress. According to the ASEAN Secretariat, power interchange would make it possible to save US$662 million for capital investment and operating costs. (The estimate is a slightly old one based on 15 projects.)

Lao PDR has a strong presence in the APG. Even though it is only involved in 3 projects (with Thailand, Viet Nam, and Cambodia) out of the 16, those projects already in operation account for 2,359 MW or 68 percent of all APG projects. The ongoing projects (the ones for which two countries already signed the contract and MOU) account for 6,062 MW or 84 percent of all APG projects.

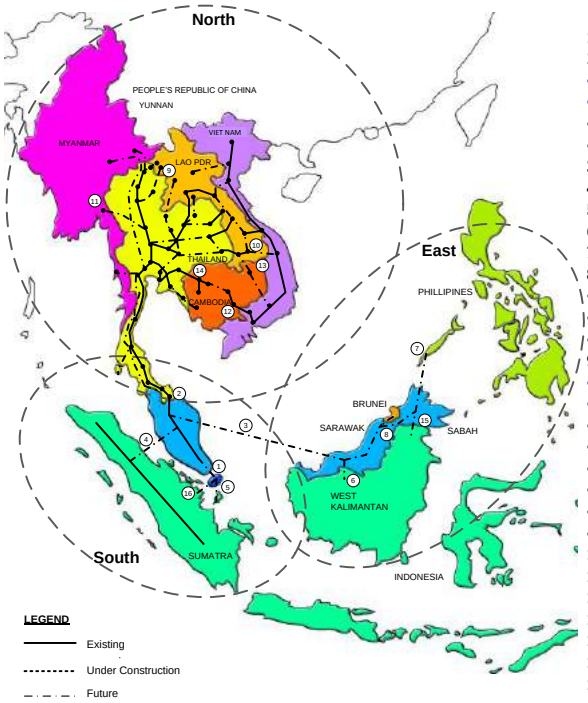
Table 6.10. Hydroelectricity Plan up to 2020

Region	No. of Projects	Output (MW)	Production (GWh/year)
Northern	31	1,466 (2010–15) 1,623 (2016–20)	8,016 (2010–15) 7,783 (2016–20)
Central	19	1,333 (2010–15) 323 (2016–20)	5,366 (2010–15) 1,524 (2016–20)
Southern	27	1,047 (2010–15) 905 (2016–20)	6,504 (2010–15) 4,729 (2016–20)
Total	77	3,846 (2010–15) 2,851 (2016–20)	19,886 (2010–15) 14,039 (2016–20)

MW = megawatt; GWh = gigawatt hours.
Source: MEM (2008; 2014), compiled by ERIT.

The Renewable Energy Development Strategy in Lao PDR published in October 2011 aims for stable energy supply, socio-economic benefit, and environmentally and socially sustainable economic growth. It is intended to aid the aforementioned electricity policy by enhancing distributed power sources and reducing imported fuels (the 7th Five Year Plan).

Figure 6.12. ASEAN Power Grid – 16 Projects



		Earliest COD
1)	P.Malaysia - Singapore (New)	post 2020
2)	Thailand - P.Malaysia	
•	Sadao - Bukit Keteri	Existing
•	Khlong Ngae - Gurun	Existing
•	Su Ngai Kolok - Rantau Panjang	TBC
•	Khlong Ngae – Gurun (2nd Phase, 300MW)	TBC
3)	Sarawak - P. Malaysia	2025
4)	P.Malaysia - Sumatra	2020
5)	Batam - Singapore	2020
6)	Sarawak - West Kalimantan	2015
7)	Philippines - Sabah	2020
8)	Sarawak - Sabah – Brunei	
•	Sarawak –Sabah	2020
•	Sabah – Brunei	Not Selected
•	Sarawak – Brunei	2018
9)	Thailand - Lao PDR	
•	Roi Et 2 - Nam Theun 2	Existing
•	Sakon Nakhon 2 – Thakhek – Then Hinboun (Exp.)	Existing
•	Mae Moh 3 - Nan - Hong Sa	2015
•	Udon Thani 3- Nabong (converted to 500KV)	2019
•	Ubon Ratchathani 3 – Pakse – Xe Pian Xe Namnoy	2019
•	Khon Kaen 4 – Loei 2 – Xayaburi	2019
•	Nakhon Phanom – Thakhek	2015
•	Thailand – Lao PDR (New)	2019-2023
10)	Lao PDR - Vietnam	2016-TBC
11)	Thailand - Myanmar	2018-2026
12)	Viet Nam - Cambodia (New)	TBC
13)	Lao PDR - Cambodia	2017
14)	Thailand - Cambodia (New)	post 2020
15)	East Sabah - East Kalimantan	post 2020
16)	Singapore – Sumatra	post 2020

COD = Commercial Operating Date.
Source: Heads of ASEAN Power Utilities/Authorities (HAPUA), '16 APG Projects as of May 2015'.

The strategy aims to use renewable energy to meet one-third of the energy demand, positioning biofuel – bioethanol and biodiesel – as the main source. Whereas bioethanol is produced from sugar and starch, such as sugar cane and cassava, biodiesel is produced from vegetable oil, such as jatropha and palm oil. Since Lao PDR is an agricultural country, bioethanol and biodiesel are highly suitable for it.

Table 6.11. Ongoing Projects in Lao PDR

Project Name	COD	MW
Lao PDR to Thailand		
Existing		
• Nakhon Phanom - Thakhek - Theun Hinboun	1998	220
• Ubon Ratchathani 2 - Houay Ho	1999	126
• Roi Et 2 - Nam Theun 2	2010	948
• Udon Thani 3 - Na Bong - Nam Ngum 2	2011	597
• Nakhon Phanom 2 - Thakhek - Theun Hinboun (Expansion)	2012	220
Ongoing		
• Mae Moh 3 - Nan 2 - Hong Sa	2015	1,473
• Udon Thani 3 - Na Bong - Nam Ngiep 1	2019	269
• Ubon Ratchathani 3 - Pakse - Xe Pien Xe Namnoi	2019	390
• Khon Kaen 4 - Loei 2 - Xayaburi	2019	1,220
Future		
• Nong Khai - Khoksa-at (Suggested by AIMS-II)		
• Nakhon Phanom - Thakhek (Suggested by AIMS-II)	2015	600
• Thoeng - Bo Keo (Suggested by AIMS-II)		
• Udon Thani 3 - Na Bong - Future project	2018	510
• Ubon Ratchathani 3 - Pakse - Future project	2019	315
• Nan 2 - Tha Wang Pha - Nam Ou	2023	1,040
Lao PDR to Viet Nam		
Existing		
• Xekaman 3 - Thanhmy	2013	248
Ongoing		
• Xekaman 1 - Ban Hat San - Pleiku	2016	1,000
• Nam Mo - Ban Ve	TBC	TBC
• Luang Prabang - Nho Quan	2020	1,410
Future		
• Ban Hat San - Stung Treng - Tay Ninh	TBC	TBC
Lao PDR to Cambodia		
Ongoing		
• Ban Hat - Stung Treng (G2G Agreement)	2016	300

COD = Commercial Operating Date; MW = megawatt.
Source: Prepared by DIR based on Heads of ASEAN Power Utilities/Authorities (HAPUA), 'Updated APG Status as of May 2015'.

The 2025 installation targets for bioethanol and biodiesel are 150 million litres and 300 million litres, respectively, aiming to replace 10 percent of the gasoline and diesel consumed in the transportation sector. This level can be achieved by mandating E10 and B10, which include 10 percent of bioethanol and biodiesel, respectively.

According to the FAO, sugar cane, which has a high ethanol yield per unit area, is said to yield 4,550 litres of ethanol per hectare (FAO, 2008). To achieve the 2025 target of 150 million litres, 330 square km of farmland, as well as alignment with the agricultural policy, would be required.

Table 6.12. Targets and Positioning of Biofuel

Energy demand	**4,930 kTOE**
Renewable energy target	1,479 kTOE
Biofuel	662 kTOE
Bioethanol	***279 kTOE***
Biodiesel	***383 kTOE***
Electricity (micro hydropower plant, etc.)	416 kTOE
Thermal energy (Biogas, Solar thermal, etc.)	400 kTOE

	Current	**2015**	**2020**	**2025**
Bioethanol (mil litres)	0	10	106	150
Biodiesel (mil litres)	0.01	15	205	300

kTOE = kilotonne of oil equivalent.
Source: Lao PDR Peace Independence Democracy Unity Prosperity, “Renewable Energy Development Strategy in Lao PDR”, compiled by DIR.

6.2.3. Promising scenarios

6.2.3.1. Regional power interchange

Promoting US dollar–denominated electricity sales to Viet Nam and Cambodia in accordance with the APG’s initiative looks promising for the following two reasons: First is the application of the successful case of electricity exports to Thailand. The focus should be directed towards further replicating such a successful case, not to mention increasing electricity exports to Thailand. Because of the track record of sales

to Thailand, investors' perceptions of the operational risks (failure and a lower utilisation rate due to insufficient repairs and maintenance, etc.) and political risks (seizure, institutional changes, etc.) in Lao PDR must have gradually decreased. By capitalising on the risk reduction in Lao PDR, the chances of being able to attract IPP businesses would be higher, even in countries such as Viet Nam and Cambodia where the offtake risk is high. Of course, US dollar–denominated sales are a prerequisite for reducing the offtake risk as much as possible.

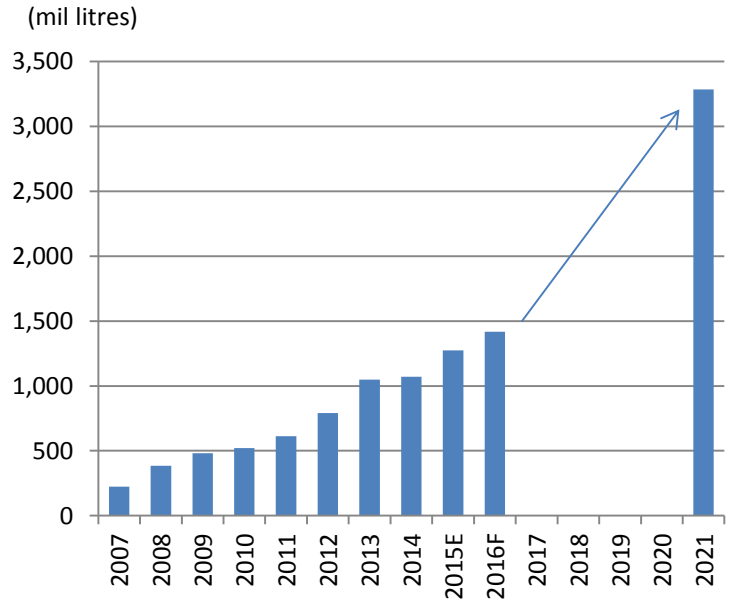
The second reason for expanding electricity exports to Viet Nam and Cambodia is to take preparatory steps for the formation of subregional grids. Subregional grids are positioned as one phase prior to the APG. If Lao PDR can take the initiative in forming subregional grids on the basis of promoting the APG and creating a grid system (including intangible aspects such as institutions and rules), this would be advantageous for the power-generation side. Such initiative taken by Lao PDR would also result in future advantages in terms of negotiating electricity exports to Myanmar and China (although not part of the ASEAN).

6.2.3.2. Bioethanol production

Constructing hydropower plants and promoting electricity sales to neighbouring countries are strategies to reinforce the strength of Lao PDR. Meanwhile, producing bioethanol is a strategy to overcome the dependence on imported petroleum products, which is a weakness of Lao PDR. In particular, there are two reasons bioethanol should be considered. First is the possibility to partner with Thailand, a leading bioethanol country in the Mekong region. In Thailand, where production and consumption of bioethanol are popular, the actual production volume in 2014 reached approximately seven times the 2025 target of Lao PDR. With the expertise of Thailand, technologies to cultivate raw materials and produce bioethanol and policies to popularise bioethanol would enable Lao PDR to promote the use of bioethanol within a short period and with a high degree of reliability.

Second is the collaboration with the agricultural sector. One of the reasons the poverty rate tends to be high in rural areas is that many farmers have not been able to move away from subsistence agriculture (JICA, 2010). Helping farmers earn cash income by introducing commercial crops such as sugar cane would be essential for promoting the economic development of rural farming communities. Furthermore, developing a related industry (bioethanol production) that uses these commercial crops would result in synergy with the agricultural sector in terms of creating regular purchasers of commercial crops.

Figure 6.13. Production Volume of Bioethanol in Thailand



Note: The amount in 2021 is the consumption target of the Thailand government.
Source: United States Department of Agriculture (USDA) (2015); compiled by DIR.

The measure for bioethanol production includes the following two steps:

(1) Cultivation of Energy Crops

The aim is to cultivate energy crops – such as sugar cane and cassava – reliably before launching bioethanol production. Given that there is almost no domestic sales channel, cultivated crops would be exported to Thailand and Viet Nam for the time being. To

do so, it is necessary to partner with Thailand, Viet Nam, and Cambodia for the interchange of energy crops.

(2) Construction of Bioethanol Plants

Once there is a good prospect for the reliable procurement of raw crops, companies should be recruited to construct bioethanol plants. Realistically, bioethanol producers should be recruited from Thailand to obtain technologies and expertise related to bioethanol production. Although the initial objective is to produce bioethanol for domestic consumption, when production exceeds consumption, exporting it to consumer countries such as Thailand and Viet Nam should be considered. It is necessary to establish partnerships with neighbouring countries for bioethanol interchange as well. In this phase, it is essential to mandate the use of bioethanol – similar to what Thailand does – to promote the consumption of ethanol.

6.2.4. Future challenges

6.2.4.1. Establishing a leading position at the APG

Which country would take the initiative in forming subregional grids? Even though Lao PDR has primarily produced results for the APG, when the frequency of participation is calculated for the 16 existing projects, Malaysia, Indonesia, and Thailand are ranked highly, and Lao PDR is ranked fourth, as shown in Table 6.13. These countries could also take the initiative in forming subregional grids. Hence, it is important for Lao PDR to communicate with them to establish a leading position at the APG.

To stay in the lead as an electricity-generating country, it is important for Lao PDR to move forward with electricity exports to Viet Nam and Cambodia and establish a good track record. Furthermore, in doing so, it is necessary to look at the prospect of building subregional grids and think about matters such as the contract terms and technical cooperation, similar to that used for electricity sales to Thailand.

6.2.4.2. Partnering with neighbouring countries

As described above, a system that can flexibly export energy crops and bioethanol to Thailand can be considered a prerequisite for introducing bioethanol production in Lao PDR. However, the negotiations between the two countries could turn out to be difficult if the nature of trade is one-sided – if only Lao PDR exports to Thailand. Therefore, it is desirable for Lao PDR to propose a regional initiative by involving Viet Nam, which is working gradually on bioethanol introduction, and Cambodia, which is one of the countries producing the energy crop cassava.

Table 6.13. Frequency of Participation in the 16 APG Projects

Malaysia	7
Indonesia	5
Thailand	4
Lao PDR	**3**
Cambodia	3
Singapore	3
Viet Nam	2
Myanmar	1
Philippines	1
Brunei Darussalam	1

APG = ASEAN Power Grid.
Note: Calculated for 15 projects, excluding the PJT No. 4, which was intended for power interchange within Malaysia.
Source: Heads of ASEAN Power Utilities/Authorities (HAPUA), '16 APG Projects as of May 2015', compiled by DIR.

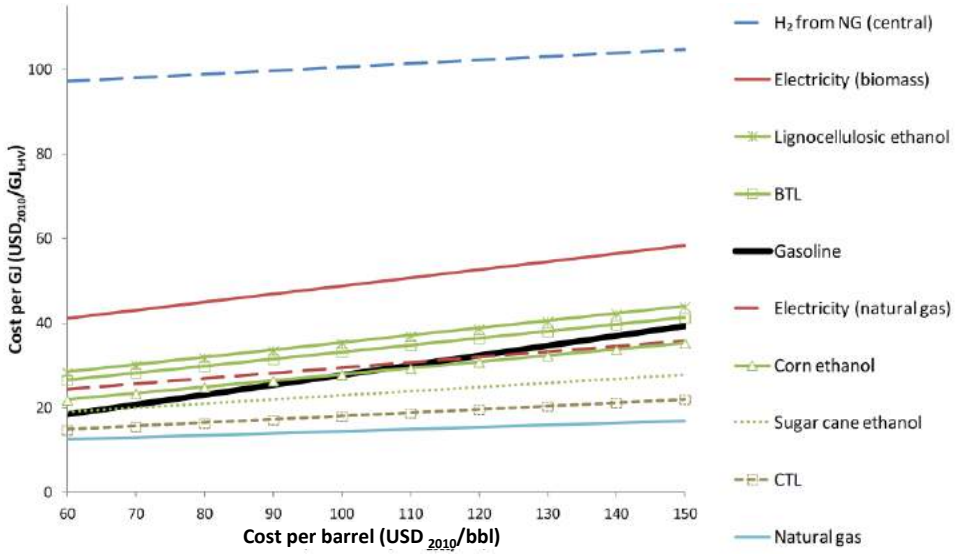
6.2.4.3. Establishing a subsidy system to guarantee the profitability of bioethanol

Key factors in endorsing bioethanol include the user benefit (i.e. cheaper than gasoline) and the profitability for bioethanol business operators. These are integral issues and both can be addressed if a subsidy system to guarantee profitability for bioethanol business operators is in place. Conversely, not addressed, either the user benefit or the profitability for the business operators would be sacrificed and bioethanol will not be popularised.

According to an International Energy Agency (IEA) estimate (IEA, 2013), the price of gasoline per energy unit becomes cheaper than the price of bioethanol when the price of crude oil falls below US$60 per barrel (Figure 6.14). In other words, gasoline will be preferred based on market mechanism and popularisation of bioethanol will be limited only to some environmentally conscious consumers.

In the case of Lao PDR, the break-even point would be US$50 per barrel since the cost of transporting gasoline over several hundred kilometres from the refinery on the coast (about 5 cents per litre, or US$1.5 per gigajoule [GJ]) should be added.

Figure 6.14. Energy Costs of Gasoline and Ethanol Relative to the Cost of Crude Oil



Notes:
1) BTL = biomass to liquids; CTL = coal to liquids; NG = natural gas; US$2010/bbl = 2010 nominal US dollars per barrel of oil; US$2010/GJLHV = 2010 nominal US dollars per gigajoule using lower heating value. Fuel production costs in this figure are extrapolated from their US$60/bbl value using an arithmetical average of the two methods (Petroleum Intensity and Historic Trend).
2) The heating value of gasoline per litre is 33.4MJ.
Source: IEA (2013).

Although, according to the IEA (2013), the price of crude oil is expected to gradually increase over the medium to long term, as described above, subsidy to the ethanol business operators is essential because prices of gasoline and bioethanol would be in

close competition when the price of crude oil is at the lower end, i.e. in the US$40 range, and the user benefit cannot be ensured. It is necessary to first investigate the above break-even point that takes into account the actual logistics scenario within Lao PDR and then determine the subsidy for the operators to ensure the user benefit.

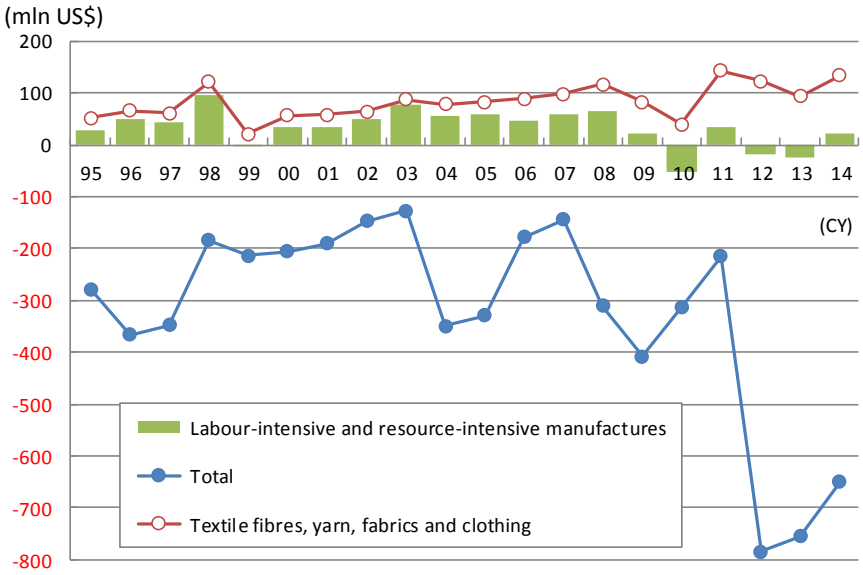
6.3. Garment and Other Labour-Intensive Industries

6.3.1. Overview of the garment industry

6.3.1.1. Trade surplus from the garment industry

Labour costs in Lao PDR are lower than those in Thailand and Viet Nam, and hence some may assume the country is a production centre suited to labour-intensive manufacturing. However, so far Lao PDR has not pursued development emphasising these low labour costs. According to the trade statistics of the United Nations Conference on Trade and Development (UNCTAD), although up to 2009 labour-intensive industries in Lao PDR produced a trade surplus, they have recorded temporary deficits since 2010 and are not necessarily internationally competitive.

Figure 6.15. Trade Balance (Lao PDR)



Source: UNCTAD; compiled by DIR.

Garments contributed 13.2 percent of the manufacturing sector's value added during the period 2005–2014. The Lao garment industry started with just one garment factory in 1984; this expanded to more than 99 factories in 2014, of which 40 were export oriented.

The garment industry, however, is contributing to economic development. In the 20 years from 1995 to 2014, garment products ran a trade surplus of approximately US$85 million. The garment product industry recorded surpluses of over US$120 million each year from 2011–2014, except in 2013.

6.3.1.2. Main destinations for garments

Europe is the primary export destination for garment-related products, such as textile fibres, yarn, fabrics, and clothing (SITC code: No. 26, 65, and 84). The 28 European Union member states were the destination for 76 percent of these exports in 2014. European countries comprised 7 of the top 10 export destinations in this trade category in that year: Germany (29.0 percent), the United Kingdom (16.8 percent), Netherlands (7.5 percent), Italy (5.7 percent), France (4.5 percent), Denmark (3.1 percent), and Belgium (2.5 percent).

Apart from Europe, Japan is also a major destination (12.3 percent). However, exports to the United States (US), which has a large apparel market, only comprise 3.8 percent of the total. Exports to ASEAN countries are very low, at only 0.5 percent of the entire volume.

Imports were primarily from Thailand. Garment-related imports from Thailand made up 63.3 percent of the total in 2014, with at least 75 percent of apparel and clothing accessories coming from Thailand that year.

Table 6.14. Major Export/Import Partners in Trade for Textile Fibres, Yarn, Fabrics, and Clothing

Export			
No	Country	mln US$	ratio
1	Germany	55.3	29.0%
2	United Kingdom	32.1	16.8%
3	Japan	23.5	12.3%
4	Netherlands	14.2	7.5%
5	Italy	10.9	5.7%
6	France	8.5	4.5%
7	United States	7.3	3.8%
8	Canada	6.2	3.2%
9	Denmark	6.0	3.1%
10	Belgium	4.8	2.5%
	Others	22.3	11.7%
	Total	191.0	100.0%

Import			
No	Country	mln US$	ratio
1	Thailand	36.2	63.3%
2	China	8.7	15.3%
3	Japan	5.0	8.7%
4	Hong Kong	2.3	4.1%
5			
6			
7			
8			
9			
10			
	Others	5.0	8.7%
	Total	57.1	100.0%

Source: UNCTAD; compiled by DIR.

6.3.2. Lao PDR government policies

In its 7th Five Year Plan (pp.98–99), the government set out the 2015 target for 'Handicrafts' as follows:

- ✓ To develop and expand handicrafts at 15 percent per year, by encouraging main products, such as cloth, cotton and silk at 20 percent per year, silver–gold products at 18 percent per year and wooden art at 16 percent per year.

To achieve this target, the government wants to take the following measures:

(1) Production Promotion

- ✓ Apply all effective export promotion methods, such as exhibiting products in both domestic and foreign countries, advertising through different mass media (including through Lao embassies in foreign countries), spreading information through trade representatives, training in business information dissemination, opening more markets, developing the 'brand names' of products, and meeting international standards.

(2) Building Human Resources and Training

- ✓ Strengthen national industry and commerce; upgrade staff and workers who have talented skill to work in production, businesses, and import–export activities.
- ✓ Hold training programmes and organise seminars for business owners (and all others associated with economic sectors) on marketing techniques, doing business in a market system, and establishing harmony with international and business laws.

(3) The Law and Legal Aspects

- ✓ Make the law 'business-friendly', and gradually become consistent with the economic situation in domestic and international step markets, through reviewing and improving existing laws, drafting new rules and regulations, and revisiting other legalities.

(4) Foreign Capital

- ✓ Invite foreign capital of high quality that adheres to the principles of fair business practice and environmental regulations. They should also preferably create jobs for local people and enable transfer of technology.

6.3.3. Features in comparison with neighbouring countries

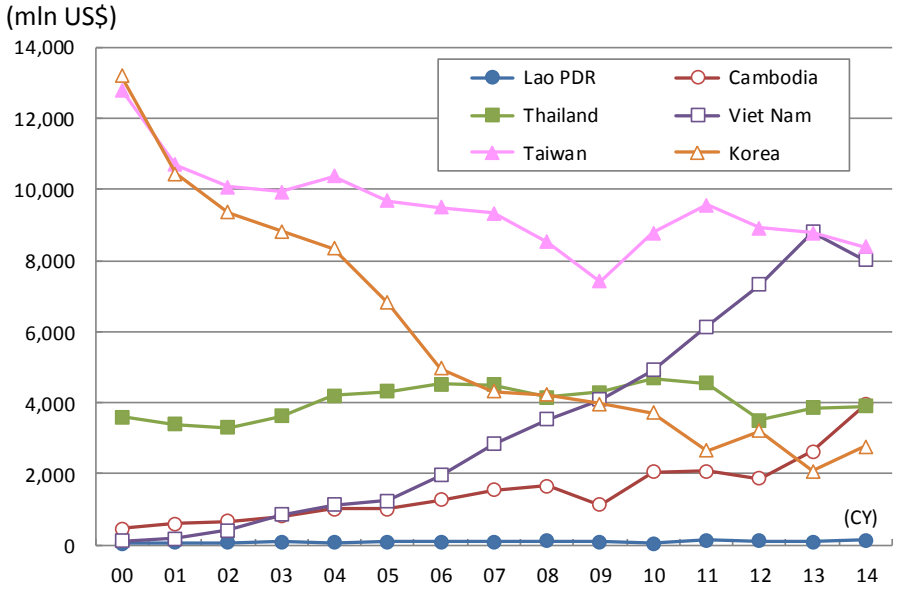
6.3.3.1. Smaller apparel trade surplus compared with Viet Nam and Cambodia

Compared with the neighbouring countries of Viet Nam and Cambodia, Lao PDR has a significantly smaller apparel trade surplus. Although the surplus in this industry was approximately at the same level as these two countries in 2000, Viet Nam and Cambodia have used the benefits of maritime transport to rapidly increase exports to the US. Whereas the Lao apparel trade surplus increased by a factor of 2.3 between 2000 and 2014, Cambodia experienced an 8.7-fold increase, and Viet Nam a 75-fold increase in this industry.

Viet Nam has expanded as a centre of apparel export, with companies in this industry continuing to make inroads into the country. Makers of apparel materials, such as textile and buttons, and specialised trading companies have entered in large numbers, particularly in Ho Chi Minh City in the south, resulting in abundant benefits, such as shortened procurement lead time for apparel makers, and large numbers of deals available for negotiation.

Furthermore, the development of Ho Chi Minh City has had a positive influence on the operational environment for apparel companies in neighbouring Cambodia. The southern economic corridor, which connects Ho Chi Minh City to Bangkok in Thailand, passes through Cambodia, and it only takes three to four hours to drive from the Bavet region in eastern Cambodia to the Vietnamese city. Therefore, it is easier for apparel makers in Bavet to procure their materials from Ho Chi Minh.

Figure 6.16. Trade Balance of Textile Fibres, Yarn Fabrics, and Clothing



Source: UNCTAD; compiled by DIR.

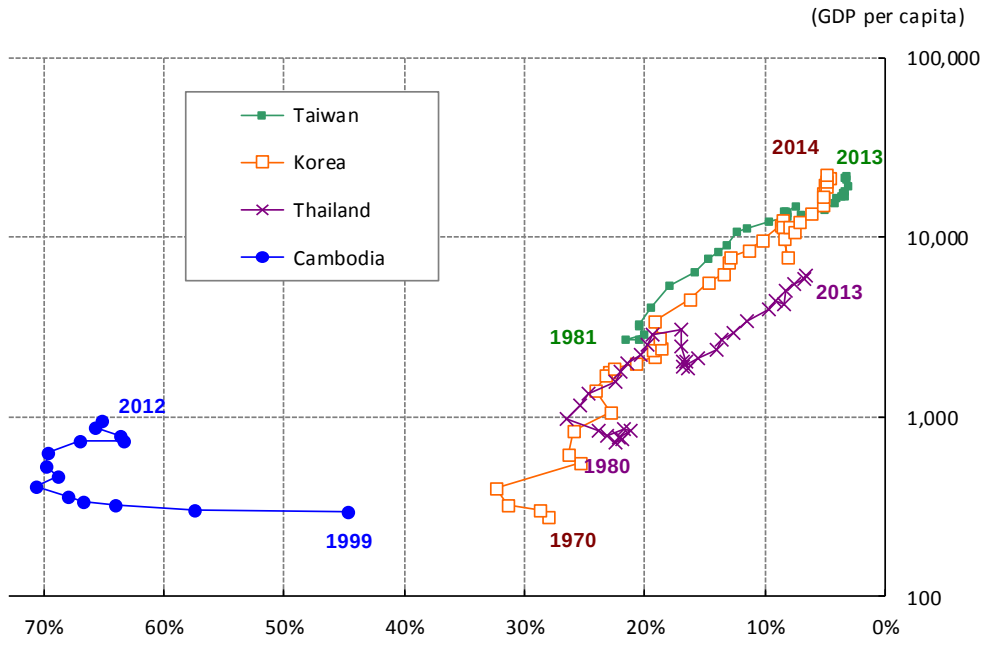
On the other hand, because there is no direct route from Lao PDR to Ho Chi Minh City, the former is not included in the garment industry production network centred on this

metropolis. Whereas in recent years there has been an increase in Vietnamese and Cambodian exports to the US and Japan, the primary and tertiary apparel markets in the world, respectively, this has not been the case for Lao PDR.

6.3.3.2. The garment industry driving initial stages of economic development

In many cases of changes in economic development, apparel is the key industry in the initial stages, as evidenced by a country's GDP per capita and primary industries. Available statistics for four countries – Taiwan, Korea, Thailand, and Cambodia – reveal that until per capita GDP exceeded US$10,000 in Taiwan and Korea, apparel exceeded 10 percent of the manufacturing industry's GDP. The same was the case in Thailand, until per capita GDP exceeded US$5,000.

Figure 6.17. Apparel Industry's Share in Manufacturing – Nominal GDP



GDP = gross domestic product.
Source: IMF Statistics; compiled by DIR.

Although the apparel industry's share in GDP is not disclosed, the industry can be considered as a main driver of economic development through export. This is because

this industry consistently records trade surpluses, even though the country has a continuous trade deficit.

6.3.4. Promising scenarios

6.3.4.1. Short-term prospects – targeting high value added products with low seasonality

Compared with Viet Nam and Cambodia, the apparel industry in Lao PDR does not have convenient access to maritime transport, and there is an extended lead time to markets in the US, Japan, and Europe. In such an environment, in the short term there are good prospects for attracting companies making high functionality wear, such as work clothes and uniforms, and those handling high value-added items, for example Leavers lace used in embellished dresses, such as wedding dresses.

Work clothes and uniforms have a low level of seasonality compared with other apparel products; therefore, in terms of lead time Lao PDR's disadvantages are diminished. On the other hand, because work uniforms, which emphasise safety, use a thicker cloth compared with socks and other products, which also have low seasonality, the sewing process requires a relatively large amount of electricity. There is a benefit in terms of cost because electricity prices in Lao PDR are lower than in other ASEAN countries.

Leavers lace is also a promising product for overcoming Lao PDR's disadvantage in transportation. Planning and design add high value to the lace product so the price per unit of volume is high and profitability is high, even if airfreight is used. Most apparel products are shipped by sea, which is inexpensive. But as air shipment is possible for Leavers lace, Lao PDR can avoid the disadvantage of long lead times.

Although Leavers lace is relatively unseasonal, it is influenced by various factors, such as yearly trends in the apparel industry, and client demand. However, it is possible to respond rapidly to customer needs and product changes by setting up computer-aided

drafting (CAD) tool planning and design departments internally. If companies shorten the time from design to production, they can reduce the inventory of both material and semi-finished goods, which has a positive impact on their cash flow.

6.3.4.2. Mid-term prospects – participation in the 'fast fashion' supply chain for ASEAN countries

Product categories suited to the operational environment in Lao PDR have good short-term prospects, but the volumes in these categories are lower than for other product categories, so it is not easy to achieve sustainable growth. As a result, entering the 'fast fashion' (FF) supply chain and targeting middle-income ASEAN countries is a promising mid- to long-term strategy aimed at a 'mass market.'

Currently, FF companies, such as Inditex (Zara), Fast Retailing (UNIQLO), and Hennes & Mauritz (H&M), are increasing their stores in Asian countries. The overall store count for these three brands increased by a factor of 1.6 in 2009–2014, and the number is increasing at a faster pace in the ASEAN region (with a factor of 4.8) and East Asia (with a factor of 2.1) than in other areas. As the middle-income level in the ASEAN region is expected to rise, the number of stores will also increase.

Larger FF companies are increasingly shifting production facilities to Asia with the increase of store locations within the region. The supplier count for Inditex, which had a group total of 6,683 stores worldwide as of January 2015, including 2,085 locations for its main Zara brand, increased by 388 vendors from 2009 to 2014, with 278 located in Asia. During this time, the share of Asian suppliers increased from 38.9 percent to 46.7 percent of the total number of suppliers.

Table 6.15. The Number of Stores by Regions (Major 'Fast Fashion' Brands)

	2009				2014				Times
	ZARA Jan-10	H&M Nov-09	UNIQLO Aug-09	Total	ZARA Jan-15	H&M Nov-14	UNIQLO Aug-14	Total	Total
Total	1,595	1,988	862	4,445	2,085	3,511	1,485	7,081	1.6
ASEAN	31	-	2	33	47	31	79	157	4.8
Singapore	7	-	2	9	8	10	18	36	4.0
Malaysia	5	-	-	5	9	18	21	48	9.6
Thailand	5	-	-	5	9	-	20	29	5.8
Philippines	6	-	-	6	8	3	16	27	4.5
Indonesia	8	-	-	8	13	-	4	17	2.1
East Asia	111	33	844	988	310	364	1,359	2,033	2.1
Japan	50	6	770	826	95	51	852	998	1.2
China (incl. Hong Kong)	44	27	44	115	165	291	328	784	6.8
Taiwan	-	-	-	-	7	-	46	53	-
Korea	17	-	30	47	43	22	133	198	4.2
Europe	1,204	1,678	15	2,897	1,340	2,548	21	3,909	1.3
America	175	241	1	417	256	435	25	716	1.7
Others (incl. Franchise)	74	36	-	110	132	133	1	266	2.4

Source: Company Annual Reports; compiled by DIR.

In FF, it is desirable for production centres to be as close to the consuming market as possible. Therefore, future business opportunities for the apparel industry in Lao PDR will increase due to the expansion of the FF market in the ASEAN region.

Table 6.16. The Number of Suppliers for Inditex

	Jan-10		Jan-15		Difference	
	Number	(ratio)	Number	(ratio)	Number	(ratio)
Total	1,237	(100.0%)	1,625	(100.0%)	+388	(+0.0%)
Africa	94	(7.6%)	135	(8.3%)	+41	(+0.7%)
America	51	(4.1%)	80	(4.9%)	+29	(+0.8%)
Asia	481	(38.9%)	759	(46.7%)	+278	(+7.8%)
Europe (non-EU)	99	(8.0%)	160	(9.8%)	+61	(+1.8%)
European Union	512	(41.4%)	491	(30.2%)	-21	(-11.2%)

EU = European Union.
Source: Index Annual Report (2010, 2014); compiled by DIR.

6.3.4.3. Other labour-intensive industries

Lao PDR has a lower population than most other ASEAN countries, but companies in labour-intensive industries already established in Lao PDR are of the opinion that there is sufficient profitability in a labour-intensive model with 200–300 people.

The rationale concerning focus on labour-intensive industries, aside from the garment sector, is that they are manufacturing corporations that either take advantage of the benefits of the business environment in Lao PDR or are affected only in a limited way by such disadvantages.

The first assertion is that manufacturers use large amounts of low-cost labour and electricity, which account for a relatively large share of production costs. This is the case particularly in areas such as copper wire and casting and moulding.

Table 6.17. Cost Structure of Japanese Companies

Company Name	TOYOTA	MANI	NICHIDAI	KYODEN	DAIKI ALUMINIUM INDUSTRY	OSAKA Titanium technologies
Business operations	Automobile	Medical Parts	Mold	PCB (*)	Casting	Titanium Ingot
(End of fiscal year)	2013/3	2012/8	2013/3	2013/3	2013/3	2013/3
Sales	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of goods solds	86.7%	40.3%	77.3%	85.9%	96.0%	82.2%
Raw materials	72.4%	6.2%	21.6%	8.1%	45.1%	29.8%
Labor	6.4%	12.8%	27.6%	10.2%	2.6%	9.2%
Others	8.0%	24.5%	19.6%	67.0%	#N/A	57.2%
Depreciation	1.6%	2.4%	5.0%	2.1%	1.0%	22.3%
Outsourced assembling work	#N/A	13.7%	9.2%	55.7%	#N/A	3.7%
Electricity	#N/A	#N/A	#N/A	#N/A	2.0%	17.1%
Others	6.3%	5.2%	13.9%	9.8%	45.3%	0.2%
SG&A	10.8%	24.4%	17.3%	11.7%	3.5%	10.5%
Logistics	2.2%	#N/A	1.3%	0.5%	1.6%	1.7%
Others	8.6%	#N/A	16.0%	11.2%	1.9%	8.8%
Operating Profit	2.5%	35.3%	5.3%	2.3%	0.5%	7.4%

PCB (*) = printed circuit board.
Source: Companies' annual securities reports; compiled by DIR.

The second point is that as manufacturers produce items, where distribution issues such as lack of a port have little effect, transportation costs are relatively low and there

is high added value. Medical devices are one example of this. Mani, Inc., which boasts of a high market share in surgical sutures, ophthalmic knives, and dental equipment, established itself in Vientiane Province in Lao PDR in 2009. Mani sends medical devices made in Lao PDR to Hanoi in Viet Nam by airfreight, and then ships those to the customer after a final inspection.

Based on 2013 securities reports filed by Japanese-listed companies, copper wire processing, casting, and moulding, and medical device manufacturers are characterised by either a high labour and electricity expense weight, or a low shipping expense weight, compared with car makers' finished car data.

6.3.5. Future challenges

6.3.5.1. Issues for smooth distribution to Bangkok

According to meetings with Japanese companies currently in or considering entering a Special Economic Zone (SEZ), there were investment incentives, such as more favourable corporate tax rates for companies entering the Savannakhet SEZ.

However, distribution infrastructure to Bangkok was noted as a problem in conducting business smoothly. Suggestions made to tackle this problem are (1) the improvement of road conditions on Route 13, which connects Vientiane City with Vientiane Province; (2) the improvement of the process approval flow when customs procedure managers are not present, as currently the process stops when managers are absent; and (3) the introduction of mixed loading services to lower logistics costs.

Regarding the first point above, despite regular rehabilitation work to Route 13, the road becomes bumpy during the rainy season due to the low quality of work undertaken. Lower traffic speeds and traffic jams during roadwork periods result in an increased transit time.

In the customs clearance procedural flow noted in the second point, the problem would be solved by granting authority to several people so that a manager is always present. After studying the disadvantages of such a measure, as well as countermeasures, it is concluded that it would be desirable to consider revising current regulations.

The third point is the introduction of container mixed-loading services. The government would have difficulty in taking the initiative to promote this because the provision of logistics services is dependent upon private companies' management strategies. However, to increase opportunities for mixed-loading services, it is possible to adopt policies to increase the volume of goods traffic between Lao PDR and Thailand. In concrete terms, it would be desirable to remove restrictions on foreign investment in the service and retail industries. If companies with suburban big box stores – such as Big C and Tesco Lotus – were to enter Lao PDR, a large number of products would be imported from Thailand. This would result in an increase in the volume of logistics traffic with Thailand, and increase the likelihood of private companies starting mixed-loading services. (Section 6.8 discusses the third point in more detail.)

6.3.5.2. Ensuring one-stop service at VITA Park

According to meetings with Japanese companies and related authorities in Lao PDR, the one-stop service in Vientiane Industrial & Trade Area (VITA) Park, where foreign manufacturing companies gather, is not functioning. Although there is a building to station a representative from the authority handling procedures within the SEZ, as of August 2015 such a person was not there.

The expectations of such a service are high, to the extent that private companies already in areas outside of SEZs think that entering the SEZ would be worth considering if one-stop services were functioning. Corporations may think so due to a

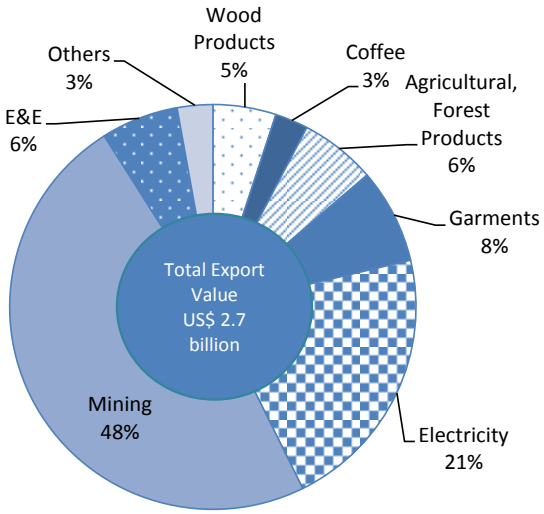
limited number of local staff, particularly for foreign companies, and may need efficient administrative work, including filing notifications with administrative authorities. With such needs, strengthening the functionality of one-stop services would have very positive effects on industrial development led by foreign private companies.

6.4. Electrical and Electronic Machinery

6.4.1. Overview of electrical and electronic components

The electrical and electronic components industry was started with just one factory in 1990s, and the number of factories reached more than 20 in 2014. Most of them are export oriented, and are located in SEZs.

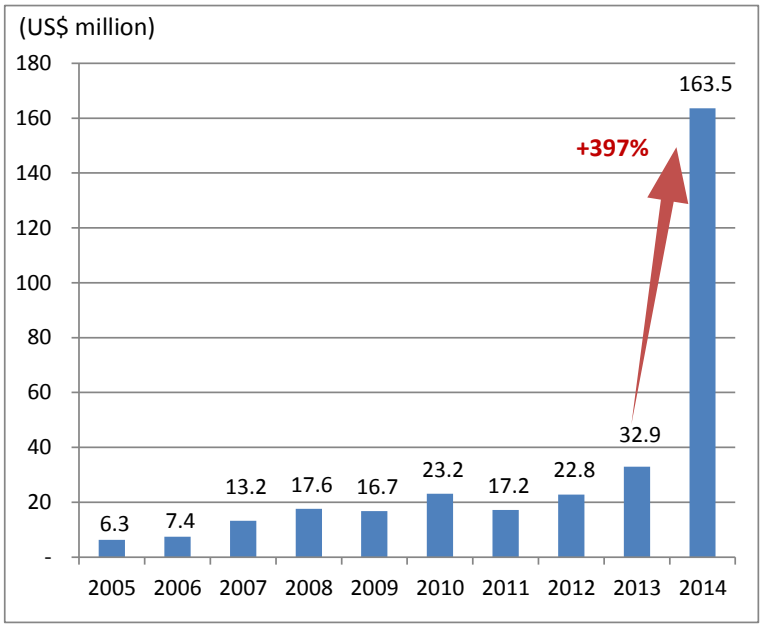
Figure 6.18. Exports from Lao PDR by Item (2014)



E&E = electrical and electronic components.
Source: Lao Statistics Bureau.

The export value of electrical and electronic components (HS code 85) from Lao PDR was US$160 million in 2014, which is about 6 percent of the country's total export value of US$2.7 billion in the same year.

Figure 6.19. Change in the Export Value of E&E (HS code 85)

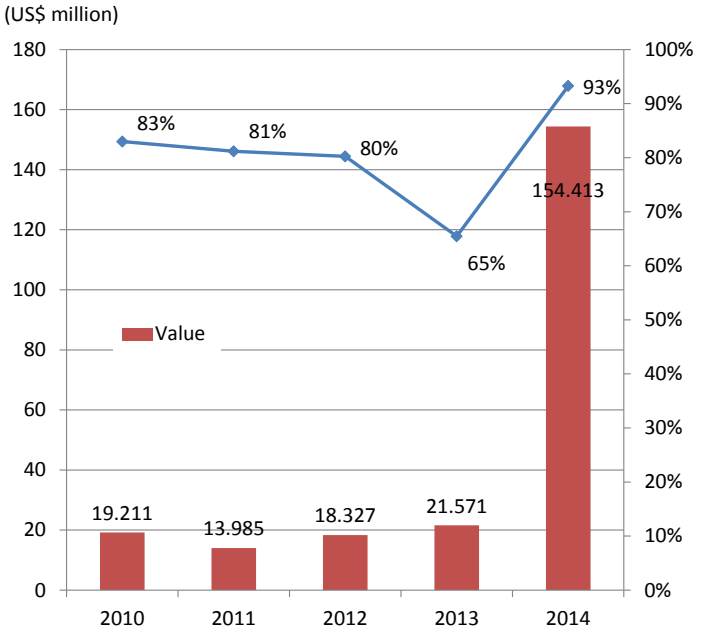


E&E = electrical and electronic components.
Source: International Trade Centre; compiled by DIR.

As for the change in the export value of electrical and electronic components, the value gradually increased from 2005 to 2013. Due to the increase in production of electronic components with foreign investment and expansion of exports mainly to Thailand, the export value of these components in 2014 showed a dramatic increase of 397 percent over that in the previous year.

With regard to export destination by country, Thailand accounts for a significant share of electrical and electronic components exported from Lao PDR. In 2014, the value increased over seven times from that of the previous year, and 93 percent of these exports were directed to Thailand.

Figure 6.20. Changes in the Export Value and Share of E&E (HS code 85) to Thailand



E&E = electrical and electronic components.
Source: International Trade Centre; compiled by DIR.

According to statistics from the International Trade Centre regarding the export value of electrical and electronic components in 2014, the world's biggest exporter is China, with a value exceeding US$570 billion. Lao PDR ranks 85th in the world with US$160 million, and 8th among the 10 ASEAN countries.

Table 6.18. Export Value of E&E (HS code 85) by Country (in 2014, US$ million)

#	Country	Export Value
	World	2,353,135
1	China	570,940
2	Hong Kong	239,968
3	United States	172,368
4	Germany	147,934
5	Korea, Republic of	138,234
6	Singapore	124,875
7	Taiwan	123,324
8	Japan	104,198
9	Mexico	80,024
10	Malaysia	65,726
11	Netherlands	49,522
12	France	44,036
13	Viet Nam	43,847
14	United Kingdom	31,901
15	Thailand	30,735
16	Italy	29,920
17	Czech Republic	29,150
18	Poland	25,218
19	Philippines	23,122
20	Hungary	22,221
21	Slovakia	18,162
22	Sweden	17,578
23	Austria	17,544
24	Spain	17,196
25	Belgium	14,780
26	Canada	13,622
27	Switzerland	13,275
28	Romania	10,850
29	Denmark	10,350
30	Indonesia	9,746
31	Turkey	9,698
32	India	9,002
33	Israel	8,951
34	Finland	6,462
35	Portugal	5,017
36	Russian Federation	4,929
37	Ireland	4,391
38	Brazil	4,216
39	United Arab Emirates	4,210
40	Tunisia	4,116
41	Morocco	3,782
42	Slovenia	3,650
43	Estonia	3,610
44	Norway	3,385
45	Australia	2,733
46	Ukraine	2,682
47	Bulgaria	2,491
48	South Africa	2,489
49	Costa Rica	2,421
50	Lithuania	2,173
51	Egypt	1,959
52	Latvia	1,575
53	Serbia	1,389
54	Greece	1,221
55	Croatia	1,116
56	Malta	1,045
57	Belarus	900
58	New Zealand	768
59	Luxembourg	687
60	Dominican Republic	679
61	Honduras	617
62	Chile	613
63	Nicaragua	571
64	Saudi Arabia	472
65	Colombia	459
66	Cambodia	441
67	Macedonia, The Former Yugoslav Republic of	440
68	Oman	402
69	Jordan	371
70	British Virgin Islands	362
71	Mauritius	329
72	Iran, Islamic Republic of	312
73	Free Zones	301
74	Argentina	296
75	Sri Lanka	293
76	Bahrain	279
77	Kazakhstan	261
78	El Salvador	259
79	Moldova, Republic of	251
80	Macao, China	250
81	Cyprus	232
82	Bosnia and Herzegovina	232
83	Lebanon	222
84	Kuwait	172
85	Lao People's Democratic Republic	164
86	Qatar	123
87	Korea, Democratic People's Republic of	119
88	Paraguay	112
89	Peru	106
90	Pakistan	95
91	Guatemala	88
92	Botswana	85
93	Fiji	78
94	Bangladesh	77
95	Uruguay	76
96	Zambia	70
97	Uzbekistan	68
98	Ecuador	67
99	Venezuela, Bolivarian Republic of	65
100	Lesotho	65
101	Kenya	62
102	Saint Kitts and Nevis	58
103	Albania	55
104	Myanmar	51
105	Senegal	49
106	Iceland	45
107	Seychelles	37
108	Nigeria	36
109	Georgia	31
110	Tanzania, United Republic of	30
111	Brunei Darussalam	29
112	Trinidad and Tobago	29
113	Swaziland	29
114	Côte d'Ivoire	28
115	Ghana	27
116	Azerbaijan	25
117	Andorra	21
118	Ethiopia	20
119	Samoa	20
120	Namibia	20
121	Uganda	19
122	Saint Lucia	18
123	Malawi	18
124	Sudan (North + South)	18
125	Kyrgyzstan	17
126	Yemen	17
127	Rwanda	17
128	Bahamas	12
129	Zimbabwe	12
130	Palestine, State of	12
131	Papua New Guinea	12
132	Armenia	11
133	Barbados	11
134	British Indian Ocean Territories	11
135	Iraq	10
136	Benin	8
137	Tajikistan	8
138	Libya, State of	8
139	Angola	8
140	Marshall Islands	8
141	Cuba	8
142	Mongolia	7
143	Mali	7
144	Cameroon	7
145	New Caledonia	7
146	Mozambique	7
147	Faroe Islands	6
148	Madagascar	6
149	Niger	6
150	Cayman Islands	5
151	Jamaica	5
152	Congo	5
153	Netherlands Antilles	5
154	Bolivia, Plurinational State of	5
155	Algeria	5
156	Montenegro	5
157	Suriname	4
158	Dominica	4
159	Burkina Faso	4
160	Gabon	4
161	Solomon Islands	4
162	Togo	3
163	Haiti	3
164	Aruba	3
165	Gibraltar	3
166	Liberia	3
167	Turkmenistan	3
168	Guinea	3
169	Guyana	3
170	United States Minor Outlying Islands	2
171	Antigua and Barbuda	2
172	Bermuda	2
173	French Polynesia	2
174	Cocos (Keeling) Islands	2
175	Nauru	2
176	Timor-Leste	2
177	Congo, Democratic Republic of the	2
178	Saint Vincent and the Grenadines	1
179	Nepal	1
180	Vanuatu	1
181	Syrian Arab Republic	1
182	Burundi	1
183	Chad	1
184	Kiribati	1
185	Cook Islands	1
186	Turks and Caicos Islands	1
187	Palau	1
188	Gambia	1
189	Djibouti	1
190	French South Antarctic Territories	1
191	Saint Helena	1
192	Belize	1
193	Christmas Islands	1
194	Equatorial Guinea	1
195	Anguilla	0
196	Somalia	0
197	Pitcairn	0
198	Bhutan	0
199	Greenland	0
200	Micronesia, Federated States of	0
201	Tokelau	0
202	Guinea-Bissau	0
203	Grenada	0
204	Ship stores and bunkers	0
205	Niue	0
206	Tonga	0
207	Eritrea	0
208	Comoros	0
209	Maldives	0
210	Northern Mariana Islands	0
211	Falkland Islands (Malvinas)	0
212	Wallis and Futuna Islands	0
213	Tuvalu	0
214	Montserrat	0
215	St. Pierre and Miquelon	0
216	Norfolk Island	0
217	Western Sahara	0
218	Sierra Leone	0
219	Sao Tome and Principe	0
220	American Samoa	0
221	Central African Republic	0
222	Mayotte	0
223	Panama	0

E&E = electrical and electronic components.

Source: International Trade Centre.

6.4.2. Features in comparison with other countries

There were cases where the production sites of electronic components were located inland, in countries such as Thailand, Mexico, the Czech Republic, and Switzerland, and this may develop in Lao PDR as well. As electronic components are small in size and light in weight, they have a relatively minor impact on the cost of distribution, and the production sites do not necessarily have to be located near the coast. Moreover, in fields that require manual assembly, such as electric motors, connectors, and wiring, sites with low personnel expenses tend to be preferred.

Common characteristics of these locations are as follows: they are close to large-scale markets or production bases (the Czech Republic and Switzerland to Germany; Mexico to the US and Brazil; and Cheng Mai, Thailand, to Bangkok); their distribution infrastructure such as motorway networks, airports, and railways have already been completed to a large extent; and compared with neighbouring countries, personnel expenses are mostly lower.

Lao PDR is relatively close to Thailand. The distance between Bangkok and Vientiane is about 600 km, and that between Bangkok and Savannakhet is about 700 km. Therefore, it is relatively easy to provide employee training and maintenance of machines and equipment, conducted by technicians from Thailand.

In addition, bronze is often used in electronic components for wiring, among other uses. Mainly to prevent its oxidation, the temperature and humidity must be maintained at a certain level. Lao PDR, with low-priced electricity, has an advantage since electric power is required to control temperature and humidity.

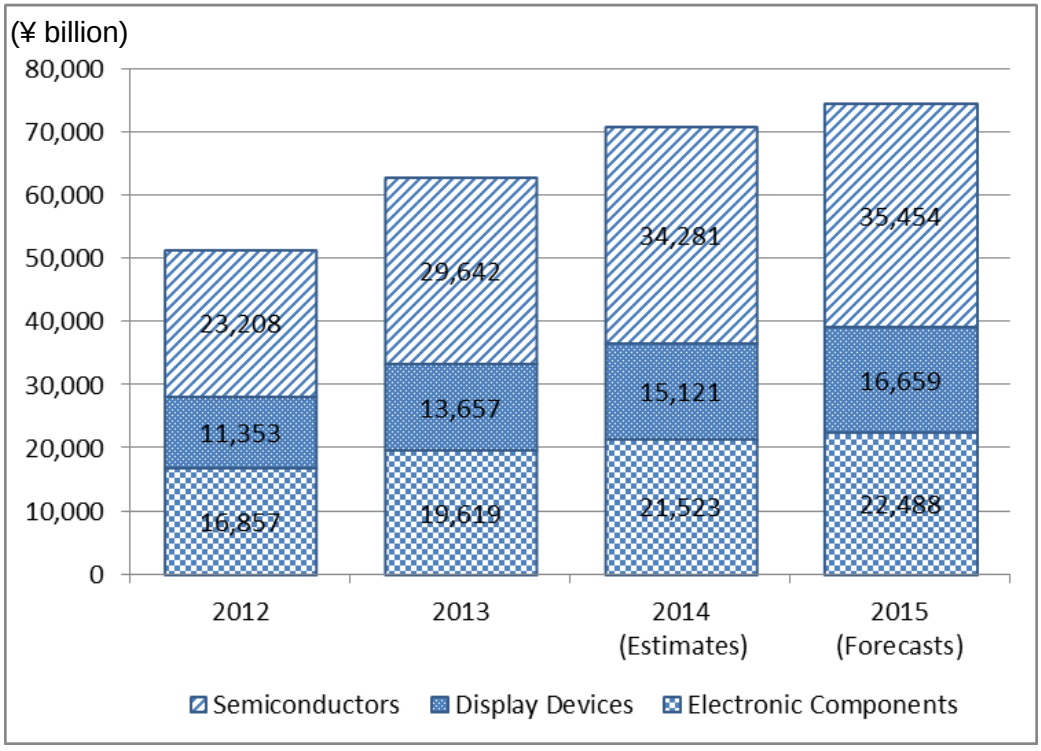
According to Euromonitor,[26] the number of refrigerators and washing machines sold per 1,000 households in Lao PDR in 2014 was 4.8 and 10.5, respectively. Calculating

[26] Data from Euromonitor database.

the overall sales figure from the number of households, it would be about 6,000 refrigerators and about 13,000 washing machines. The normal production scale for both in a small-sized factory is 100,000 units a year. Transportation costs can be high for home appliances such as refrigerators and washing machines, and they tend to be produced at sites close to large consumption areas; however, it is not feasible to produce them in Lao PDR at present.

Although the electrical and electronics industry is one of the potential drivers of Lao PDR's export expansion, the competitiveness of the sector against neighbouring countries remains weak. In 2014, the share of electrical and electronic machinery exports from Lao PDR in global export was only 0.007 percent, compared with 0.19 percent for Cambodia, 1.31 percent for Thailand, and 1.90 percent for Viet Nam.

Figure 6.21. Production Value of Electronic Components in the World



Source: Japan Electronics and Information Technology Industries Association (JEITA) (2014); compiled by DIR.

6.4.3. Promising scenarios

The industry trend is to assemble home appliances near an area of large-scale consumption. Considering this trend, it is improbable for them to be produced in Lao PDR where the market is small.

On the other hand, there is potential for the production of electronic components. According to the survey (Figure 6.21, Japan Electronics and Information Technology Industries Association, 2014), the global production value of electronic components is trending upward. These products are small, lightweight, can be mass produced, have a small impact on the distribution cost per unit, and are often distributed by air transport. Therefore, setting up a production site near the coast is unnecessary. In the field of manual assembly, producers enthusiastically enter emerging countries seeking low personnel expenses.

But Lao PDR, with a population of about 6 million, has a small workforce, and factory development is limited, unlike the large factories of a few thousand to over 10,000 workers in Viet Nam and other countries. Although there have already been some cases of foreign-investment operations in Lao PDR with several thousand workers, many companies included in this survey considered the appropriate size for an operation in Lao PDR to be one with 200–300 workers. Some of the companies surveyed experienced difficulties in recruiting workers even at that size.

Lao PDR would benefit to produce diverse items that have a relatively short commodity cycle and with a flexibly adjusted production volume. One example would be connectors (such as local area networks [LANs] and universal serial buses [USBs]) and their cables that could change in shape and the number of compatible terminals, according to advancing technology.

6.4.4. Future challenges

6.4.4.1. Improvement in distribution

Many electronic components are small and do not take up much space. Currently, delivering such products is costly, as they do not fill up an entire truckload, and there is no regular delivery truck available that mixes these with other loads. Companies that moved to Lao PDR mention that distribution costs offset any savings on personnel or electricity expenses and, hence, development of a regular means of distribution is necessary. To achieve this, the elimination of unnecessary logistic regulations and non-tariff measures is essential. See Section 6.8 for more detailed analysis of the transportation industry.

6.5. Transport Equipment

6.5.1. Overview of automobiles and motorcycles

Data from the Lao Statistics Bureau indicate that in 2014 the number of registered automobiles in Lao PDR was about 1.2 million motorcycles, 180,000 pick-up trucks, and 50,000 passenger vehicles (sedans). These numbers demonstrate large increases from 2010, by about 2.4 times for motorcycles, 3.4 times for pick-up trucks, and 3.6 times for sedans.

Table 6.19. Transitions in the Numbers of Registered Vehicles in Lao PDR (unit: vehicle)

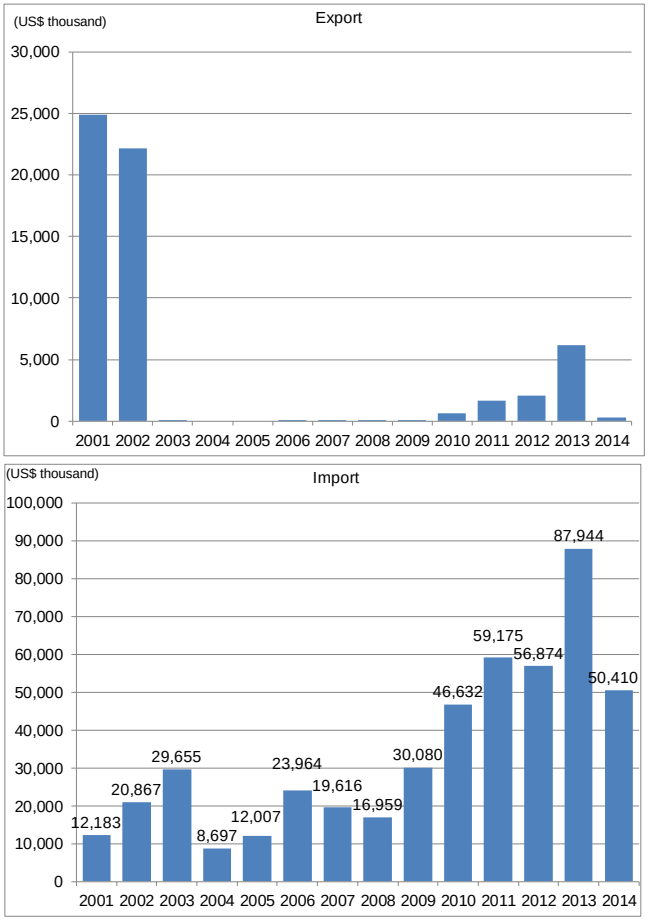
Items	2010	2011	2012	2013	2014
Motorcycle	503,230	818,344	1,005,047	1,111,894	1,218,379
Three wheel	8,825	7,884	8,588	8,601	8,737
Sedan	14,325	21,287	35,514	43,860	51,284
Pick-up	53,712	105,575	147,497	162,586	185,081
Jeep	9,715	23,603	17,153	19,961	22,515
Van	6,310	12,206	37,729	50,035	52,136
Truck	15,678	25,209	33,346	38,480	44,293
Bus	5,705	2,752	3,430	3,865	4,120

Source: Statistical Yearbook 2012 and 2015.

6.5.1.1. Motorcycles

Based on the transitions in the numbers of registered vehicles shown in Table 6.19, the market size is about 100,000 units per year. Lao PDR imports many vehicles, but it also produces them domestically in the form of foreign investments. In the 1990s, Suzuki and Honda of Japan began production in Lao PDR. Suzuki produces through a joint venture, whereas Honda produces via contracted outsourcing. In 2002, Korea's Kolao began local production, and Chinese motorcycle manufacturers are now producing motorcycles in Lao PDR. These motorcycles are produced through foreign investments, and they are mostly domestically distributed, with exports almost exclusively bound for Thailand.

Figure 6.22. Transitions in the Value of Lao PDR's Motorcycle Imports and Exports (HS Code 8711)



Source: International Trade Centre; compiled by DIR.

It is predicted that as incomes increase in the future, the motorcycle market and ownership will increase and disperse to the peripheral areas of Lao PDR. However, the small Lao population of about 6 million people means that the growth of the industry will be limited if driven solely by domestic demand.

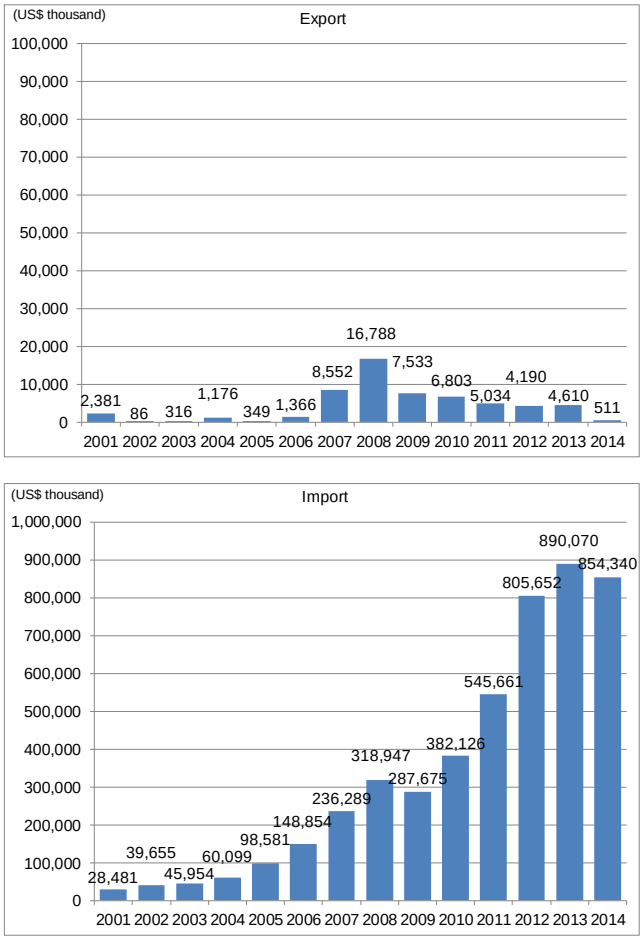
Motorcycle imports to Lao PDR were on an increasing trend until 2013, albeit at a low level (Figure 6.22). Combined domestic production and distribution led to an increase in the number of registered vehicles.

6.5.1.2. Four-wheeled vehicles

Based on the transitions in the number of registered vehicles shown in Table 6.19, the size of the automobile market (passenger and commercial vehicles) ranges from 40,000 to 80,000 units per year, although those numbers depend on imports. As was shown in Table 6.19, the number of registered vehicles in Lao PDR continues to grow. A particularly marked increase in automobiles is reported in Vientiane. The most recent data from Vientiane indicates that the number of registered vehicles increased by more than 31,000 units in the first six months of 2015, or an average of 5,000 units per month (Vientiane Vehicle Control Unit, Ministry of Public Works and Transport).

The value of automobile imports has increased almost consistently over the past 15 years (Figure 6.23), which is confirmed by the increase in the number of registered automobiles.

Figure 6.23. Transitions in the Value of Lao PDR's Automobile Imports and Exports (HS Codes 8701–8705)



Source: International Trade Centre; compiled by DIR.

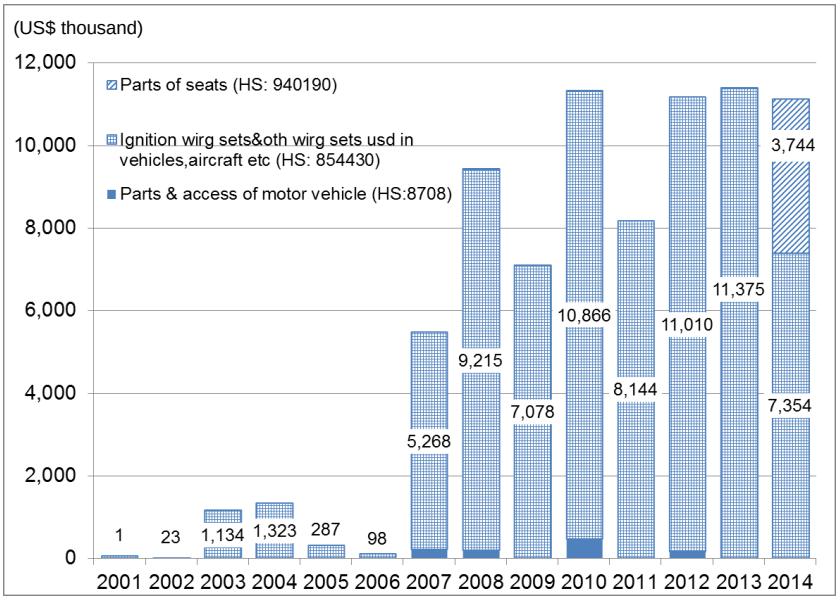
6.5.1.3. Components

At present, the supply of domestic-bound components is almost entirely dependent on imports. The increase in imported components accompanying the recent increase in motorcycles and automobiles means that exports of components are increasing because of the increase in component manufacturing and exports by foreign businesses that have ventured into Lao PDR.

Figure 6.24 shows the transitions in the value of exported automobile components (HS Code 8708), vehicle cable harnesses (HS Code 854430), and seat components (HS Code 940190). Vehicle cable harness saw a major expansion compared with the first half of the 2000s. Seat components were not added until 2014. This figure also

includes data on automobile seat covers, which Japanese-affiliated companies began producing in Lao PDR in 2014.

Figure 6.24. Transitions in the Value of Lao PDR's Automobile Component Exports



Source: International Trade Centre; compiled by DIR.

6.5.2. Features in comparison with other countries

Tables 6.20 to 6.22 show the transitions in the value of each ASEAN nation's exports of automobile components (HS Code 8708), vehicle cable harnesses (HS Code 854430), and seat components (HS Code 940190). Recently, the export values of cable harnesses and automobile seat covers produced and exported from Lao PDR by foreign investors have increased (or have begun to increase), and Lao PDR is clearly participating in the value chain. However, regarding other automobile components, the overall value of exports by ASEAN countries was US$13.7 billion compared with US$20,000 for Lao PDR. Despite its production and exports, Lao PDR cannot be considered to be involved in the automobile components value chain in the ASEAN region.

Indonesia is central to the ASEAN region's motorcycle production. According to data from the ASEAN Automotive Federation, 3.98 million motorcycles were produced in 2014 in Indonesia, Malaysia, the Philippines, and Thailand, of which about 1.3 million were produced in Indonesia. As stated above, Lao PDR's domestic motorcycle production is now under way, and many of the motorcycles produced are domestically distributed, although some are exported to Thailand.

Table 6.20. Transitions in the Value of Each ASEAN Nation's Automobile Component Exports (HS Code 8708) (in US$'000)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Thailand	490,158	628,366	957,106	1,412,020	2,120,010	2,500,165	3,397,759	4,094,798	3,003,376	4,155,972	4,581,947	5,861,333	6,351,984	6,789,480
Singapore	428,999	515,407	907,457	1,238,465	1,428,578	1,501,311	1,919,767	2,252,087	2,097,452	2,446,807	2,677,501	2,789,280	2,272,429	2,056,425
Indonesia	255,121	288,212	380,583	532,557	757,862	908,519	922,530	1,088,430	844,475	1,170,714	1,115,385	1,476,959	1,417,755	1,619,939
Philippines	625,054	754,810	932,274	1,172,333	1,355,131	1,400,325	1,671,685	2,052,025	1,422,697	1,670,451	2,068,952	1,387,369	1,343,623	1,472,262
Viet Nam	4,902	14,909	20,296	54,182	91,488	262,404	392,856	409,489	316,209	419,186	534,992	775,533	887,574	900,972
Malaysia	131,057	150,734	211,799	276,074	372,913	424,653	541,402	578,919	553,225	762,922	825,572	870,002	879,022	828,674
Myanmar										0	1,153	1,346	47	539
Cambodia	392	1	9	20	25	177	80	49	51	31	110	32	1,450	499
Brunei	391	550	107	179		468			329	628	310	745	170	201
Lao PDR	34	3	1	3	23	6	203	187	9	458	20	152	15	20
ASEAN	1,936,108	2,352,992	3,409,632	4,685,833	6,126,030	6,998,028	8,846,282	10,475,984	8,237,823	10,627,169	11,805,942	13,162,751	13,154,069	13,669,011

ASEAN = Association of Southeast Asian Nations.
Source: International Trade Centre; compiled by DIR.

Table 6.21. Transitions in the Value of Each ASEAN Nation's Vehicle Cable Harness Exports (HS Code 854430) (in US$'000)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Philippines	483,082	522,912	508,451	749,743	720,245	788,343	891,577	901,884	752,051	1,107,209	1,109,830	1,446,499	1,641,904	2,041,968
Viet Nam	51,905	83,973	134,435	167,583	187,969	423,788	480,599	714,361	687,474	992,934	1,094,256	1,630,398	1,868,144	1,993,463
Indonesia	103,550	95,985	78,342	140,085	187,599	238,947	370,191	484,464	369,493	505,006	528,395	611,904	662,459	659,592
Thailand	184,479	266,098	297,410	308,272	280,974	338,394	281,470	393,502	291,399	425,006	437,837	471,054	431,788	431,764
Cambodia	0	0	0	0	0	0	0	1	0	0	0	1,720	25,656	101,996
Singapore	3,746	2,388	3,146	2,701	3,760	5,863	8,036	42,596	29,907	35,335	60,990	67,844	78,751	91,139
Malaysia	1,499	1,790	1,649	1,692	13,535	9,964	13,869	22,152	16,856	28,688	40,698	44,922	55,901	53,692
Lao PDR	1	23	1,134	1,323	287	98	5,268	9,215	7,078	10,866	8,144	11,010	11,375	7,346
Brunei	5	4	2	4		32			34	11	17	34	6	15
Myanmar										0	8	23		1
ASEAN	828,267	973,173	1,024,569	1,371,403	1,394,369	1,805,429	2,051,010	2,568,175	2,154,292	3,105,055	3,280,175	4,285,408	4,775,984	5,380,976

ASEAN = Association of Southeast Asian Nations.
Source: International Trade Centre; compiled by DIR.

Table 6.22. Transitions in the Value of Each ASEAN Nation's Seat Component Exports (HS Code 940190) (in US$'000)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Viet Nam	7,497	10,061	11,104	14,915	17,702	35,294	59,100	73,124	56,794	69,643	87,006	130,869	143,016	421,998
Thailand	28,187	38,967	64,726	79,372	99,963	141,217	186,400	218,176	152,719	234,136	215,264	260,385	321,270	291,159
Malaysia	30,692	32,647	31,292	34,195	45,768	25,631	37,970	47,546	53,609	57,749	67,895	89,945	78,611	80,954
Philippines	2,286	4,588	7,660	9,447	9,813	9,769	21,263	26,963	18,095	32,999	29,264	31,574	40,154	59,208
Indonesia	18,399	19,471	18,439	18,756	17,600	13,678	25,771	41,118	40,540	67,771	45,052	53,778	55,473	54,050
Cambodia	11	0	2	0	0	0	0	0	0	0	0	1,466	684	28,164
Lao PDR			1					12						3,744
Singapore	4,146	3,149	2,744	1,734	3,364	4,971	5,331	2,427	2,081	1,832	3,690	3,604	3,793	3,467
Myanmar										0	254	189	308	426
Brunei	0	5	5	67		4			58	4	31	21	10	3
ASEAN	91,218	108,888	135,973	158,486	194,210	230,564	335,835	409,366	323,896	464,134	448,456	571,831	643,319	943,173

ASEAN = Association of Southeast Asian Nations.
Source: International Trade Centre; compiled by DIR.

Table 6.23. Transitions in Motorcycle Production in Four ASEAN Nations ('000 units)

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Indonesia	4,459	4,723	6,264	5,884	7,395	8,006	7,080	7,780	7,926
Malaysia	432	446	537	436	468	498	543	549	440
Philippines	518	579	523	634	813	763	588	729	755
Thailand	2,076	1,647	1,907	1,634	2,025	2,043	2,606	2,219	1,843

ASEAN = Association of Southeast Asian Nations.
Source: ASEAN Automotive Federation.

6.5.3. Promising scenarios

Thailand is becoming a major automobile production base in the ASEAN region. With respect to the value of automobile component imports in 2014, Thailand had the largest share of the US$5.3 billion, which accounted for 36 percent of the ASEAN region overall. Thailand also dominated or was second highest in vehicle cable harnesses and seat components. Exports of some components from Lao PDR to Thailand, such as cable harnesses and seat covers (Tables 6.25 and 6.26), are increasing, although the increase is on a small scale.

Table 6.24. Transitions in the Value of Each ASEAN Nation's Automobile Component (HS Code 8708) Imports (in US$'000)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Thailand	1,444,008	1,624,280	2,127,437	2,494,279	2,737,409	2,588,579	2,809,369	3,412,066	2,857,326	5,065,498	5,533,007	8,359,712	7,877,047	5,312,983
Indonesia	935,854	826,393	951,730	986,378	1,250,645	904,171	839,962	2,547,271	1,031,587	1,963,277	2,276,692	2,982,319	3,218,276	2,908,464
Malaysia	274,834	332,537	471,901	617,725	1,018,151	985,652	1,106,816	1,256,850	1,173,444	1,591,922	1,679,268	2,111,487	2,129,914	2,317,693
Singapore	627,074	735,362	936,376	1,138,384	1,218,377	1,299,911	1,515,751	1,695,150	1,468,913	1,735,656	2,028,974	1,933,301	1,938,344	2,169,855
Viet Nam	16,465	24,508	31,785	32,244	90,068	316,648	733,133	1,054,322	889,303	934,264	981,758	753,415	811,183	1,226,713
Philippines	260,824	307,200	409,657	388,877	415,066	353,527	300,029	316,994	269,470	372,267	431,893	435,288	420,471	428,648
Myanmar										35,921	90,502	87,356	125,545	121,293
Cambodia	1,540	1,107	833	961	520	643	867	2,820	2,598	6,290	2,140	3,257	2,818	64,580
Lao PDR	3,198	1,648	2,046	2,418	3,160	7,818	12,234	23,408	31,090	26,666	28,014	39,212	40,380	38,823
Brunei	5,669	6,659	7,084	9,080		7,894			9,704	12,781	11,854	17,734	14,697	13,028
ASEAN	3,569,466	3,859,694	4,938,849	5,670,346	6,733,396	6,464,843	7,318,161	10,308,881	7,733,435	11,744,542	13,064,102	16,723,081	16,578,675	14,602,080

ASEAN = Association of Southeast Asian Nations.
Source: International Trade Centre; compiled by DIR.

Automobile manufacturers in ASEAN are currently facing competition from Chinese and Indian low-priced vehicles. Although they are developing and producing automobiles suited to the needs and preferences of the destination countries, they attempt to reduce their costs by increasing local procurement. To meet this challenge, the automobile manufacturers consistently pressure automobile component

manufacturers to slash their costs. The same problem exists for the automobile manufacturers and component manufacturers in Thailand, the ASEAN region's major automobile production base. Problems in Thailand, such as the labour force crisis and soaring costs of labour, have led to outsourcing the labour-intensive production processes to regions with relatively low labour costs ('Thailand-plus-one business model').

Table 6.25. Transitions in the Value of Each ASEAN Nation's Vehicle Cable Harness (HS Code 854430) Imports (in US$'000)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Thailand	23,107	19,266	15,160	19,494	20,485	27,448	40,959	46,893	46,805	76,541	118,528	220,149	247,751	260,484
Indonesia	2,496	3,083	5,527	9,843	17,760	12,376	23,998	76,419	65,638	130,715	159,467	105,707	153,383	115,347
Singapore	1,923	2,666	5,494	8,721	9,858	10,924	9,306	8,472	20,604	43,856	71,782	80,522	100,048	99,366
Malaysia	7,990	9,119	6,235	15,274	20,390	22,116	23,414	36,993	27,995	31,832	33,607	33,139	35,256	52,471
Viet Nam	6,978	1,686	5,039	2,026	18,548	46,035	28,867	66,019	69,984	99,329	138,973	100,120	67,233	44,050
Philippines	8,534	11,318	11,236	19,675	19,210	107,183	33,060	38,370	13,501	23,536	23,003	28,305	33,782	26,114
Cambodia	1	0	238	1	0	0	0	0	0	53	0	10	11	6,518
Lao PDR	193	37	972	2,383	3,116	4,284	3,809	4,459	2,504	5,215	4,110	5,341	5,443	2,982
Myanmar										0	1,134	765	1,442	1,387
Brunei	124	90	121	306		395			978	2,189	776	741	653	398
ASEAN	51,346	47,265	50,022	77,723	109,367	230,761	163,413	277,625	248,009	413,266	551,380	574,799	645,002	609,117

ASEAN = Association of Southeast Asian Nations.
Source: International Trade Centre; compiled by DIR.

Table 6.26. Transitions in the Value of each ASEAN Nation's Seat Component Imports (HS Code 940190) (in US$'000)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Malaysia	38,246	46,856	59,213	73,472	94,249	75,613	90,534	117,853	94,101	147,258	158,725	161,736	174,756	173,478
Thailand	27,762	29,828	48,962	75,549	80,616	90,234	80,925	102,841	78,364	134,335	148,613	181,170	174,997	126,736
Indonesia	2,568	3,424	7,620	12,635	8,994	14,805	40,657	68,552	45,943	76,947	86,556	133,670	136,007	112,069
Viet Nam	606	1,327	3,747	2,760	6,725	16,364	26,440	40,460	32,550	30,191	38,784	34,024	41,323	82,982
Singapore	8,573	11,772	7,508	8,552	8,403	8,718	13,595	19,738	17,973	14,787	18,629	33,606	33,606	28,058
Philippines	7,247	10,935	5,941	3,364	11,491	11,053	8,085	10,782	8,017	10,509	20,314	18,101	18,438	18,433
Myanmar										49	386	756	617	1,109
Cambodia	17	15	27	60	31	47	36	58	3	11	2	34	151	580
Lao PDR		2	6	43	6	2	88	44	7	35	41	192	258	385
Brunei	343	564	312	1,597		51			3,511	1,193	425	917	772	365
ASEAN	85,362	104,723	133,336	178,032	210,515	216,887	260,360	360,328	280,469	415,315	472,475	564,206	580,925	544,195

ASEAN = Association of Southeast Asian Nations.
Source: International Trade Centre; compiled by DIR.

Labour costs in Lao PDR are lower than in its neighbouring countries. The Japan External Trade Organization (JETRO) surveyed the labour costs of seven cities (including Vientiane) in countries around Lao PDR,[27] and found that Vientiane had the lowest worker and engineer costs and was second only to Da Nang and Phnom Penh

[27] Data from JETRO database.

in terms of the personnel costs of middle management. Compared with Bangkok, Lao workers and engineers are about one-fourth the cost and middle management is about half the cost.

Table 6.27. A Comparison of Labour Costs in Lao PDR and Neighbouring Countries (US$)

	Bangkok	Yangon	Phnom Penh	Vientiane
Workers	6,997	2,062	1,887	1,705
Engineers	12,229	4,700	3,996	2,959
Middle Management	24,709	12,312	9,054	12,062

Source: Data from JETRO database; compiled by DIR.
Note: Overall annual cost (includes basic wages, benefits, social insurance, overtime costs, and bonuses).

Table 6.28. A Comparison of Power Costs in Lao PDR and Neighbouring Countries (US$/kWh)

Bangkok	Yangon	Phnom Penh	Vientiane
0.07–0.14	0.10–0.15	0.17–0.18	0.08–0.09

Source: Data from JETRO database; compiled by DIR.
Note: Industrial power costs (manufacturing, per kWh).

Lao PDR and Thailand are linguistically and culturally similar, and the two countries have a strong affinity. The Lao and Thai languages are much the same, and many Lao people understand the Thai language as they tend to watch Thai television programmes. Interviews with Japanese corporations advancing into Lao PDR frequently mention that Lao PDR is an advantageous option in terms of cost-cutting potential because it is easy for Thai managers to manage factories in Lao PDR and personnel can be trained as easily as in training sessions in Thailand.

Furthermore, compared with Myanmar, the access roads from Lao PDR to Bangkok are in relatively good condition, which reduces product damage and turnaround time. Therefore, the future will be promising if these advantages are capitalised on, and if there is further incorporation of labour-intensive sectors, such as cable harness and automobile seat cover manufacturing.

The domestic motorcycle market is similarly expected to expand, and it is believed that it would be a vital step to incorporate labour-intensive sectors of production, such as motorcycle components (seats and instrument panel assemblies), for export as well as for supply to the domestic market.

However, Lao PDR has a small population and many workers go to Thailand for work. Therefore, assembling a labour force on a scale of several thousand workers presents logistical and economic difficulties. Interviews with Japanese corporations operating in Lao PDR frequently point out that it is probably realistic to operate on a smaller scale of about 200 to 300 people.

6.5.4. Future challenges

Automobile components are used in machines that are responsible for protecting people's lives, and they are therefore required to be of high quality and reliability. An automobile industry comprises not only finished automobile makers but also components makers that support them. The automobile industry in Lao PDR at the outset should aim to participate in automobile production networks centring on Thailand as components makers. For Lao PDR to construct and expand a value chain of automobile components with Thailand, the following points are crucial:

6.5.4.1. A stable power supply

The interviews conducted in Lao PDR generally indicate that although power outages are infrequent, problems with the power grid do cause blackouts due to strong thunderstorms during the rainy season. Momentary power outages and changes in voltage affect the quality of some automobile components and can lead to mechanical malfunction. To ensure that the produced components are reliable, automobile manufacturers require component manufacturers to satisfy certain standards in the work environment. Cable harness manufacturing processes must conform to a certain standard of brightness (lighting) provided to the factory workers and a stable power

supply is necessary to ensure that level of lighting. An affordable and stable power supply would potentially increase Lao PDR's competitiveness.

6.5.4.2. Improved road conditions

Improvements are under way on the highways that connect Lao PDR to Thailand. However, it has been pointed out that problems regarding the repair and maintenance methods cause the road conditions to deteriorate after the annual rainy season. Depending on the severity of the conditions, bad roads may also damage the products. Therefore, it is crucial to improve road maintenance methods and the overall road quality.

6.6. Tourism

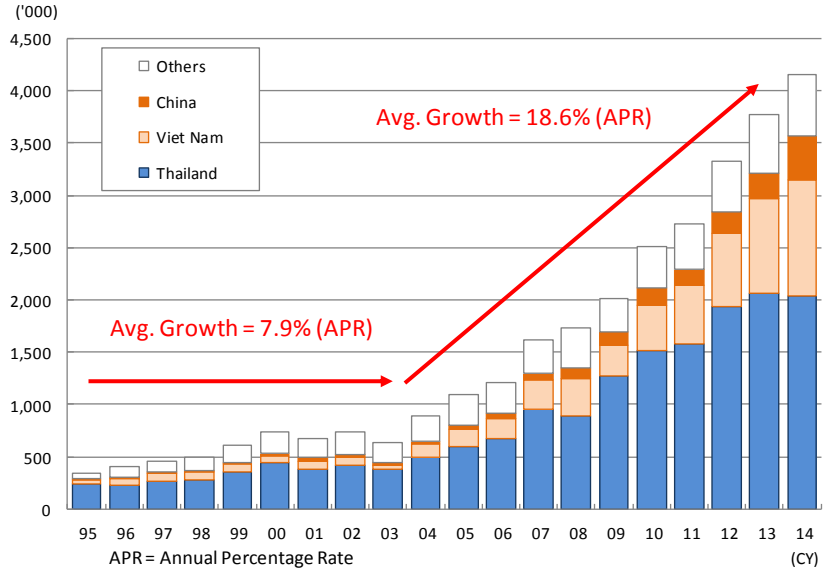
6.6.1. Outline of the tourism industry

6.6.1.1. Number of visitors

The number of foreign visitors to Lao PDR has been increasing since 2004. After hovering at around 500,000 per year up until 2003, it has grown at an annual rate of 18.6 percent ever since. Breaking the numbers down by country, the increase in visitors from Thailand, Viet Nam, and China is particularly striking.

In 2014, 4.16 million foreign visitors came to Lao PDR. In comparison with the other ASEAN nations, this is fewer visitors than Malaysia (27.44 million) and Thailand (24.81 million), but it is very similar to Myanmar (3.08 million), which is rich in Buddhist historical sites such as Shwedagon Pagoda and Bagan, and Cambodia (4.50 million), which has Angkor Wat.

Figure 6.25. International Visitor Arrivals



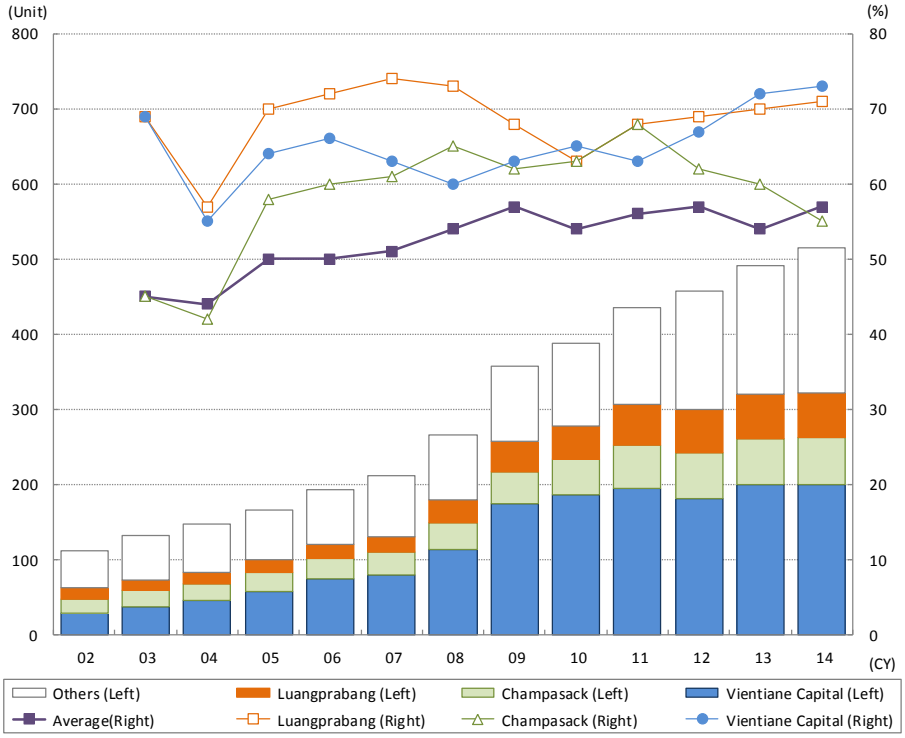
Avg. = average.
Source: Lao Statistics Bureau; compiled by DIR.

6.6.1.2. The tourism market

The number of hotels in Lao PDR has grown along with the increasing number of visitors. In the decade between 2004 and 2014, the number of hotels rose from 148 to 515, increasing at an average annual rate of 13.3 percent. These hotels are mainly concentrated in three areas out of the country's 16 provinces and capital city: Vientiane (the capital city), Champasack Province (where the southern central city of Pakse is located), and the tourist city of Luang Prabang in the province of the same name. These three places account for approximately 60 percent of the country's hotels.

Partly because the number of hotels has grown at almost the same pace as the number of visiting tourists, occupancy rates have hovered steadily at around 55 percent since 2008. Although this level is low compared with neighbouring Cambodia (which had an occupancy rate of 67.6 percent in 2014), interviews with those in the Lao hotel industry indicate that they can still turn a profit with occupancy at around 60 percent because of the country's low labour and other administrative costs relative to other ASEAN nations.

Figure 6.26. Number of Hotels and Hotel Room Occupancy Rate



Source: Lao Statistics Bureau; compiled by DIR.

Vientiane Capital, and the tourist city of Luang Prabang have the highest occupancy rates of all the regions. Both of these cities are receiving more and more foreign visitors, and boasted occupancy rates of over 70 percent in 2014.

6.6.1.3. Purposes of and types of visitors to Lao PDR

Comparing the features of Lao PDR's tourist market with those of other ASEAN countries on the basis of 'purpose' of visit and 'type of visitor,' we can see that the Lao market relies heavily on leisure spending and foreign visitors. Figure 6.27 shows tourism-related consumption in different countries with the horizontal axis representing the percentage of consumption for leisure purposes and the vertical axis representing the percentage of consumption by foreign visitors.

Figure 6.27. Comparison among ASEAN Countries

Source: World Travel & Tourism Council; compiled by DIR.

This data shows that (1) in Singapore and Malaysia, which have high income levels, there is a high percentage of business spending within tourism consumption, whereas in low-income countries with fixed tourist sites like Lao PDR, leisure spending is greater than business spending; and (2) tourism consumption in populous countries such as Indonesia and the Philippines centres around domestic tourists, whereas tourism consumption in low-population countries such as Lao PDR, Cambodia, and Singapore centres around foreign tourists.

The Lao tourism market's features of reliance on leisure spending and foreign tourists are shared by the markets in Cambodia and Thailand.

6.6.2. Lao PDR government policies

According to the 7th Five Year Plan (pp.125), the government regarded the tourism sector as one of important industries in the short and long terms. Its stated targets for 'Tourism' for 2015 are as follows:

- ✓ 'The aim should be to increase the annual inflow of tourists to 2.8 million and foreign exchange earnings to approximately US$350 million by 2015.

- ✓ To explore and develop natural, cultural and historic tourist sites: First, build 2 world heritages and 29 national heritages; next, the following districts will be prioritised: Vieng Xay district (Huaphanh), Konepapheng (Champassack), Phongsavan district (Xiengkhuang), Konglor and Namlord caves in Nakai district (Khammuane), Dongnatao district (Savannakhet), and Phoukaokway Mountain (Vientiane Capital), among others.
- ✓ Expand and improve accommodation: increase the number of hotels and the quality of tourist resorts; the aim is to have 300 hotels with 12,000 beds and 850 restaurants to meet the domestic and foreign tourist demand by 2015.
- ✓ Maintain a good atmosphere in Luang Prabang, the world heritage site; double the GDP in Champassack compared to the present by developing tourist infrastructure and promoting Mahanathy Siphandone (Great River and 4,000 islands) as a tourist site, build 10 cable trolleys connecting key islands, promote the Bolevan Plateau to become an additional agricultural and livestock site.
- ✓ To organise an enjoyable Lao Tourism Year 2012.
- ✓ Prepare for the hosting of the ASEAN Tourism Ministerial Tourism Conference and organise the ATF exhibition in 2013 (i.e. ASEAN Tourism Forum 2013).'

6.6.3. Features of the Lao tourism market in comparison with other countries

6.6.3.1. The lowest average spending per foreign visitor of any ASEAN country

Although the features of Lao PDR's tourism market match those of neighbouring Thailand and Cambodia, the profits per visitor are smaller. Figure 6.28 shows the average tourist expenditure per foreign visitor of different countries, calculated by taking World Travel & Tourism Council data on consumption by foreign travellers (including business travellers) and dividing by the number of visitors from abroad. This data reveals that at US$157, average expenditure per person travelling to Lao PDR in 2014 was the lowest among all ASEAN countries. It was less than half of Myanmar's expenditure (US$383) and less than a quarter of Cambodia's (US$711).

One reason for the large gap in the data of Lao PDR and Cambodia is a difference in how the numbers were defined. The figure for total number of foreign visitors in Lao PDR includes those on day trips from its surrounding countries (Thailand, China, Viet Nam, and Cambodia), but the figure for Cambodia does not include these visitors. In 2014, 4.16 million foreigners visited Lao PDR; 1.30 million, or approximately 30 percent, came on day trips from surrounding countries.

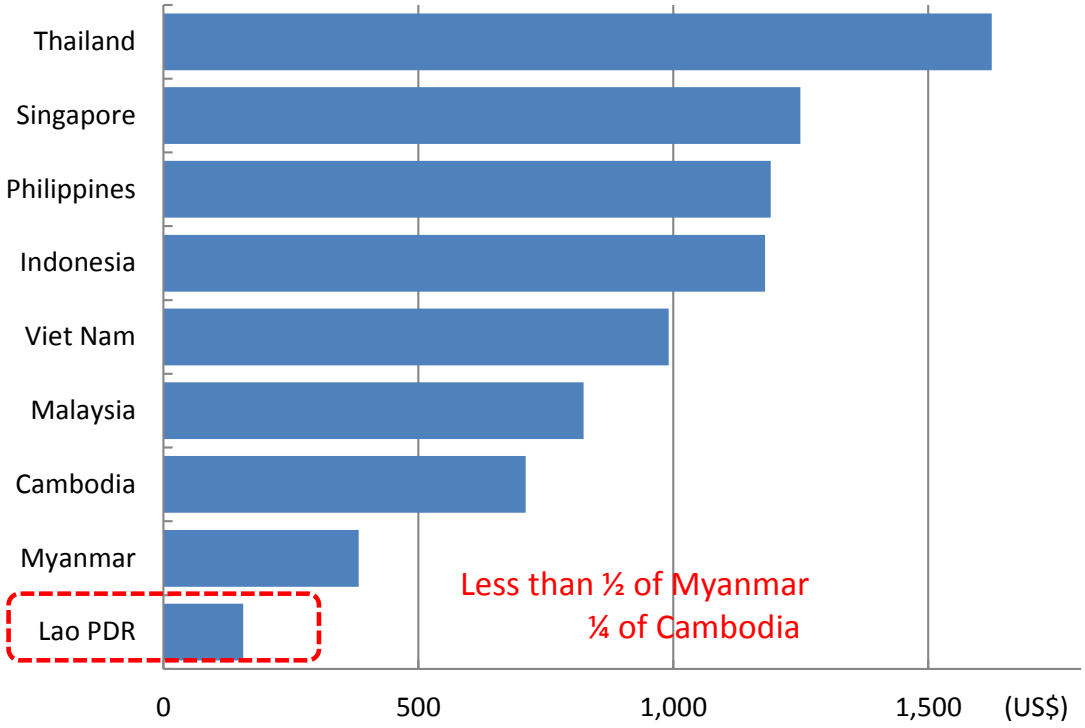
Looking at the average length of stay of foreign visitors, the Cambodian average is 6.5 days versus the Lao average of 4.9, approximately a 1.5-day difference. However, if we exclude day-trip visitors to Lao PDR from our base, the average becomes 6.7 days (DIR estimate), which is not very different from Cambodia's.

Nonetheless, even using this figure that excludes day travellers, the average expenditure in Lao PDR is still no more than about US$230, which is only one-third of Cambodia's average. Some reasons given for why average expenditure in Lao PDR is lower than in other countries are: (1) Lao PDR's economic development lags behind Thailand's and Singapore's, translating into lower price levels; (2) the admission fees for tourist facilities in Lao PDR are generally low; and (3) opportunities to profit from dining and services providing uniquely Lao experiences have not been well developed.

6.6.3.2. Few (direct) international flights

Lao PDR has little airplane access to its fellow ASEAN countries or other regions of Asia. When travellers consider touring ruins in Indochina, they either choose countries with direct flights or they plan journeys centred on Thailand that has many flights to other places within the region. However, looking at the current number of routes, we see that most of them choose places like Thailand and Cambodia, with few possibilities for excursions to Lao PDR.

Figure 6.28. Average Tourist Expenditure per Foreign Visitor (Comparison between ASEAN Countries)



Source: World Travel & Tourism Council, country statistics; compiled by DIR.

Comparing the number of direct flights and destinations at the major international airports of Cambodia versus Lao PDR as of November 2015, Lao PDR has more flights to Hanoi (Viet Nam), but Cambodia leaves Lao PDR far behind in the number of flights it has to other major ASEAN cities such as Ho Chi Minh (Viet Nam), Bangkok (Thailand), Kuala Lumpur (Malaysia), and Singapore. Cambodia also has more convenient flight availability to destinations outside of the ASEAN region, such as mainland China, Hong Kong, and Taiwan.

Table 6.29. Number of International Flights per Week at Major Airports in Lao PDR and Cambodia

(Unit: Number of service)			Lao PDR				Cambodia		
			Vientiane	Luang Prabang	Pakse	Total	Phnom Penh	Siem Reap	Total
ASEAN	Thailand	Bangkok	35	29	-	64	69	63	132
		Chiangmai	-	7	-	7	-	-	0
	Viet Nam	Hanoi	17	19	-	36	-	29	29
		Ho Chi Minh	-	-	3	3	29	44	73
		Da Nang	-	-	-	0	-	9	9
		Duong Dong	-	-	-	0	-	3	3
	Singapore	Singapore	3	-	-	3	30	15	45
	Malaysia	Kuala Lumpur	3	-	-	3	28	16	44
	Philippines	Manila	-	-	-	0	-	4	4
	Lao PDR	Vientiane					10	-	10
		Luang Prabang					-	10	10
		Pakse					-	10	10
	Cambodia	Phnom Penh	10	-	-	10			
		Siem Reap	-	10	10	20			
	Sub-total		68	65	13	146	166	203	369
Asia	Korea	Seoul	15	3	-	18	14	23	37
		Pusan	3	-	-	3	-	6	6
	China	Guangzhou	3	-	-	3	17	18	35
		Kunming	12	-	-	12	-	3	3
		Shanghai	-	-	-	0	8	15	23
		Beijing	-	-	-	0	-	7	7
		Wuhan	-	-	-	0	-	3	3
		Chongqing	-	-	-	0	1	2	3
		Nanning	2	-	-	2	2	2	4
		Chengdu	-	2	-	2	-	2	2
		Xiamen	-	-	-	0	-	2	2
		Jinghong	-	2	-	2	-	-	0
		Guiyang	-	-	-	0	-	1	1
		Ningbo	-	-	-	0	-	1	1
		Changzhou	1	-	-	1	-	-	0
	Hong Kong	Hong Kong	-	-	-	0	12	17	29
	Taiwan	Taipei	-	-	-	0	12	3	15
	Sub-total		36	7	0	43	66	105	171
Total			104	72	13	189	232	308	540

Source: Data on the FlyTeam website (http://flyteam.jp/); compiled by DIR.

6.6.3.3. Seasonal fluctuation is relatively low, but summer does not draw visitors

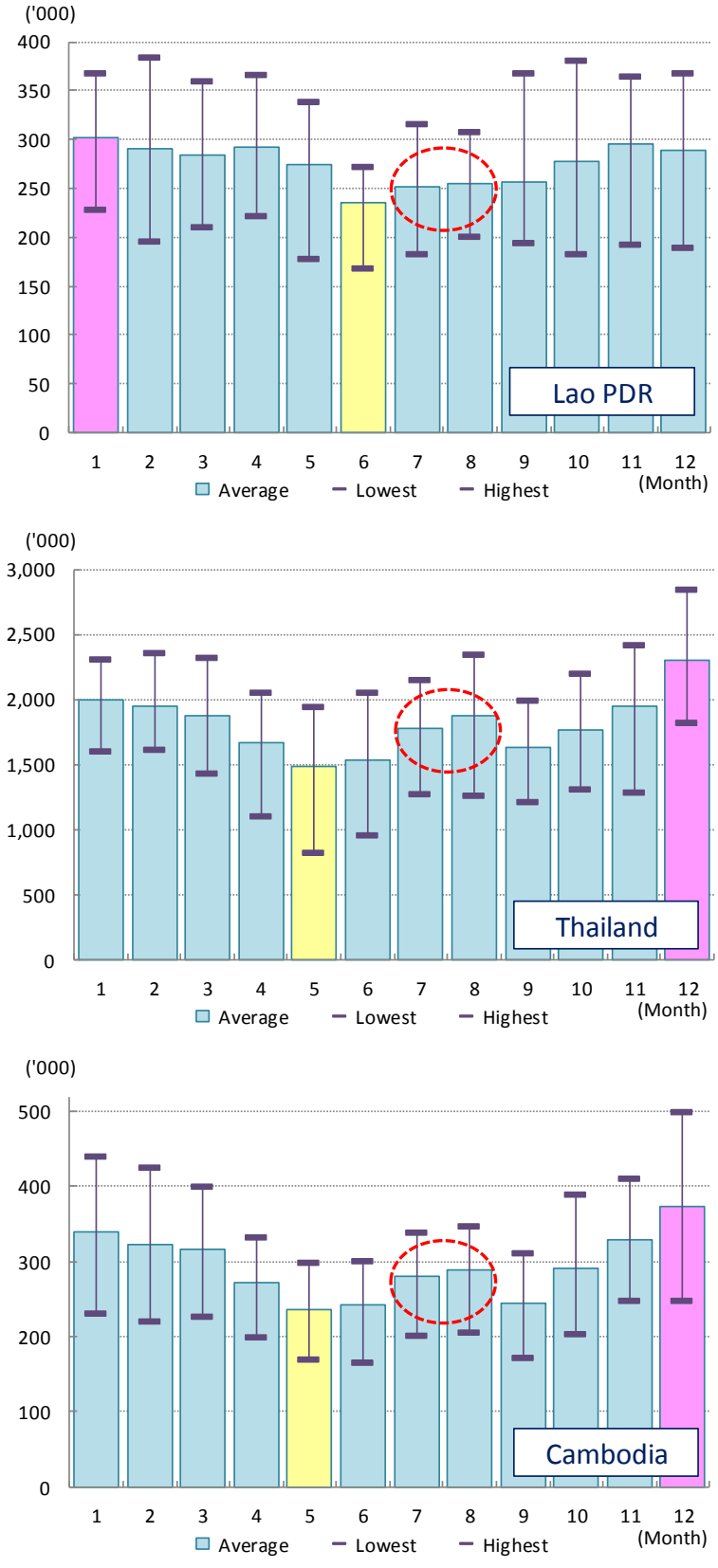
Breaking down the number of visitors by month, Lao PDR has more visitors in the dry season (November–February) and fewer in the wet season (June–October). While the same holds true in neighbouring Thailand and Cambodia, the data indicates that (1) the difference between the peak and trough of Lao PDR's visitor numbers is not as large as for Cambodia and Thailand, and (2) even though the numbers for Thailand and Cambodia recover in the summer vacation season of July and August, there is no noticeable increase in Lao PDR.

Based on the average values of five years of data from 2010 to 2014, the ratio of visitors in the month with the lowest number of visitors versus the peak month was 78.3 percent in Lao PDR, which is high compared with Cambodia (63.7 percent) and Thailand (64.4 percent).

A large difference between the peak and trough months makes it difficult to achieve stable hotel occupancy rates from month to month. When there is a low-occupancy season, one cannot easily recoup the initial investment required for a hotel's construction unless the room rates are set a bit higher (or the marginal profit rate per guest is set higher). On the other hand, exact prediction of when the off-peak season will occur makes it easier for hotels to come up with strategies to attract guests. For example, they can capture business demand for events such as seminars and sales fairs, or they can focus on a few key countries and run promotions aimed at tourists there.

Because Lao PDR's seasonal fluctuation is relatively low compared with Thailand and Cambodia, it can maintain stable hotel occupancy rates more easily. However, targeted campaigns to attract guests in May and June are unlikely to be as effective in Lao PDR as in those two countries.

Figure 6.29. Visitor Arrivals by Month, 2010–2014



Source: Country statistics; compiled by DIR.

For Thailand and Cambodia, looking at the increase in visitors by country for the lowest-visitor months of May through August (Table 6.30), we see that the increase in visitors from China, Japan, Korea, and France was pronounced. This means that Lao PDR, where the increase in visitors from May to August has been limited, is not successfully engaging tourists from these four countries.

Table 6.30. Difference in Visitor Arrivals from May to August (2010–2014)

	To Thailand		To Cambodia	
Rank	Country	Person	Country	Person
1	China	+94,535	Japan	+8,701
2	Japan	+51,050	China	+8,417
3	Korea	+36,665	Korea	+6,774
4	Malaysia	+34,858	France	+5,519
5	France	+21,072	Lao PDR	+4,643

Source: Country statistics; compiled by DIR.

6.6.4. Promising scenarios

6.6.4.1. Appealing 'key visuals' for core markets (Thailand, Viet Nam, and China)

Lao PDR receives many visitors from Thailand, Viet Nam, and China, and given the upward trend in recent years, we can expect these numbers to continue increasing. However, to create repeat visitors as well as try to win new visitors through word of mouth, it is necessary to clearly demonstrate through 'key visuals' experiences and concepts travellers from Thailand, Viet Nam, and China can encounter in Lao PDR that they cannot in their home countries.

The North African country of Tunisia, for example, has key visuals that brand it as 'a country where you can experience Roman ruins, the desert, and the sea all in one trip.' Neither the scale nor the fame of Tunisia's Roman ruins, desert, or sea views are as great as those in other countries. Italy is more renowned for Roman ruins, Libya and Morocco are more famously associated with the Sahara Desert, and Greece and Italy are more famously associated with the Mediterranean Sea. However, Tunisia's

advantage as a tourist destination is that it lets you experience all three of these sites within a relatively small area.

Looking at Tunisia's example, a potential theme for Lao PDR's key visuals could be: 'a country where you can easily experience Buddhist ruins (religion), caverns and waterfalls (nature), and trekking (activity).'

Figure 6.30. Key Visuals of Tunisia

Source: http://gotunisia.jp/recommend/standard

6.6.4.2. Attracting visitors from Japan, Korea, and China during the summer vacation season (July–August)

According to hotel companies in Luang Prabang, there are many tourists from Western countries in the peak season between November and March, and occupancy apparently reaches 100 percent at times. One feature of Western tourists that they mentioned was that these visitors acted early, often making reservations a year in advance of their trips. Therefore, we can expect generating additional demand (visitors) during the peak season to be no easy task.

In the off-season (April to October), it seems promising to target July and August, which is when visitors to Thailand and Cambodia temporarily increase. Although these months fall in the wet season, it does not rain all day long, and hence this is not a bad time for sightseeing. As far as marketing targets go, it would be reasonable to focus on three countries: China and Korea, which have direct flights to Lao PDR, as well as Japan, which sends many visitors to Thailand.

6.6.5. Future challenges

6.6.5.1 Investigating the needs of travellers from different countries

An analysis of the characteristics of tourists from different countries (such as motives for visiting and amounts paid for different expenses) is important. For example, according to the Japan Tourism Agency's 'Consumption Trend Survey for Foreigners Visiting Japan,' visitors from Asia spend less on hotels than Western visitors do, but they have a tendency to spend more on shopping.

When visitors were asked what they looked forward to before coming to Japan (multiple answers possible), of the 12 ASEAN and other Asian countries/regions listed below, all but India and Korea had over half of the respondents mark 'shopping,' and these Asian countries dominated the top 10 in terms of spending on shopping. Asian visitors rarely marked 'experience Japanese history/culture,' with Korea, Hong Kong, China, and Taiwan being the bottom four countries/regions in this category. No ASEAN countries rose above the middle of the range on this score.

If this type of survey were periodically conducted in Lao PDR, we would be able to gauge the broad strokes of customer needs by country, making it possible to efficiently prepare the facilities and plans needed to bring in more visitors.

Table 6.31. Trip Spending of Japanese Tourists by Expense Category (2014)

		Shopping		Accommodation		Meals		Transportation		Total	
		US$	(Rank)	US$	(Rank)	US$	(Rank)	US$	(Rank)	US$	(Rank)
ASEAN	Viet Nam	740	(2)	531	(8)	453	(1)	198	(8)	1,981	(1)
	Singapore	379	(8)	438	(10)	324	(10)	130	(13)	1,298	(10)
	Thailand	468	(4)	340	(14)	236	(13)	124	(15)	1,217	(13)
	Malaysia	396	(6)	392	(11)	234	(14)	154	(11)	1,212	(14)
	Indonesia	313	(10)	311	(15)	182	(17)	155	(10)	999	(16)
	Philippines	283	(11)	258	(17)	224	(15)	94	(17)	877	(17)
Asia (Ex. ASEAN)	China	1,062	(1)	372	(13)	329	(9)	131	(12)	1,931	(2)
	Australia	326	(9)	779	(1)	436	(2)	281	(1)	1,899	(3)
	India	241	(13)	522	(9)	396	(3)	219	(4)	1,396	(8)
	Hong Kong	430	(5)	383	(12)	265	(12)	128	(14)	1,233	(12)
	Taiwan	388	(7)	309	(16)	211	(16)	105	(16)	1,044	(15)
	Korea	168	(18)	207	(18)	160	(18)	76	(18)	632	(18)
America	Canada	240	(14)	596	(5)	341	(7)	208	(5)	1,422	(7)
	US	191	(16)	598	(4)	353	(6)	204	(7)	1,378	(9)
Europe	Russia	525	(3)	573	(6)	336	(8)	171	(9)	1,680	(4)
	France	277	(12)	649	(3)	381	(5)	275	(2)	1,622	(5)
	UK	226	(15)	676	(2)	386	(4)	238	(3)	1,560	(6)
	Germany	176	(17)	548	(7)	282	(11)	205	(6)	1,240	(11)
Others	Others	318		610		422		240		1,632	

US = United States; UK = United Kingdom.
Note: Calculated with an exchange rate of $1 = ¥120. The sum of the categories listed does not correspond exactly to total trip spending.
Source: Japan Tourism Agency (2015); compiled by DIR.

6.6.5.2. Improving sanitation, etc.

Looking at the promising scenario mentioned in Sub-section 6.6.3.2 above ('Attracting Visitors from Japan, Korea, and China during Summer Vacation Season'), at present, Lao PDR particularly lags in attracting new visitors from Japan, which has no direct flight to Lao PDR. To effectively market to the Japanese audience, it is important to understand the sentiments of Japanese tourists who travel abroad. Improving overall sanitation is critical in this regard.

The Japanese market research company Citation Japan, in its March 2014 'Study on Preparations for Travel Abroad,' came up with the top three issues that took Japanese tourists aback when travelling abroad – 'toilet-related issues' (66.8 percent), 'sanitation issues' (65.5 percent), and 'public safety issues' (62.4 percent).[28]

[28] Citation Japan Co., Ltd.'s March 2014 'Study on Preparations for Travel Abroad.'

Although some cafés and restaurants in Lao PDR's cities have installed air-conditioned restrooms in recent times, many public toilets at tourist facilities are not very sanitary. For example, once you close the door it may be dark inside even during the daytime; the system of using a bucket of water to flush surely lowers the satisfaction felt by tourists from Western countries as well.

Figure 6.31. Toilet at Tat Kuangsi Falls (Tat Kuangsi, Luang Prabang)

Source: DIR.

6.6.5.3. Relaxing the procedure for applying for a guided tour

Package tour offers by travel agencies are an effective way to attract more foreign tourists. However, under the current rules, to tour Lao PDR with a guide, you need to apply for a 'sightseeing permit' in advance. To obtain it you need to declare: (1) your schedule, (2) the passport information of the participant(s), (3) the hotel where you will be staying, (4) the name of your guide, and (5) the name of your driver.

Because the process takes about a week, it is highly likely that you will not make it in time if information gathering takes too long or your plans change at the last minute. It is also inconvenient because the application office is closed on weekends. Permit applications that must be filled out in advance are also a problem for travel agencies because independent customers are apt to request last-minute changes to their accommodations. If this process were simplified or made more convenient, travel agencies could surely plan more package tours.

6.6.5.4. Developing the airline industry

To develop the tourism industry in Lao PDR and capture the growth within the country, it is important that domestic airline service be upgraded to international standards. This would require not only introducing newer Western made aircrafts and upgrading the airport infrastructure, but also making the national carriers obtain international standard certification that demonstrates membership of an international airline organisation. The development of airlines in Lao PDR would also help improve logistics connectivity and stimulate export and import movements.

6.7. Finance

6.7.1. The finance sector

6.7.1.1. Overview

The financial sector functions as a key form of infrastructural support for the development of all other industries. As in most developing economies, most funding

is secured via its banking sector in Lao PDR. To illustrate this, total credits from commercial banks amounted to KN40 trillion, equivalent to 43 percent of Lao PDR's GDP by the end of 2014.

The banking sector is one of the sectors that grew rapidly and distinctly under the 7th Five Year Plan (2011–2015). This is because of the government made much effort to create better conditions, making it easier for banks to do business. In particular, the law and regulations have been improved to facilitate this sector, enabling it to support industrial and commercial activities through expanding bank credit.

Despite the banking sector's ability to provide funding, Lao PDR's capital markets remain at an early stage of development. In terms of equity finance, the Lao Securities Exchange has merely five listed companies, with a total market capitalisation of KN12 trillion at the end of 2015. Moreover, 82 percent of Lao PDR's market capitalisation is attributable to a single company (an electricity generation company, EDL–Gen). Although a fifth initial public offering (Souvanny Home Center Public Company) took place successfully in 2015, Lao PDR's equity market has yet to start serving a broad range of companies (Table 6.32).

Further illustrating the undeveloped nature of Lao capital markets, the domestic market for debt financing via corporate bonds is virtually non-existent. EDL–Gen's first corporate bond was issued in Thailand as recently as December 2014, though it was issued in Thai baht (B6.5 billion). The first EDL–Gen corporate bond to be issued in Laotian kip had been planned for 2015, but the planned amount of that issuance was merely KN162 billion due to limited market depth.

Although Lao PDR's capital markets have begun to develop in recent years, the banking sector remains the largest channel – in terms of both size and outreach – through which clients secure funds.

Table 6.32. LSX's Listed Companies

Abbreviation	Name	Listing	Market Cap. (KN bn, end 2015)
BCEL	Banque pour le Commerce Exterieur Lao Public	Jan. 2011	683
EDL-Gen	EDL Generation Public Company	Jan. 2011	9,824
LWPC	Lao World Public Company	Dec. 2013	291
PTL	Petroleum Trading Lao Public Company	Dec. 2014	705
SVN	Souvanny Home Center Public Company	Dec. 2015	545
(Total)			12,047

LSX = Lao Securities Exchange; Cap. = capitalisation.
Source: LSX Website; compiled by DIR.

6.7.1.2. Composition of the banking sector

Including branches of foreign banks, Lao PDR's banking sector comprised 37 commercial banks as of 2014. The country's central bank, Bank of the Lao PDR (BOL), serves as the supervising authority for the banking sector.

As outlined in Table 6.33, commercial banks are categorised into five groups: (1) State-owned commercial banks are majority-owned by the government. (2) Joint venture banks are mutually owned by local and foreign banks; the three joint venture banks in Lao PDR are jointly owned subsidiaries of the largest state-owned commercial bank, Banque pour le Commerce Exterieur Lao (BCEL). (3) Private banks are privately owned local banking corporations that are not a subsidiary of any foreign bank. (4) Affiliated banks are locally incorporated subsidiaries of foreign banks. (5) The final category is comprised of foreign branches of banks that are incorporated overseas.

Table 6.33. Commercial Banks in Lao PDR (as of December 2014)

		Name	Establishment	Branches	Service Units	Money Changer	ATM
State-owned Commercial Banks	1	Banque pour le Commerce Exterieur Lao	Jan-89	19	64	16	276
	2	Lao Development Bank	Dec-02	18	73	18	171
	3	Agricultural Promotion Bank	Jan-93	17	87	2	60
	4	Nayoby Bank	Sep-06	10	65	0	0
Joint Venture Banks	5	Lao-Viet Bank	Mar-00	5	6	0	30
	6	Banque Franco-Lao	Jul-10	0	19	1	32
	7	China-Lao	Jul-14	0	0	0	0
Private Banks	8	Joint Development Bank	Jul-89	0	13	0	52
	9	Phongsavanh Bank	Feb-07	4	20	0	60
	10	ST Bank	May-09	3	26	0	39
	11	Indochina Bank	Nov-08	2	6	0	22
	12	Booyong Lao Bank	Sep-09	0	0	0	0
	13	Lao Construction Bank	Feb-12	0	1	0	3
	14	Maruhan Japan Bank Lao	Feb-13	0	0	0	2
Affiliated Banks	15	ANZ Lao Bank	Jul-07	0	0	0	21
	16	Acleda Bank Lao Ltd	Feb-08	7	33	0	44
	17	International Commercial Bank	Oct-08	2	0	0	3
	18	RHB Bank	Apr-14	0	0	0	0
	19	Kasikornthai Bank Limited	Oct-14	0	0	0	0
Foreign Branches	20	Bangkok Bank	Feb-93	0	0	0	0
	21	Krung Thai Bank	Feb-93	0	0	0	0
	22	Ayudhya Bank	Apr-94	0	0	0	0
	23	Thai Military bank	Jul-92	0	0	0	0
	24	Siam Commercial Bank	Dec-93	0	0	0	0
	25	Public Bank	Oct-95	0	0	0	1
	26	Public Bank Sikhai Branch	Feb-08	0	0	0	1
	27	Public Bank Savanakhet Branch	Feb-08	0	0	0	1
	28	Ayudhya Bank Savanakhet Branch	Jan-09	0	0	0	0
	29	Sacom Bank	Sep-08	0	2	0	3
	30	Military Commercial Joint Stock Bank	Dec-10	0	0	0	0
	31	ICBC Bank	Feb-12	0	0	0	0
	32	Vietin Bank Lao Branch	Jan-12	0	0	0	2
	33	Saigon-Hanoi Commercial Joint Stock Bank Branch	Sep-12	0	0	0	0
	34	Public Bank Pakse Branch	Oct-12	0	0	0	1
	35	May Bank	Oct-12	0	0	0	2
	36	CIMB Thai	Jun-14	0	0	0	0
	37	Cathay United Bank Vientiane Capital Branch	Nov-14	0	0	0	0
Total				87	415	37	826

ATM = automated teller machine.
Source: Bank of Lao PDR.

State-owned commercial banks account for the majority (62 percent) of deposits in Lao PDR, at KN30.6 trillion. Among these, BCEL accounts for KN21.9 trillion worth of deposits, representing 44 percent of all nationwide deposits. Given that all joint venture banks operate under the auspices of BCEL, this banking group holds more than half of all deposits in Lao PDR.

The Lao banking sector grew dramatically from 2013 to 2014. Both total assets and total deposits expanded by 30 percent, at a rate that far exceeded nominal GDP growth in that period (12 percent).

Table 6.34. Commercial Banks' Assets and Deposits by Category

Total Assets KN bn

	Assets		Share	Growth Rate
	2013	2014	2014	2013−14
State-Owned Commercial Banks + Specialised Banks	32,816	41,818	52%	27%
Joint Venture Banks	6,784	8,128	10%	20%
Private Banks	11,562	14,073	17%	22%
Branches of Foreign Banks	11,109	17,153	21%	54%
Commercial Banks (Total)	62,270	81,171	100%	30%

Total Deposits KN bn

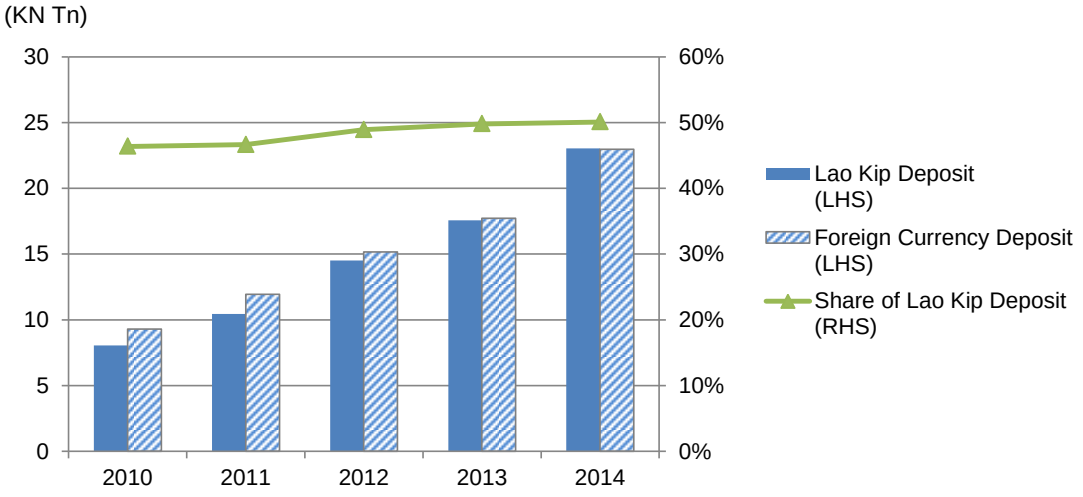
	Deposits		Share	Growth Rate
	2013	2014		2013-14
State-Owned Commercial Banks + Specialised Banks	23,585	30,651	62%	30%
Joint Venture Banks	2,915	4,153	8%	42%
Private Banks	8,443	9,765	20%	16%
Branches of Foreign Banks	3,259	5,235	11%	61%
Commercial Banks (Total)	38,202	49,803	100%	30%

Source: Bank of Lao PDR; compiled by DIR.

6.7.1.3. Share of currencies

As US dollars and Thai baht are commonly circulated in Lao PDR, commercial banks accept deposits and provide loans in those currencies. Although the Laotian kip had become the most common form of currency by the end of 2014, 49.9 percent of commercial banks' deposits were made in foreign currencies at that time.

Figure 6.32. Share of Lao Kip Deposits



Tn = trillion.
Source: Bank of Lao PDR; compiled by DIR.

6.7.1.4. Interest rates and credit

Interest rates are relatively high in Lao PDR. In 2014, the average 1-year fixed deposit rate was 8.58 percent for the Laotian kip. Given an inflation rate of 5.20 percent, this interest rate provided an effective return of 3.38 percent. The interest margin for reliable customers (Customer Type A) was approximately 4 percent for a short-term loan. Moreover, the World Bank indicates that deposit/lending spreads are much higher for local SMEs in Lao PDR than official statistics imply. According to the World Bank, Lao PDR's average spread remains relatively high at about 20 percent. This is roughly twice as high as the average across LDCs.

Although foreign currencies are regularly circulated within Lao PDR, the costs associated with funding those currencies are high for Lao PDR's commercial banks. More precisely, whereas American commercial banks accept 1-year US dollar deposits at lower than 0.1 percent per annum in the United States, the average rate for 1-year Laotian kip deposits in Lao PDR was 4.17 percent in 2014. This imposes a financial burden on those forced to make interest payments. Naturally, customers must pay a higher rate for borrowing US dollars. For example, Type A customers must pay an average of 8.8 percent interest on a 1-year loan in US dollars. It seems that the scarcity of hard currencies makes it difficult for Lao companies to secure funding, which restricts their ability to compete with other ASEAN countries.

Interest rates associated with the Thai baht are similarly higher in Lao PDR than in neighbouring Thailand. As of July 2015, the Thai baht savings deposit rate was 1.29 percent in Lao PDR, but only about 0.5 percent in major Thai banks (e.g. Bangkok Bank, Krung Thai Bank, Kasikornbank, etc.). These differences grow more pronounced as the term of the loan increases. For example, the average 12-month fixed rate was 3.97 percent in Lao PDR but only 1.5 percent with major Thai banks. For 24-month deposits, Lao PDR's rate exceeds 5 percent, whereas in Thailand it is only about 1.7 percent.

Table 6.35. Average Interest Rates (as of July 2015)

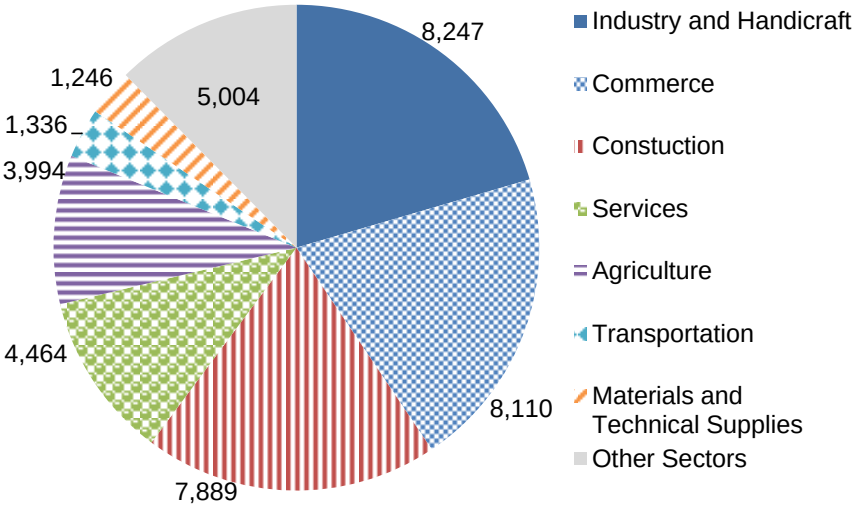
		KN	B	US$
Deposit Rates				
Savings		3.01	1.29	1.39
Fixed:	6 months	6.92	3.02	3.31
	12 months	8.58	3.97	4.17
	24 months	10.91	5.12	5.43
Loan Rates				
Type of Customers: A				
	Short term (1 year)	12.7	9.69	8.8
	Medium term (1−3 years)	12.75	9.7	9.28
	Long term (3−6 years)	13.33	10.52	9.93
Type of Customers: C				
	Short term (1 year)	13.65	9.95	9.83
	Medium term (1−3 years)	14.78	10.53	10.59
	Long term (3−6 years)	14.94	10.83	11.21

KN = Laotian kip; B = Thai baht; US$ = United States dollar.
Source: Bank of Lao PDR; compiled by DIR.

In terms of funding distribution, it seems that commercial banks have distributed credit relatively equally across industrial sectors. The sector benefiting most from credit provided by Lao commercial banks is the industry and handicraft sector. This sector holds roughly KN8.2 trillion in borrowed funds, representing about 20 percent of all credit allocated. Commerce follows closely, with KN8.1 trillion.

When it comes to evaluating credit relative to sector size, however, some interesting phenomena emerge. For example, credit to the construction sector accounts for 19.6 percent of all allocated credit, but the construction sector accounts for only 7.3 percent of GDP. In contrast, the agricultural sector accounts for only 9.9 percent of commercial banks' credit but represents nearly a quarter – 24.9 percent – of Lao PDR's GDP.

Figure 6.33. Sectoral Share of Bank Credit



KN = Laotian kip.
Source: Bank of Lao PDR (2015), Quarterly Report Q4/2014; compiled by DIR.

6.7.2 Lao PDR government policies

6.7.2.1. Existing policies (the 7th Five Year Plan)

The implementation of the 6th Five Year Plan (2006–2010) brought the amendment of banking sector laws and regulations to facilitate market entry and competition among international banks. Most notably, the Law on Commercial Banks passed the National Assembly in 2006. As a result of the passing of the law, Lao PDR has benefited from improved banking service standards owing to modern banking technologies at lower service costs. In addition, the proportion of non-performing loans fell from 10.5 percent in 2006 to less than 4 percent in 2009.

In light of these positive effects, the government has sought to emphasise three policy objectives in the 7th Five Year Plan:

(1) The Facilitation of Lending while Managing NPL Risks

At present, the Lao banking sector is sound in terms of its liquidity and capital base. Despite potential risks associated with the rapid expansion of credit until 2013, the proportion of non-performing loans remains low. Although these risks forced BOL to

adopt a tighter approach, the government nevertheless seeks to support domestic industries with lower interest rates. The slowdown of credit growth induced BOL to lower the rate in August 2015.

The 7th Five Year Plan outlined quantitative targets that the government wished to achieve. Specifically, the 7th Five Year plan described the goal of having total savings and credit within the banking system to respectively equal 39.5 percent and 32.9 percent of GDP. The total savings equalled 53.1 percent of GDP in 2014, well exceeding the target of the 7th Five Year Plan. Total credit similarly exceeded expectations, equalling 43.0 percent of GDP in 2014.

(2) Promotion of Laotian Kip Circulation

As described above, US dollars and Thai baht are widely circulated within Lao PDR. However, the government has promoted greater use of the national currency, the kip, through macroeconomic stability, particularly steady exchange rates and sufficient foreign reserve.

Like its targets related to savings and credit, the 7th Five Year Plan also described the goal of increasing Laotian kip deposits such that they account for no less than half of all deposits by 2015. At the end of 2014, Laotian kip deposits accounted for 50.1 percent of all deposits, thus achieving the 7th Five Year Plan's target early.

Despite this success of the 7th Five Year Plan, there have been failures as well. The plan described an objective of securing six months of imports as a foreign reserve; this target has not been met. According to the IMF, in August of 2014, Lao PDR's gross foreign reserves dropped to only one month of imports, rendering the Lao PDR economy vulnerable to external shocks. Although foreign exchange rates have remained relatively stable, Lao officials recognise the necessity to accumulate greater foreign reserves.

(3) Improvement of BOL's Supervisory Capacity

With assistance from the World Bank and the Bank of Thailand, Lao PDR is in the process of adopting the Basel II capital standard. To do so, BOL seeks to strengthen its supervisory capacity and regulatory framework. Recognising BOL's limited supervisory capacity against a growing number of commercial banks, the authorities have suspended new licences to private banks until 2016, when the new licensing policy is to be completed (IMF, 2015).

6.7.2.2. Expected policies (the 8th Five Year Plan)

The 8th Five Year Plan (2016–2020), at the time of writing, suggests that the banking sector will improve in terms of its institutional efficiency to engender smooth financial business transactions, thereby continuing Lao PDR's socio-economic development. It is not explicitly stated how the banking sector should be changed under any particular time restraint. Instead, a discussion of the banking system is included in the context of promoting agricultural development and facilitating SME activities. Furthermore, it is pointed out that Lao banking sector policies are likely to focus more extensively on improving nationwide access to financing.

At the same time, the IMF has indicated that the Lao banking system has intrinsic risks associated with public infrastructure activities. As a result, asset quality reviews could be useful in the Lao context. If Lao PDR were to experience an economic shock, it would be critical to first focus on recapitalisation and balance sheet improvement.

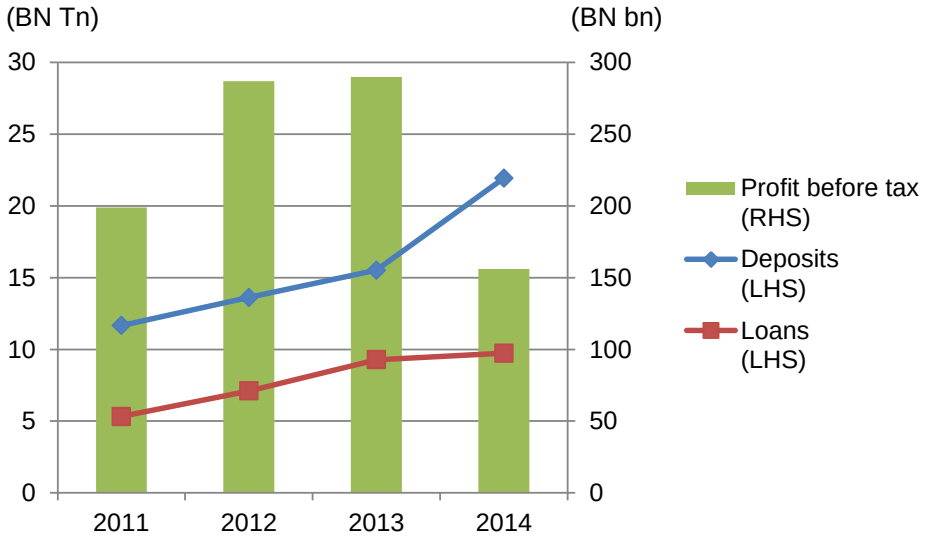
6.7.3. SME finance in Lao PDR

6.7.3.1. Commercial banks

Many local commercial banks are keen to expand their loan portfolios to include SMEs. At the end of 2014, Lao PDR's loan-to-deposit ratio was 88 percent. Because the loan-to-deposit ratio of foreign bank branches often exceeds 100 percent, local banks tend to score lower than the overall average.

Moreover, compared with local commercial banks, foreign banks have the advantage of being able to extend loans to foreign corporations and large businesses. This is largely due to these international networks (and the low cost of funding) that foreign banks maintain, as well as their relative expertise. Given their relative disadvantage vis-à-vis foreign bank branches, local banks should expand their customer base to fully utilise the excess funds available to them from deposits. Local banks possess some advantages over foreign banks, however – they have greater local knowledge, maintain local networks, and can therefore engage in lending to local SMEs.

Figure 6.34. BCEL's Total Deposits, Loans, and Profit



BCEL = Banque pour le Commerce Exterieur Lao; BN = Laotian kip; Tn = trillion; bn = billion; RHS = right-hand side; LHS = left-hand side.
Source: BCEL Annual Report 2014; compiled by DIR.

A concise evaluation of BCEL's balance sheet offers a good illustration (Figure 6.34). BCEL's deposits have increased since 2011. In 2013–2014 alone, BCEL deposits increased from KN15.5 trillion to KN21.9 trillion. Over the same period, the total value of the loans it provided grew only modestly (less than KN0.5 trillion), yielding a loan-to-deposit ratio as low as 44 percent in that period. The case of a major private bank, Joint Development Bank (JDB), shows similar outcomes. Although JDB collected KN692 billion worth of deposits, its loans to customers were valued at KN513 billion, resulting in a loan-to-deposit ratio of 74 percent.

Although they enjoy several advantages, commercial banks also experience difficulties when assessing potential SME customers. These difficulties are likely related to the limited expansion of commercial banks' lending portfolios despite the large pool of potential customers. Interview data suggests that a lack of financial literacy among SMEs is a major hindrance to the expansion of commercial bank portfolios. Many business owners do not have experience in dealing with commercial banks, and therefore do not understand the importance of adhering to the business plans they agreed upon. For example, SME owners often divert funds to their own personal use, thereby limiting the performance of their businesses.

Another issue relates to a lack of documentation. Even when SME owners appreciate the stipulations of the loans they receive, they sometimes fail to present the appropriate documentation and/or evidence for their having taken out those loans. As a result, many SMEs are not registered (World Bank, 2014b).

Lao PDR's poor legal system also discourages commercial banks from extending loans to SMEs, even when the SMEs have sufficient collateral to secure those loans. According to the World Bank (2014b), execution of collateral through the judicial system can take as long as 5 years.

6.7.3.2. Other financing channels

Current conditions in Lao PDR effectively prevent many SMEs from obtaining financing through commercial banks. According to a source from Lao PDR's business field, SMEs often seek out financing from unofficial channels when it is necessary.

One common way to seek unofficial financing is through a 'lease company.' In this case, SMEs can borrow money from lease companies in exchange for properties or certificates. In this way, SME owners can exchange land certificates, cars, or motorbikes in return for access to cash. SME owners often seek out this kind of

financing as an alternative to the lengthy process required to secure funding from commercial banks.

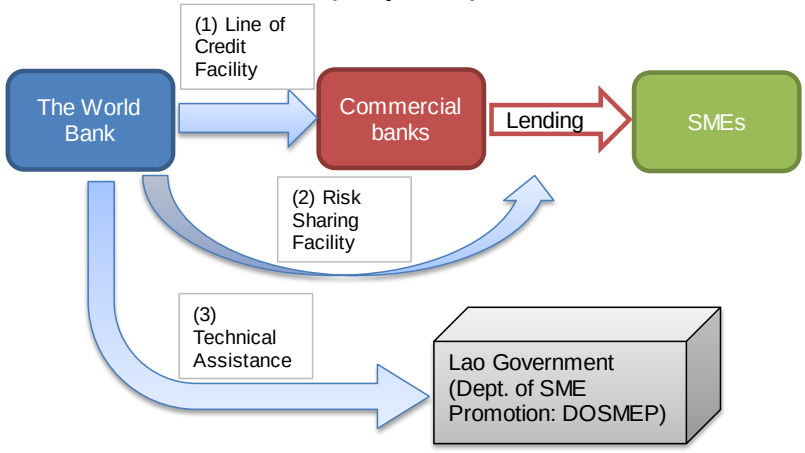
6.7.4. Promising scenarios (SME finance)

6.7.4.1. Securing funds from international organisations

SME financing is a critical element in the development of a balanced economy, and international donors and/or organisations often seek to contribute to this development. The World Bank, for example, started 'the SME Access to Finance Project' in 2014. The objective of the project is to provide long-term funding to SMEs through a 'two-step' loan scheme, in which local bank(s) would provide long-term credit to SMEs by utilising the primary funding sources made available by the World Bank.

As illustrated in Figure 6.35, the project consists of three primary components. Not only does the World Bank provide a Line of Credit Facility to local commercial banks, it also provides a Risk Sharing Facility (i.e. partial credit guarantee) to SME lending, accompanied by technical assistance to the government (Department of SME Promotion: DOSMEP).

Figure 6.35. Components of the World Bank's SME Access to Finance Project (simplified)



SME = small and medium-sized enterprise; DOSMEP = Department of SME Promotion.
Note: (1) Line of Credit Facility is provided to commercial banks through a form of long-term kip deposits of DOSMEP.
Source: DIR from the World Bank (2014b).

Currently, the Line of Credit Facility would be US$12 million (KN96 billion) from the World Bank Group's International Development Association (IDA). Due to the risk-sharing scheme, Lao PDR's commercial banks would bear only 50 percent of the credit risk associated with SME lending. The Risk Sharing Facility would cover 50 percent of US$30 million worth of SME loans at most; Contribution from IDA would be US$3 million, and the International Finance Corporation (IFC) would cover the additional loss of US$12 million.

6.7.4.2. Building the credit assessment capacity of commercial banks

To promote financing for SMEs, it will be crucial for commercial banks to have an effective assessment capacity. As mentioned above, Lao PDR has already welcomed foreign banks and joint ventures, which have helped modernise the Lao banking sector in a number of ways. Some local private banks (e.g. Indochina Bank and Maruhan Japan Bank) have been established by foreign capital, effectively importing knowledge of overseas markets and procedures.

Still, the modernisation of SME finance has been limited, as foreign banks have neither the advantages nor the expectation of profitability in dealing with local SMEs. Given this, Lao PDR must enact another means of improving SME finance skills. One promising avenue is the reception of technical assistance through intragovernmental relations.

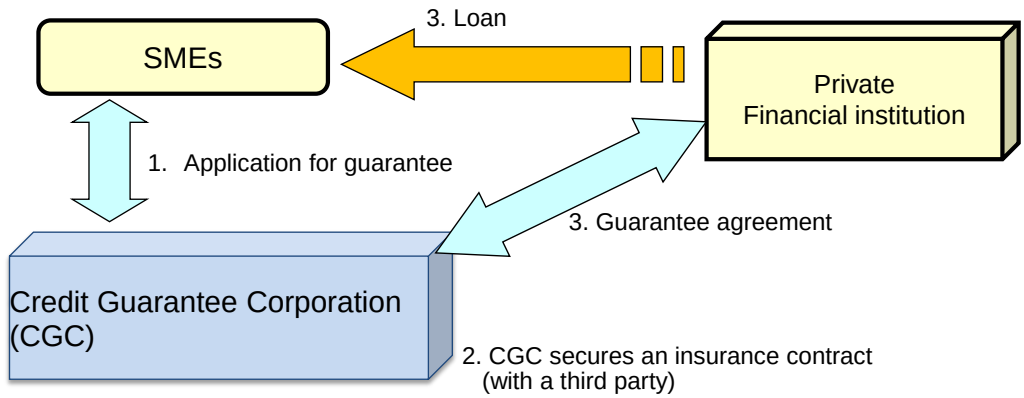
In this regard, the Japanese government (i.e. the Policy Research Institute, Ministry of Finance, Japan: PRI) has engaged in a technical cooperation project on SME finance for Lao Development Bank (LDB) in conjunction with the Japan Finance Corporation, Micro Business and Individual Unit (JFC–Micro). PRI enacted the programme in 2011, and is currently developing a manual for credit analysis for LDB. Once the manual is in use, LDB's standards for SME credit assessment are expected to improve.

6.7.4.3. Establishment of a domestic and region-wide Credit Guarantee System

Due to information asymmetry about the financial conditions of SMEs, private banks are reluctant to take substantial risks in SME finance. This hurdle induces private banks to keep their capital adequacy ratio and reduce lending to SMEs. Even with the capacity building proposed above (Sub-section 6.7.4.2), monitoring costs for SME lending will remain a substantial burden for Lao PDR's commercial banks.

Although it should be established with mid- and long-term visions, a domestic credit guarantee system in Lao PDR can potentially supplement fragile credit capability of SMEs and promote lending of private banks to SMEs. Figure 6.36 shows how the system could be operated.

Figure 6.36. Structure of a Credit Guarantee System



SMEs = small and medium-sized enterprises.
Source: SME Agency, Ministry of Economy, Trade, and Industry (Japan); edited by DIR.

The key point is that Credit Guarantee Corporation (CGC) facilitates SME loans through providing guarantee, while CGC itself manages the risk efficiently by accumulating information on their database. Also, it secures insurance contracts with third parties to minimise the risk of its own default.

In the future, a region-wide credit guarantee system will enable SMEs with cross-border activity to have easier access to finance through cross-border guarantee. The

domestic CGC would be a core actor in the international cooperation among ASEAN countries in sharing Lao companies' credit information and obtaining that of regional companies. By establishing the scheme, Lao companies' access to finance will be much easier in neighbouring countries (e.g. Thailand and Viet Nam), while Lao commercial banks will have safer business opportunities in dealing with foreign companies operating in Lao PDR. Towards that end, the establishment of a domestic CGC will be the very first step.

6.7.4.4. SME capacity building

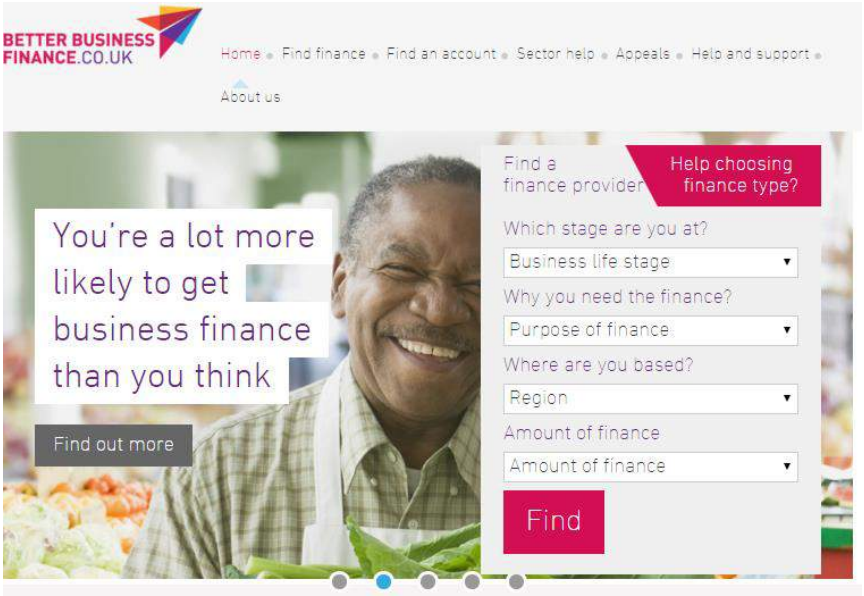
As mentioned above, many SMEs lack the salient knowledge or the documentation that is central to the practice of commercial banking. Given the limitation of human resources, companies fail to prepare credible financial statements and concrete business plans for upcoming years, which are essential in commercial banks' credit assessment. Even if commercial banks have identified funding sources and secured appropriate means of assessment, they will be unable to finance their activities until SMEs prepare themselves to engage in the loan application process.

Given that there are more than 100,000 small enterprises (i.e. 1–19 employees) in Lao PDR, it is impossible to build their respective capacities individually. Rather, mechanisms for improving capacities must be accessible by each SME. For local businesses, Lao National Chamber of Commerce and Industry (LNCCI) and Provincial Chambers of Commerce and Industry (which collectively have more than 1,000 members) would provide a critical platform for capacity building for SMEs.

Moreover, a businessperson suggested that within Lao PDR, information and literature concerning financial literacy are relatively rare. Given the limited time and resources that SMEs can allocate to activities other than their main business operations, introductory brochures and websites are useful sources of knowledge for many foreign SME managers and employees. In Japan, the Japanese Bankers

Association provides loan-related information and manages an advisory counter and telephone line to assist SME personnel. In the United Kingdom, major banks (e.g. Barclays, HSBC, RBS, Lloyds, and Santander) have established a website (betterbusinessfinance.co.uk) designed to provide information and support to SMEs and entrepreneurs online. Commercial banks in Lao PDR could benefit from the development and implementation of such support mechanisms.

Figure 6.37. Example of Banks' Collective Service: betterbusinessfinance.co.uk



Source: http://www.betterbusinessfinance.co.uk/

6.7.5. Future challenges

6.7.5.1. Managing SME finance risks in the banking sector

Financing SMEs not only requires a greater amount of paperwork; it also represents a greater risk than dealing with large, stable businesses. Although the expansion of SME finance is desirable for Lao PDR, it could introduce risks and damage the capacity of Lao banks to compete with their foreign counterparts. If major local banks (e.g. BCEL) are to develop as competitive commercial banks in ASEAN, it is not desirable to put the burden of SME finance equally on them. In that case, some of the government-owned banks (e.g. LDB) should be designated for financing SMEs.

In addition, BOL must strive to maintain stability in the banking sector. Commercial banks must compensate for potential losses with profits secured via successful lending projects. Therefore, commercial banks should not lower the lending rate too aggressively when taking on substantial risk. Even if BOL wishes to promote SME finance, it should not incentivise such an unhealthy practice. Authorities should keep this in mind and similarly strive to balance the stability of the Lao banking sector and the promotion of SME financing.

6.7.5.2. Providing incentives for bookkeeping in SMEs

A large number of SMEs do not currently maintain proper records (i.e. keep transaction documents or financial statements). Unless SMEs have the incentive to compile the documents properly (perhaps through tax/subsidy schemes), SME finance will not develop as a formal business activity. To this end, the improvement of SMEs' operational capacity would allow them to maintain and prepare documents without substantial detraction from normal business activities. These challenges should be addressed primarily by entities like DOSMEP, rather than commercial banks or the BOL.

6.8. Transportation

6.8.1. An overview of transportation

Currently, the transportation system of Lao PDR consists of four types: (1) Mechanised road transport with a length of 33,768 km, handling 80 percent of the total transport volume according to the 7th Five Year Plan (2011–2015). This mode of transport has enabled the supply of goods and passenger transport to all districts throughout the country. (2) Water transport with a length of more than 300 km, accounting for 18 percent of the total transport volume. (3) The air transport sector has 11 airports that handle 2 percent of the total transport volume. (4) Railway covers the 3 km from Nong Khai, Thailand, to Thanaleng, Lao PDR. Currently, it is limited to passenger transportation.

Table 6.36, which highlights domestic distribution, also shows that road transportation is the main distribution mode. For international freight, the impact of water transportation is even less. This is because the Mekong River is divided at Khone Phapheng Falls in the area surrounding the border with Cambodia. The extent of water transportation for international freight is little more than ferries crossing the Mekong River.

Table 6.36. Freight Volume by Domestic Distribution Mode (2014)

	Freight volume (thousand tonnes)	**Freight movement (thousand tonne–km)**
Road	4,962	415,526
Water	1,667	94,700

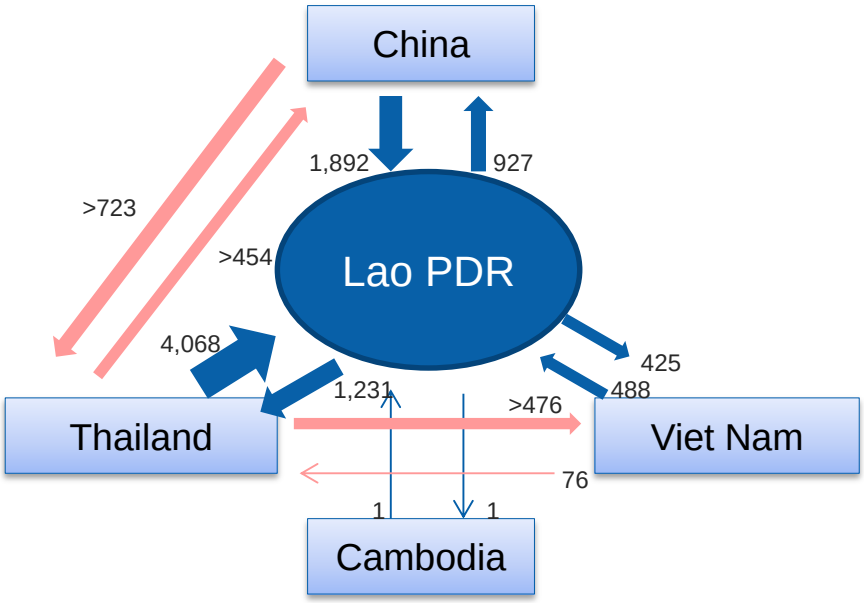
Source: ASEAN Japan Transport Partnership Information Center, May 2015.

6.8.1.1. A large volume of import and transit cargo

A distinguishing feature of Lao PDR is that it is landlocked. The geographical condition of being landlocked is generally considered an impediment to economic development. But looked at from another perspective, it also has the potential to create a transportation hub. Lao PDR borders all of the Greater Mekong Subregion countries, which allows it to strive to be a 'land-linked' country rather than a 'landlocked country.' Lao PDR's status as a land-linked country could result in a large volume of cargo transport between Lao PDR and its neighbouring countries, and a large volume of transit cargo between those neighbouring countries.

As shown in Figure 6.38, comparing trade volumes of exports from and imports into Lao PDR, 2013 already saw substantial volumes of transit cargo. Taking into account the disparities in economic size between Lao PDR and its neighbours, the amount of transit cargo is likely to rise further in the future. It is vital to devise a strategy for allowing this transit cargo to contribute to Lao PDR's economy.

Figure 6.38. Trade Volume and Transit Cargo Volume (million US$, 2013)



Note: Blue arrows signify direct trade with Lao PDR and red lines depict trade via Lao PDR.
Source: ADB and Central Bank of Thailand, compiled by Keola.

The 2014 import/export statistics clearly shows that Lao PDR has a trade deficit. This causes freight volume disparities between outgoing and return trips. The value of imports increased 2.1 times between 2010 and 2014, surpassing the increase of 1.9 times seen in export values during those same years. This freight volume disparity has been worsening.

Table 6.37 lists the top 10 import and export items by the two-digit HS code. Electrical and electronic equipment, the top import item, shot up by a factor of 6 between 2010 and 2014, taking first place from petroleum-based products as of that year. As for other import items that increased, articles of iron and steel (up by a factor of 3.2 in the same period) and meat and edible meat offal (up by a factor of 8.7 in the same period) experienced considerable growth. Petroleum-based products are transported using dedicated vehicles like tankers, whereas steel products are transported using bulk loading. Many of the other items are transported by container.

Table 6.37. Import/Export Value by Product (2014)

Import Product	Import value in 2014 (mil US$)	%	2014 /2010
All products	6,802	100%	108%
Electrical, electronic equipment	1,160	17%	501%
Mineral fuels, oils, distillation products, etc.	1,025	15%	61%
Vehicles other than railway, tramway	966	14%	103%
Machinery, nuclear reactors, boilers, etc.	895	13%	130%
Articles of iron or steel	347	5%	218%
Meat and edible meat offal	208	3%	762%
Iron and steel	194	3%	51%
Plastics and articles thereof	142	2%	90%
Pearls, precious stones, metals, coins, etc.	115	2%	408%
Printed books, newspapers, pictures, etc.	98	1%	672%
Other	1,651	24%	38%

Export Product	Export value in 2014 (mil US$)	%	2014 /2010
All products	3,850	100%	86%
Wood and articles of wood, wood charcoal	1,134	29%	250%
Copper and articles thereof	602	16%	29%
Mineral fuels, oils, distillation products, etc.	572	15%	99%
Ores, slag, and ash	516	13%	23%
Articles of apparel, accessories, not knit or crochet	172	4%	38%
Electrical, electronic equipment	164	4%	606%
Articles of apparel, accessories, knit or crochet	103	3%	-14%
Rubber and articles thereof	80	2%	221%
Tobacco and manufactured tobacco substitutes	77	2%	957%
Coffee, tea, mate, and spices	66	2%	44%
Other	365	9%	60%

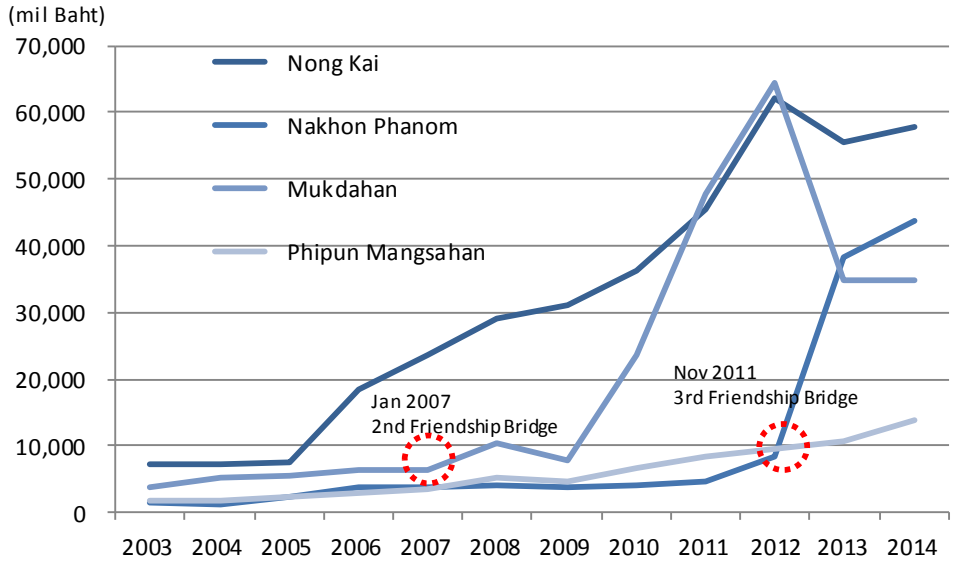
Note: Increase rate is calculated as the value in 2014 divided by the value in 2010 minus one.
Source: International Trade Centre data; compiled by DIR.

It is possible to alleviate the problem of freight disparities using transit cargo. For instance, although the export volume from Lao PDR to Thailand is currently low, this freight disparity could be mitigated by adding transit cargo moving from China to Thailand. This becomes more effective as transit cargo volume grows; the more transit cargo increases, the more beneficial for Lao PDR to the extent that it offers a benefit to the Lao economy.

6.8.1.2. Improving hard infrastructure for border trade

Hard infrastructure for border trade, such as the Thai–Lao Friendship Bridge and the opening of the East–West Economic Corridor, is improving. Four 'friendship bridges' have been completed: from Nong Khai, Thailand, to Thanaleng, Lao PDR, in 1994; from Mukdahan, Thailand, to Savannakhet, Lao PDR, in 2007; from Nakhon Phanom, Thailand, to Thakhek, Lao PDR, in 2011; and from Chiang Khong, Thailand, to Ban Houayxay, Lao PDR, in 2013 (Kunming–Bangkok Expressway). Since damage began to occur along the East–West Economic Corridor around 2008, rehabilitation has been ongoing with the support of other countries. As such hard infrastructure improvements are made, trade along the borders increases steadily (Figure 6.39).

Figure 6.39. Border Trade Value by Route



Note: This figure counted border trade only from Thailand to Lao PDR.
Source: Central Bank of Thailand; compiled by DIR.

Following the completion of the Thakhek Friendship Bridge in 2011, the distribution volume in Thakhek rose, whereas the distribution volume in Savannakhet fell. This was because direct service between Bangkok and Hanoi shifted to a route through Thakhek. The reason for this was that, in addition to the Thakhek route being shorter, the road conditions were poor along the Savannakhet route due to damage on Highway 9. The construction of the Thakhek Friendship Bridge was itself significant in that it provided

a better route for direct service between Bangkok and Hanoi. However, one important point is that as harder infrastructure are built, cost effectiveness gradually decreases.

Although hard infrastructure are not sufficient at present, we should pay attention to both soft and hard infrastructure.

6.8.1.3. Gradual improvement in problems with customs

As far as soft infrastructure is concerned, long-standing problems with customs are gradually being resolved. Although the short business hours of government offices on the Lao side (e.g. 8 a.m. to 4 p.m. with a one-hour lunch break) had been cited as an issue until a few years ago, the Densavan–Lao Bao gates now operate from 7 a.m. to 10 p.m. (without a lunch break) using a three-shift system. It is still pointed out that the business hours of government offices are different, but it is clear that the situation has gradually been improving.

According to the Japan External Trade Organization (JETRO)'s World Business News (14 January 2015), single stop inspections (SSIs) are also improving. As a model case for SSIs, repeated SSI experiments have been run at the Densavan–Lao Bao border of the East–West Economic Corridor since 2005. To be specific, interagency control stations were created; common check areas for these stations were set up; and the customs officials, immigration inspectors, and quarantine inspectors of both countries involved carried out coordinated inspections. In October 2014, the Lao PDR Ministry of Finance and the Viet Nam Ministry of Finance concluded the 'Memorandum on the Implementation of the 4th Phase of SSIs on the Densavan–Lao Bao Border,' resulting in actual implementation of the fourth phase in 2015.

Electronic customs clearance was introduced at main customs offices with the support of the World Bank. According to the World Bank (2015), electronic data interchange customs systems using the Automated System for Customs Data were introduced at 11 main customs offices.

6.8.1.4. Distribution costs and attraction of companies

Distribution costs are a deterrent for foreign companies launching in Lao PDR. For example, when some processes in a Thai factory are transferred to Lao PDR, although labour costs are lowered, distribution costs between Thailand and Lao PDR are added on. How to decrease distribution costs is an important matter not only for distributors but also for the Lao government's strategy for attracting foreign companies.

A round-trip service for Bangkok–Vientiane–Bangkok that uses 40-foot containers costs approximately US$2,000 for a Lao logistics company, including customs costs between Thailand and Lao PDR (according to Suzuki Motoyoshi, Ministry of Planning and Investment, Lao PDR). For example, using this service twice a month to import raw materials and export products would result in a cost of US$4,000. In this case, how many workers would a factory need to pay for the high cost of distribution? According to JETRO (2014), monthly salaries for the working class in Thailand and Lao PDR are US$363 and US$111, respectively. If we assume that the labour productivity per employee in Thailand is double that of Lao PDR, replacing one Thai employee with two Lao employees results in a cost cut of 363 – (111 × 2) = US$141. Accordingly, a midsize factory with more than 56 employees (on the Lao side) would make up for distribution costs – US$4,000.[29] When considering the costs involved in set-up, preparation, and launch, an investor would be likely to require roughly 100 employees (on the Lao side) to make up for all these costs and enjoy affordable labour costs.

6.8.1.5. Lack of consolidation services

A lack of consolidation services is often cited as a factor driving up distribution costs even further. Cargo owners with factories in Lao PDR have voiced dissatisfaction. A consolidation service gathers, consolidates, and ships small cargo that does not fill a whole container. These services need regular shipments to consolidate small cargo but, without sufficient distribution volume, logistics companies are unable to offer the

[29] The factory with 56 employees (on the Lao side) generates US$3,948 cost cut (=56÷2×141).

service. For instance, when goods are transported from Savannakhet to Bangkok, the lack of consolidation services means that a cargo owner must charter a container even if it is only shipping two or three boxes.

There is particularly high demand for consolidation services from small to medium-sized factories. Whereas a large factory may be able to ship enough products to fill a container in a week, one container can be equivalent to one to two months' worth of shipments for a small to medium-sized factory. If the size of the products is small, achieving the shipment amount may take even longer. Long-term stocking of inventory at the factory results in longer lead time. From the perspectives of customer service and proper inventory management, companies realistically charter containers and contract out their freight transportation even when the loading ratio of a container is low.

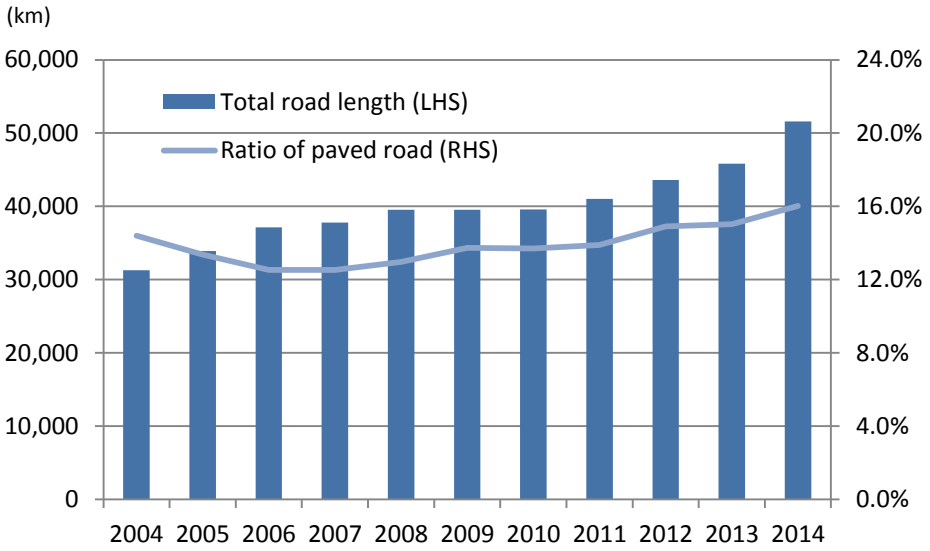
Furthermore, according to interviews with logistics companies in Lao PDR, no consolidation services at all are offered for domestic distribution within Lao PDR or for international distribution to its neighbouring countries. The situation is the same for other logistics companies, as well as the logistics companies interviewed.

6.8.2. Lao PDR government policies

The 7th Five Year Plan on the distribution sector summarised three points: distribution volume, quantitative provision of roads, and qualitative improvements of roads.
The current state of distribution volume is shown by mode, as discussed above, and the goal is to increase distribution volume at an annual rate of 7 percent. However, policies intended to increase distribution volume lean towards hard infrastructure expansions such as those described below.

With regard to quantitative provision of roads, the plan lists multiple road construction and improvement projects. As a result, road length reached 51,596 km in 2014, 1.7 times the 2004 figure. The length of paved roads reached 8,272 km in 2014, 1.8 times the 2004 figure. The percentage of paved roads rose slightly, from 14.4 percent in 2004 to 16.0 percent in 2014. The result has been an expansion of the length of roads nationwide, with roads paved in a well-balanced way and with a focus on main thoroughfares. The plan reveals a strong desire for road improvements, stating that the need for road improvements is huge while paving rates are still low.

Figure 6.40. Progress in Road Improvement



km = kilometre; LHS = left-hand side; RHS = right-hand side.
Source: ASEAN Japan Transport Partnership Information Center, May 2015.

On the qualitative front, the plan points out that some roads, primarily in rural areas, are impassable during the rainy season and that pavement strength is lacking.

Although they were not highlighted in the 7th Five Year Plan, two major railway projects are under way: one between Lao PDR and China, and the other between Lao PDR and Viet Nam.

According to the Vientiane Times (3 December 2015), a 427-km railway construction project connecting Vientiane and the Chinese border began in December 2015. To

pass through the mountainous region in the north, 170 bridges (69 km total) and 72 tunnels (183 km total) are planned; their construction is likely to be extremely difficult. Construction costs will reach US$6 billion, and the project is slated for completion within five years. Passenger trains and distribution trains are planned, and a container station will be built in Vientiane. Generally speaking, robust transportation demand for existing transportation modes such as trucks and buses, and steady, strong expected future transportation demand for trains are necessary conditions for investment in railways. Although China is shouldering 70 percent and Lao PDR only 30 percent of the investment, it is still a large investment of US$1.8 billion.

According to the NNA (17 November 2015), Viet Nam and Lao PDR concluded a memorandum of understanding regarding 'Transportation Cooperation Strategy in 2016–2025 and a Vision for 2030' in August 2015. Although the content of that MOU was primarily geared towards the construction of a Hanoi–Vientiane highway, it also included research into construction of a Vung Ang, Viet Nam–Vientiane railway (approximately 500 km). The Korea International Cooperation Agency has already decided to implement a feasibility study over three years. Although we should wait for the conclusions of the feasibility study for more details, we expect it not to be very feasible because the existing distribution volume to Vung Ang is by no means high.

These two projects may have poor results on investment, and careful judgment is called for. The strategy to invest in railways is likely to attract cargo to Lao PDR. However, we propose below that investment results be carefully assessed and that the development of soft infrastructure is given attention as well. Furthermore, the plan for railway transportation between Bangkok and Vientiane is a project with a high return on investment because only few sections in Lao PDR would require improvement. Although the railway is currently limited to passenger transportation, it has great potential for use in distribution.

6.8.3. Promising scenarios and areas of focus

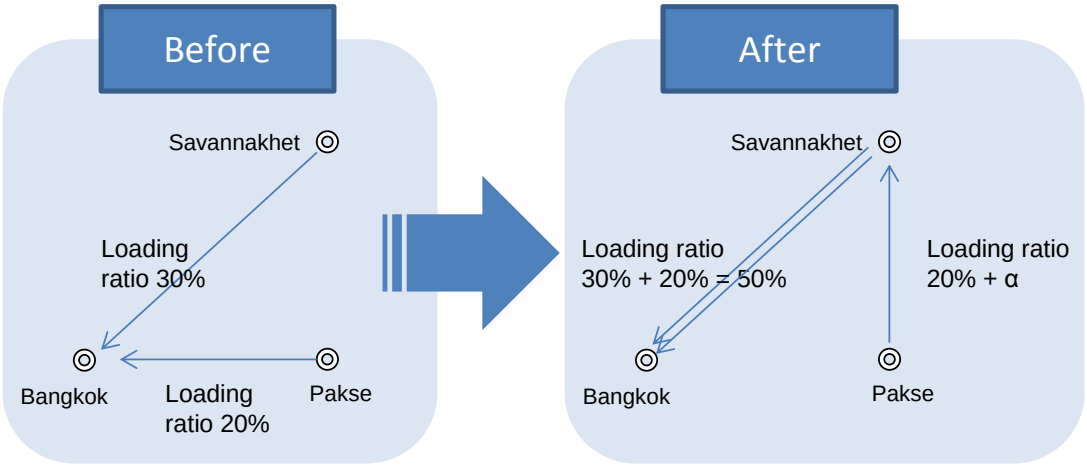
6.8.3.1. Offering consolidation services (Savannakhet Logistics Hub)

The reason distributors are not offering consolidation services despite their importance lies in the profitability of those services. We propose breaking up transportation routes and aggregating small-lot cargo at a single site as suggestions for improving transportation efficiency.

Take the Bangkok–Savannakhet and Bangkok–Pakse routes. Let us assume that the loading ratios when consolidation services were provided along each route were 30 percent and 20 percent, respectively. The Bangkok–Pakse route is set up to include a stop in Savannakhet, a detour of about 200 km, rather than travelling nonstop. In this scenario, the Bangkok–Savannakhet loading ratio improves to 50 percent. Additionally, an improvement on the 20 percent loading ratio of the Bangkok–Pakse route would be expected if it were consolidated with cargo for domestic transport along a Savannakhet–Pakse route. Although the approximately 30 percent increase in transportation distance due to the 200 km detour causes an increase in costs, the improvement in loading ratios would be sufficient to absorb this. Shippers can expect a major reduction in transportation costs by sending their cargo with the goods of other shippers rather than chartering one container for a single company.

Although Bangkok–Pakse route cargo proposed above is sent through Savannakhet, this proposal also aggregates small-lot cargo from various other places in Savannakhet. For instance, the goal of aggregating, reshipping, and sending out all cargo from areas within Lao PDR and neighbouring countries in Savannakhet (i.e. the hub-and-spoke method) is to make the lots from each area larger, as shown in Figure 6.42.

Figure 6.41. Example of Transportation Route Break-up and Cargo Aggregation

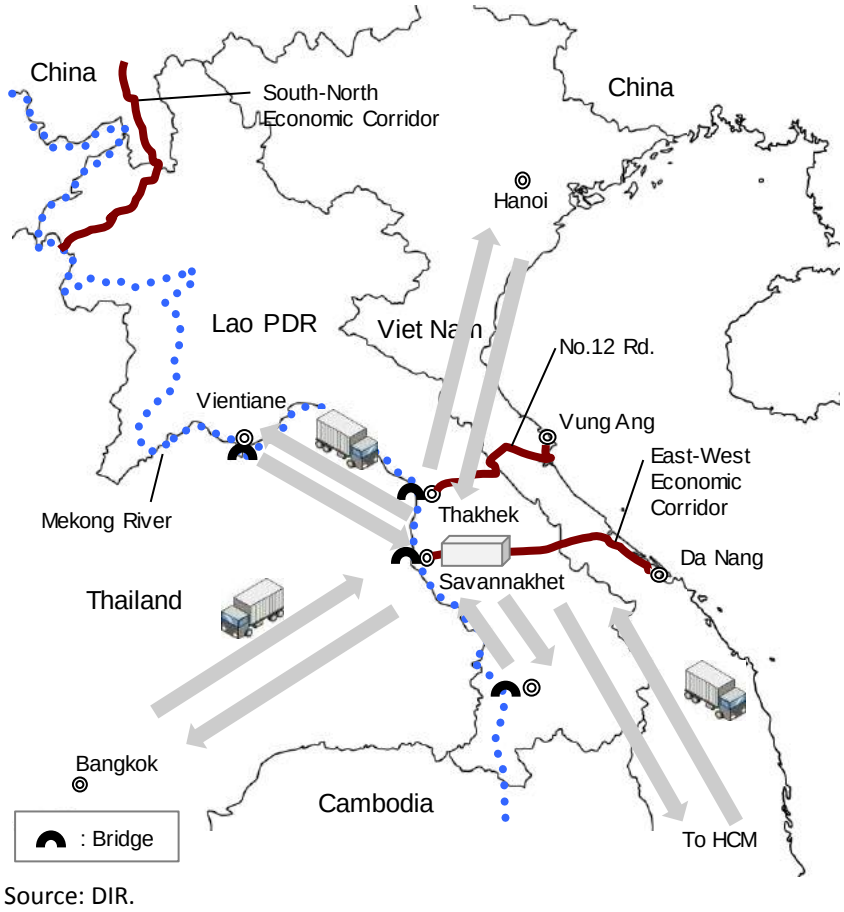


Source: DIR.

Savannakhet, centrally located in Lao PDR along the Mekong River, is considered a suitable hub for aggregation. Although neighbouring Thakhek also has a high distribution volume, Savannakhet comes out on top; it has Special Economic Zones (SEZs), and demand for cargo that uses Savannakhet as a departure and arrival point is anticipated. Thakhek could be considered as a transit point for through service between Bangkok and Hanoi.

There is no need for major hard infrastructure investments to establish Savannakhet as a hub. The important thing is to aggregate cargo from various areas in Savannakhet; basic infrastructure for this, such as warehouses (on a small scale at first) and customs offices, would be sufficient. This proposal seeks to provide the soft infrastructure of consolidation services rather than hard infrastructure.

Figure 6.42. Savannakhet Logistics Hub



Source: DIR.

6.8.3.2. Using railways to reduce transportation costs (Vientiane Logistics Hub)

It is also important to cut transportation costs for the Vientiane–Bangkok route, where border trade is most active. Reduced transportation costs through the use of rail transportation benefit not only shippers of small cargo, as do consolidation services, but also shippers of large cargo.

The Vientiane–Bangkok route also has potential for cutting costs in that it can make use of Thai rail transportation. Nippon Express implemented F/S with plans to build a complex distribution hub in Thanaleng, a boarder city south of Vientiane. That hub would integrate facilities truck terminals, rail container yards, warehouses, and customs offices.

For the plan to succeed, regular operation on Thai cargo railways is key. Train delays are a normal occurrence on Thai state railways, and cargo transportation relies on trucks. To achieve regular operation, there must be cooperation with the State Railway of Thailand on equipment and operational improvements and modernisation. In October 2015, Toyota Tsusho Corporation and the Japan Freight Railway Company began F/S freight operations with the State Railway of Thailand on a Bangkok–Cambodian border route. We would like to attract similar initiatives to the Bangkok–Lao border (Nong Kai) route. This would require cooperation between Thailand and Lao PDR.

Figure 6.43. Vientiane Logistics Hub

Source: DIR.

6.8.4. Future challenges

6.8.4.1. Joint operation of the Savannakhet Logistics Hub by several private logistics companies

We would seek the participation of multiple companies as central implementers in planning, and we propose a structure of joint operations using equipment and supplies from these companies. For instance, Company A would handle freight to City X and Company B would handle freight to City Y, or Company A would handle freight on Monday and Company B on Tuesday. Of course, this would be set up to fairly divide the total profits for each route between investors.

We propose joint operations to reduce the effects of the pressures on existing distribution services. By making consolidation services available, we can anticipate that shippers that had contracts with logistics companies for charter services will shift their business to consolidation services. If these companies join the central implementers, they can continue to serve those shippers as participating companies.

Even if the private sector is involved in operations, logistics companies may not necessarily welcome the structure of the Savannakhet Logistics Hub. In particular, major logistics companies that already serve large numbers of customers may perceive this as reducing their earnings opportunities. Therefore, strong leadership from the government is needed, as discussed in the following section.

6.8.4.2. Joint operation of the Savannakhet Logistics Hub between the government and the people

Even with routes broken up based on the hub-and-spoke method and small cargo aggregated, at present distribution volume is low, and profits are not expected, therefore, even with regular service.

On the other hand, offering consolidation services has many benefits: (1) This would provide encouragement to foreign companies that are hesitant to enter Lao PDR because of high distribution costs. (2) As discussed in Sub-subsection 6.3.4.3 on labour-intensive industries, small to medium-sized factories are particularly important for Lao PDR as it has a small population. Consolidation services are considered essential to attract small to medium-sized factories, which are dissatisfied with charter services. (3) The factories of companies in Lao PDR would also enjoy the reduction in distribution costs. (4) In addition to factories, wholesale and retail product procurers would also benefit from lower procurement prices.

These consolidation services are one type of infrastructure that Lao PDR needs, and the public and the private sectors must come together to make these services a reality. In fact, consolidation services are regarded as a private-sector service that is generally offered by logistics companies. However, based on the benefits discussed, we would like to propose that they be considered as public services.

The businesses operating the hub and the businesses offering consolidation services are important elements of providing consolidation services. These businesses will need to coordinate with the interests of logistics companies (see the previous section) and bear losses until business gets on track. As such, these businesses would be operated as public–private partnerships (PPPs), and a structure for revenue compensation, such as viability gap funding, would be needed. To coordinate with the interests of various logistics companies, it would be appropriate for the government to finance central implementers and take a strong leadership role rather than entrusting these PPPs to one private company.

Careful examination of the size of viability gap funding based on F/S is necessary. For example, the cost of running a regular weekly service (round trip) between five cities, such as a Savannakhet–Bangkok route, would be US$0.36 million, assuming one

service costs US$1,500. Reshipping at the hub generates additional costs, but the freight costs are the primary expense. Although this is extremely hypothetical, even if the loading ratio happened to be zero percent, the losses would remain at US$0.36 million.

6.8.4.3. Improving customs

As explained above, SSI initiatives are moving forward at the Lao Bao–Densavan border. In promoting the Savannakhet Logistics Hub and the Vientiane Logistics Hub, Savannakhet and Thanaleng are particularly important for customs. We encourage cooperation with the Thai government to broaden the Lao Bao–Densavan initiatives to these two customs sites.

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