Lao PDR at the Crossroads: Industrial Development Strategies 2016–2030

edited by

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Foreword

Lao PDR has achieved remarkable economic growth in recent years. With growing international division of labour, the country has gradually integrated with international global production networks based on 'the second unbundling.' This economic achievement is exemplified by improved living standards throughout the country, as indicated by an increase in per capita income. On the other hand, Lao PDR faces the problems of an overdependence on the energy and mineral sectors, and growing development gaps within the country.

Lao PDR is at a turning point, where it can turn its weakness of being a 'landlocked' country into its strength, by becoming a 'land-linked' country in the Mekong Region. As chair of the ASEAN Summit and the East Asia Summit this year – a role it takes on only every 10 years – Lao PDR has a great opportunity to announce its novel industrial development strategy to potential investors around the world. 'Lao PDR at the Crossroads,' the research title, refers to this crucial time for a decision about the country's future and its central location as a transport hub in the Mekong Region.

These circumstances were motivation for the Lao PDR government and the Economic Research Institute for ASEAN and East Asia (ERIA) to create a unique mid- and long-term development vision, titled 'Lao PDR at the Crossroads: Industrial Development Strategies 2016–2030'. The study was designed to generate concrete policy measures and recommendations that, if adopted, are likely to contribute to the further development and growth of Lao PDR. I am strongly convinced that the analyses and policy recommendations presented in 'Lao PDR at the Crossroads' will be conducive to the pursuit of new development strategies. Its ideas and policy recommendations were also incorporated into Lao PDR's official plans such as the 10-Year Development Strategy (2016–2025) and Vision 2030 (2016–2030).

The policy measures proposed in this study are expected not only to promote the economic development of Lao PDR, but also to improve connectivity in the ASEAN region as a whole. I firmly believe that 'Lao PDR at the Crossroads' will contribute to the revision of the 'Master Plan on ASEAN Connectivity.'

First and foremost, I would like to express my special appreciation for the continuous support of the Ministry of Industry and Commerce (MOIC) under the auspices of H.E. Khemmani Pholsena, Minister for MOIC.

I am deeply indebted to those directly involved in this project. Fukunari Kimura, ERIA's Chief Economist, Masahito Ambashi, ERIA Economist, and Souknilanh Keola, IDE–JETRO Research Fellow, who edited the whole report and to achieve near-perfection. There were also substantial contributions from two Lao institutes and their researchers: the National Economic Research Institute (Leeber Leebouapao, Sthabandith Insisienmay, and Vanthana Nolintha) and the Economic Research Institute for Trade (Xaysomphet Norasingh, Viengsavang Thipphavong, Thantavanh Manolom, Lekxay Keoyasan, and Vanaxay Soukhaseum) who wrote the drafts of Chapters 2 to 4 and provided invaluable data. Daiwa Institute of Research Ltd. (Masahiro Nakamura, Hideaki Kasai, Jin Yoshida, Keisuke Goto, Sanae Ota, Yu Karasawa, and Rei Naka) largely contributed Chapters 5 and 6 by conducting extensive field surveys. And the IDE–JETRO Geographical Simulation Model team (Satoru Kumagai and Ikumo Isono) supported the quantitative analysis of Chapter 7 with their expertise.

I would also like to thank other ERIA staff: Yasuhiro Yamada, for his enthusiastic support in Vientiane, and Jeremy Gross, for coordinating the National Policy Dialogue on 30 March 2016. I would also like to express my gratitude to Maria Priscila del Rosario, Stefan Wesiak, Fadriani Trianingsih, and Chrestella Budyanto for their editorial and publishing support.

I hope that 'Lao PDR at the Crossroads' will be a useful reference for the Lao PDR government as well as international donor agencies and funding institutions, to help them take concrete actions for promoting the industrial development of the country.

Professor Hidetoshi Nishimura
President, Economic Research Institute for ASEAN and East Asia
June 2016

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List of Abbreviations and Acronyms

ADB	Asian Development Bank
AEC	Asian Economic Community
ASEAN	Association of Southeast Asian Nations
B	Thai baht
BCEL	Banque pour le Commerce Exterieur Lao
BOL	Bank of the Lao PDR
CLMV	Cambodia, Lao PDR, Myanmar, and Viet Nam
DIR	Daiwa Institute of Research Ltd.
E&E	electrical and electronic components
EPZ	export processing zone
ESB	Eastern Seaboard Branch
ERIA	Economic Research Institute for ASEAN and East Asia
ESB	Eastern Seaboard
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment
FTA	free trade agreement
GDP	gross domestic product
GOL	Government of Lao PDR
GRP	gross regional product
GSM	ERIA/IDE–Geographical Simulation Model
HAI	human asset index
IEAT	Industrial Estates Authority of Thailand
IDE	Institute of Developing Economies
IE	industrial estate
IMF	International Monetary Fund
IP	industrial park
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
km	kilometre
KN	Laotian kip
LDC	least developed country
ODA	official development assistance
SEZ	Special Economic Zone
SMEs	small and medium-sized enterprises
US	United States
US$	United States dollar
WTO	World Trade Organization

Executive Summary

Professor Hidetoshi Nishimura (President of ERIA)
and the Study Team

Lao PDR at the Crossroads: Industrial Development Strategies 2016–2030 is an outcome of the research initiated upon the request of Khemmani Pholsena, Minister for Industry and Commerce. The Lao PDR government has been concerned that while economic growth has increased per capita income more than seven times from US$235.2 to nearly US$1,800 since 1991, it now encounters two serious challenges. Firstly, the growth has been based on a few sectors that are dependent on exhaustible mineral resources. The mining and energy industries hardly generate sufficient employment required for inclusive growth. In other words, the economic development of Lao PDR may not be necessarily robust. Secondly, development gaps have widened between and within regions in the country.

While the Lao PDR government attempts to formulate the 10-Year Development Strategy (2016–2025) and Vision 2030 (2016–2030) to address these two challenges, this study aims to provide potential inputs, from different perspectives, particularly to mid- and long-term comprehensive industrial development strategies. It also intends to include concrete policy recommendations that are likely to contribute to the further development and growth of Lao PDR and complement other initiatives led by donor countries and institutions, such as the Mekong Industrial Development Vision proposed by Japan. More specifically, the ultimate objective of this study is to pose policy measures that can turn the weakness of Lao PDR's (i.e. 'landlocked' location) into its strength (i.e. 'land-linked' location). As the Lao PDR economy develops, the implementation of such policies is strongly required. In this regard, the term 'crossroads' in the research title refers to when the country needs to make a significant decision regarding its future and where it is centrally located in the Mekong region.

After the general introduction, Chapter 1 presents unique viewpoints based on connectivity and geography, and how they affect industrialisation and economic

development. They are analysed in the framework of 'production networks', 'second unbundling', and 'new economic geography.' In particular, the recognition of the three pillars of development strategies is important: forming an industrial cluster with existing industrial agglomeration (Tier 1) that can be divided into innovative Tier 1a and industrial Tier 1b, participating in production networks along with the second unbundling that enables to jump-start industrialisation mainly with machinery industries (Tier 2), and hooking up with global value chains on the first unbundling based on resource-based or labour-intensive industries. At present, whereas Tier 1 does not exist in Lao PDR, Tier 2 does in cities such as Vientiane. In order to rise to these development stages, elaborate industrial strategies should be laid out.

Chapter 2 outlines the issues of the forthcoming 8th Five Year Plan (2016–2020), 10-Year Development Strategy to 2025, and Vision 2030. Overall, these national-level approaches aim at preparing for a post least-developed country status. Productivity growth, consolidation of knowledge and skills, capitalisation of comparative advantages, acquisition and application of science and technology, and continuous diversification of economic activities constitute the central part of these official plans.

This chapter also claims that it is important for Lao PDR to further participate in production networks and form midsized agglomerations. To this end, reducing 'service link costs' (broadly defined as transportation costs) is critical since the modern industrial economy decentralises production blocks, which were previously integrated in a large domestic factory in locations equipped with comparative advantages. Although it is not always straightforward to reduce service link costs, both hard and soft infrastructure must be installed and efficiently operated to create midsized agglomerations. Moreover, as a way of addressing regional disparity, which is another major goal of official mid- and long-term development plans in Lao PDR, the importance of regional core cities in support of industrial estates and enhanced industries is also emphasised.

Chapters 3 and 4 deal with cross-cutting issues that are significant foundations for industrial development strategies. Since the issues mentioned in these chapters are

relevant to various policy fields and their implementation and results can be effective only if addressed integrally, it is desirable that they are deliberately adjusted with industrial development strategies from a macro viewpoint.

Chapter 3 points to policies that should be well coordinated: the interconnection between industrial promotion and international trade policies, hard and soft infrastructure development, human capital development, nurturing efficient financial sector, and transformation of the economic system from 'resource curse' to 'resource bless.' In particular, human resources are the key for industrial development of the country. Job-relevant skills can be enhanced through internship programmes and on-the-job-training currently provided by foreign companies in collaboration with local industrial training schools and supporting industries. Hence, Lao PDR can consider employing these human capital programmes based on initiatives that are concluded with donor countries (e.g. programmes formulated by AEM-METI Economic Industrial Cooperation Committee). Furthermore, this chapter points out that realising the high-level Regional Comprehensive Economic Partnership is expected to promote the efficient formation of supply chains throughout East Asia.

In addition, Chapter 4 deals with immediate policy issues, that is, extending major national electricity grids, expanding trade/investment relationship to beyond-immediate neighbours, mobilising manpower, managing trade deficit, and transitioning from tariffs to taxes. Lao PDR is required to immediately address these challenges at issue because they are highly likely to affect the sound economic environment of the country.

Chapter 5 discusses how to promote industrial estates in Lao PDR as a substantial driver of economic growth. Among the various sectors, manufacturing industries tend to contribute to the balanced development of a developing country, including neighbours such as Thailand.

While industries are largely classified into agriculture, mining, manufacturing, and service, they all face an insufficient, small domestic market in the case of developing countries. Turning one's eyes onto international markets including advanced

economies should provide a prospect for industrial promotion. However, agriculture, mining, and the service industries cannot benefit from international markets in terms of both returns and job creation. More specifically, the agriculture industry can create many jobs but generate low returns; this is the opposite for the mining industry. The service industry generally finds it difficult to enter international markets due to the lack of competitiveness. Thus, the manufacturing industry is the most promising in that it can enjoy both high returns and large job creation. Hence, exports by manufacturing based in industrial estates are essential for rapid growth, or 'take-off', of the Lao PDR economy.

By surveying the experience of neighbouring countries Thailand, Viet Nam, and Cambodia, Chapter 5 finds that industrial estates have played a key role in establishing an 'industrial cluster' that is critically essential for realising the industrialisation and economic development of developing countries. It also probes in detail the positive and negative results of industrial estate development induced by these countries. Concretely, industrial estates in Thailand mostly have been accumulating around Bangkok, and that is why Thailand has succeeded in forming a significant industrial cluster there. But at the same time, such accumulation of industrial estates results in excessive concentration in Bangkok, and thereby regional development disparity. With regard to Viet Nam, while industrial estates have successfully formed industrial clusters in Hanoi and Ho Chi Minh City, most of them in unfavourable locations suffer from low occupancy, thus failing to expand industrial clusters nationwide. For Lao PDR, the case of Cambodia would serve as a useful reference. The government selection of industrial estates around Phnom Penh, Thailand and Viet Nam border areas, and near seaports has enabled industrial estates in Cambodia to gradually establish industrial clusters that bring about well-balanced development without inappropriate resource distribution in spite of many challenges.

In Lao PDR, industrial clusters are in the midst of emerging. However, the problem is that operational industrial estates are quite limited among 11 SEZs (special economic zone and specific economic zone). Of urgent necessity is to vitalise industrial estates in Lao PDR so that they can grow into industrial clusters. To achieve this objective,

Chapter 5 presents concrete policy recommendations as follows:

- Population and existing economic activities
  - ✓ Given the small population and supporting industries of the country, industrial estates have to be located in relatively big cities of several hundred thousand people.
- Access to larger industrial clusters beyond the borders
  - ✓ The country has to be integrated with the agglomeration in Bangkok, which will constitute Lao PDR's prime industrial core. Lao PDR is highly likely to receive the largest benefit from developing industrial estates that are close to the bridges over the Mekong River.
  - ✓ To look for a competitive edge against Koh Kong and Poipet SEZs in Cambodia, Lao PDR needs to improve the business circumstances especially in shortening travel time to Bangkok and reducing logistic costs by (1) extending the business hours of customs clearance, (2) simplifying customs procedures, and (3) launching the mixed loading services.
  - ✓ To benefit from the agglomeration in Hanoi in the long term, Lao PDR needs to improve the road infrastructure between Thakhek and Hanoi.

- Start-up funding for infrastructure
  - ✓ To assure essential hard and soft infrastructure, such as electricity, transportation, and management offices in the initial development of industrial estates, policymakers are required to continue negotiating with donor countries.

Chapter 6 presents industrial studies focusing on eight economic industrial sectors: (1) agriculture and food processing, (2) mining and energy, (3) garment and other labour-intensive industries, (4) electric and electronic machinery, (5) transport equipment (automobiles and motorcycles), (6) tourism, (7) finance (small and medium enterprises [SMEs]), and (8) transportation. It is important to note that these industries can be categorised into three layers. First, the mining and energy, finance (SMEs), and

transportation industries are the foundation of economic activities. Second, the agriculture and food processing and tourism industries can be a tool of balanced development including rural areas, which corresponds to Tier 3 as mentioned in Chapter 1. Third, the garment and other labour-intensive industries (Tier 2), electric and electronic machinery industry, and transport equipment industry (Tier 1) can be drivers of accelerated economic growth led by exports. In particular, the transportation industry, in conjunction with industrial estates (SEZs) development, should be prioritised so that other industrial sectors can grow.

Chapter 6 shows that fundamental industrial strategies should be based on both drivers: productivity improvement of agriculture and job creation in other sectors through industrial promotion policies utilising a labour shift from the agriculture industry. This is expected to benefit the economy of Lao PDR because the productivity gap between the agriculture and manufacturing industries generates a huge potential to improve total productivity.

After reviewing the status quo, and previous and current Lao PDR industrial policies, Chapter 6 illustrates promising scenarios and raises future challenges in individual industries. What follows briefly (Box) summarises these scenarios and challenges (see Appendix for details).

Lastly, Chapter 7 conducts a geographical simulation analysis based on previous discussions about possible policy measures. The economic impact is evaluated by the difference in gross regional product per capita between the baseline and alternative scenarios in 2030. Naturally, the more effective policies are implemented, the greater economic gain is anticipated. The alternative scenario that incorporates all possible policy measures assumes (1) development in industrial estates (SEZs), (2) border facilitation, and (3) reduction of non-tariff barriers. In that case, we can expect large benefits not only for cities but also for rural areas, and the economic impact can be amplified through the combination of the aforementioned policies (1) to (3). Therefore, from the perspective of an economic model enhancing connectivity in all respects and

Box

Sector	Scenarios	Challenges
(1) Agriculture and food processing	● High value addition through 'sixth industrialisation' ● Efficient rice production through a 'best practice' package ● High-quality commercial crop production at local cooperatives ● Establishment of a new value chain (e.g. dairy products)	● Capacity building in farming technology ● Procuring packaging materials ● Improving cold chains
(2) Mining and energy	● Expansion of regional power interchange ● Promotion of bioethanol production	● Establishing a leading position at the ASEAN Power Grid ● Partnering with neighbouring countries ● Establishing a subsidy system to guarantee the profitability of bioethanol
(3) Garment and other labour-intensive industries	Garment industry ● Production of high value-added products with low seasonality ● Participation in the fast fashion supply chain for ASEAN nations Other labour-intensive industries ● Production using a large amount of low-cost labour and electricity, such as copper wire, casting, and moulding ● Production of high value-added light products, such as medical devices	● Ensuring smooth transport to Bangkok ● Ensuring one-stop service at VITA Park
(4) Electric and electronic machinery	● Production of electronic components with a relatively short commodity cycle and with a flexibly adjusted production volume, such as connectors (LANs, USBs, etc.) and their cables	● Improving distribution
(5) Transport equipment (automobiles and motorcycles)	● Production and exportation to Thailand of labour-intensive components, such as cable harness and automobile seat covers	● Stabilising power supply ● Improving road conditions
(6) Tourism	● Promotion of 'key visuals' for core markets (Thailand, Viet Nam, and China) ● Attraction of visitors from Japan, Korea, and China during the summer vacation season (July–August)	● Investigating the needs of travellers from different countries ● Improving sanitation, etc. ● Relaxing the procedure for applying for a guided tour.
(7) Finance	● Utilisation of funds from international organisations ● Capacity building of commercial banks in credit assessment ● Establishment of a domestic and region-wide credit guarantee system ● Capacity building of SMEs	● Managing SME finance risks in the banking sector ● Providing incentives for book-keeping in SMEs
(8) Transportation	● Launch of consolidation services (Savannakhet Logistics Hub) ● Utilisation of railways to reduce transportation costs (Vientiane Logistics Hub)	● Arranging joint operation of the Savannakhet Logistics Hub by several private logistics companies ● Arranging joint operation of the Savannakhet Logistics Hub between the government and the people ● Improving customs

developing industrial estates in tandem with industrial promotion policies can resolve the challenges Lao PDR encounters; that is, it will be able to achieve robust economic development and narrow the development gap.

Introduction

Development is a continuous process that takes decades or more to progress. For the formulation of development strategies, medium- and long-term visions are essential.

Lao PDR has utilised the Annual Plan (1976–1977), the Three Year Plan (1978–1980), and a series of Five Year Plans (1981–2016) to set short-term goals and determine the speed and direction of development. The Five Year Plans can be considered mid-term plans within which annual or short-term plans are formulated. They have changed from setting detailed and strict goals to providing broader directions and targets along with the shift from a centrally planned economy to a market-oriented economy since the Third Five Year Plan (1991–1995).

Lao PDR's transition to a market economy – through opening up to foreign trade and investment, mainly from and via Thailand – brought about moderate growth in the mid-1990s. Growth was disrupted halfway through the Fourth Five Year Plan (1995–2000) by the Asian financial crisis that had originated in Thailand. Lao PDR regained growth momentum during the Fifth Five Year Plan (2001–2005) with strong policy measures that boosted trade and investment to the East (Viet Nam) and the North (China). However, Lao PDR's trade and investment relationships with Viet Nam and China are centred on primary industries and less related to international production networks. Growth accelerated again from the Sixth Five Year Plan (2006–2010) mainly through long-awaited, large-scale exports of mineral resources and energy. Average annual gross domestic product (GDP) growth was about 8 percent from 2006–2014.

Although growth of per capita income increased more than seven times over the last two-and-a-half decades, from US$235 in 1991 to nearly US$1,800 in 2014, Lao PDR

has encountered two major challenges. First, economic growth has been based on only a few sectors, mostly exhaustible mineral resources. Renewable energy such as hydroelectricity is non-exhaustible, but its significant and lasting negative impacts on the environment are well known. Moreover, the energy and resource sectors do not generate sufficient employment for inclusive growth. Second, despite rapid recent overall economic growth, disparities between and within Lao PDR's regions have widened.

The latest government's 10 Year Development Strategy (2016–2025) and Vision 2030 (2016–2030) were drafted to address these two challenges. This report provides input, from different perspectives, for these medium- and long-term development strategies. A unique feature of this report is that it highlights the 'geography' and 'connectivity' perspectives and reveals how these are closely related to industrialisation and sustainable economic development of Lao PDR. Both the 'connectivity' and 'geography' perspectives will be discussed and analysed within the framework of 'production networks', the 'second unbundling' (Ando and Kimura, 2005; Baldwin, 2006; 2011), and the 'new economic geography' (Fujita et al., 2001; Fujita and Thisse, 2002).

This report also makes concrete policy recommendations that are likely to contribute to the further development and growth of Lao PDR and that could complement recommendations made in other proposed strategies drawn up by donor countries and institutions, such as the Mekong Industrial Development Vision proposed by Japan.[1] More specifically, the ultimate objective of this study is to turn Lao PDR's weakness of being a landlocked country into a strength, i.e. turn it into a land-linked country. As the Lao PDR economy develops, the implementation of such policies is strongly required for it to stay on a sustainable growth path. 'Lao PDR at the

[1] The Mekong Industrial Development Vision was formally adopted in the Mekong–Japan Economic Ministers Meeting held on 24 August 2015. This vision indicates possible steps and policy directions that will realise industrial development in the Mekong region from 2016 to 2020, available at: http://www.meti.go.jp/press/2015/08/20150824003/20150824003-2.pdf

Crossroads', the research title, refers to Lao PDR having to make a significant decision regarding its future, and to its central location as a transport hub in the Mekong Region.

This report is structured as follows: Chapter 1 sets out the theoretical frameworks employed in the analysis carried out in this study. Chapter 2 gives an overview of Lao PDR's official development plans and assesses how connecting to production networks and forming agglomerations support the efforts of Lao PDR to achieve these plans. Chapter 3 explains why policies need to be well coordinated to generate the expected results. Chapter 4 examines what should be done in the immediate future. Chapter 5 discusses the potential of industrial estates that form the basis for industrialisation. Chapter 6 reviews in detail the current situation and potential of Lao PDR's major industries and provides possible scenarios for and future challenges regarding their further development. Chapter 7 makes use of the ERIA/IDE–Geographical Simulation Model (GSM) to simulate spatial aspects of major development scenarios. Finally, the concluding remarks summarise policy recommendations that point out the direction development strategies should take in the future.

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Chapter 1

Medium- and Long-Term Development Strategies

1.1. Three-Tier Development Strategy

Traditional theories and practices of economic development can be broadly categorised into three groups according to what development is ascribed to. First, there is a large dominant literature in various contexts that emphasises factor accumulation as the way to achieve economic growth and development (Mankiw et al., 1990, 1995; Barro and Sala-i-Martin, 1995). Factors include a wide range of physical and human capital in the form of machinery, finance, knowledge, technology, and others. The second group sees systems or institutions as drivers of growth and development. The first and second groups are well established in the academic literature and widely applied by development practitioners (Lewis, 2000; Acemoglu et al., 2005). Location plays only a small role in these two groups with respect to theory and practice. According to these two strands of literature and their application, development can occur in any place, in any order, with the necessary factors accumulated and institutions installed.

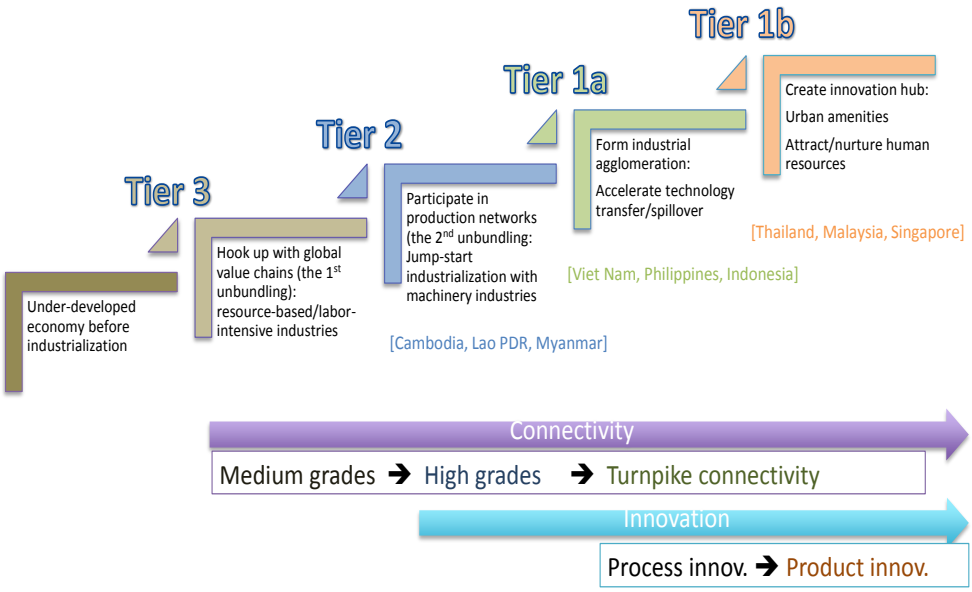
Historically, however, development has often come about quite differently. This is not to suggest development can occur without the necessary factors and institutions, but another factor seems to play a critical role (Easterly and Levine, 2001). Geography has emerged as the most plausible other factor (Krugman 1999; Henderson et al., 2001). Hence, a third group focuses on the effect of geography on development, through explicitly linking agglomeration of factors with economic development (Fujita et al., 2001). Such linkage can be found typically in cities that have seen strong visible growth and development. So far this particular idea has made relatively little progress in

mainstream development economics or with practitioners. Nonetheless, this third group, relying on the 'new economic geography' – which is the application of spatial thinking to international trade theory and general economic theory – regards cores and/or clusters in particular as the main engines of growth, and defines economic activities in surrounding peripheries in relation to the cores.

Association of Southeast Asian Nations (ASEAN) and developing East Asia have been the most advanced areas in terms of effectively utilising global values chains (GVCs) in their development strategies. Although people all over the world talk about GVCs nowadays, the most sophisticated way of taking advantage of GVCs for industrialisation is found in this region, and its mechanics have gradually been revealed in the literature of the new economic geography.

CADP (2010) and CADP 2.0 (2015) by ERIA proposes development strategies based on three tiers of development stages – Tier 1, Tier 2, and Tier 3 – which are categorised by different levels of participation in GVCs (Figure 1). Starting from an underdeveloped economy, in Tier 3 hooking up with GVCs with slow but secure connectivity occurs. This is an international industrial linkage – for example, in a relatively simplistic operation in the garment industry in which materials are imported once every two weeks, labour-intensive work produces baby clothes, and finished products are exported to the United States once every two to three weeks. Monetary transport costs as well as reliable connections are important here though logistics links may not be very sensitive. In Richard Baldwin's terminology, this is 'the first unbundling' (Baldwin, 2011). We can see similar operations, directly or indirectly linking with GVCs, in agriculture, mining, tourism, and other industries. In the case of Lao PDR, some rural areas still have room for developing Tier 3-type connectivity to improve the life of rural people and initiate industrialisation.

Figure 1.1. Three-Tier Development Strategy



Source: ERIA.

In Tier 2 a country or a region starts participating in production networks, also referred to as 'the second unbundling'. This is a more sophisticated type of participating in GVCs, in which the connectivity between production blocs is fast, precise, and synchronised. A typical example is production networks in machinery industries where production blocs are placed in countries at different stages and take advantage of different location advantages with low service link costs. In other words, agglomeration forces for a core to attract economic activities and dispersion forces for a periphery to invite activities are utilised in the effort to reduce transport costs between the core and the periphery. Lao PDR has recently started such operations at the Thai border, which can be interpreted as the initiation of Tier 2-type utilisation of GVCs.

Tier 1 is a more sophisticated step to take advantage of GVCs. This tier is further divided into Tier 1a and Tier 1b. In Tier 1a, which is tightly connected with production networks, industrial agglomeration is formed while deepening inter-firm division of labour in geographical proximity. At this stage, local firms can have opportunities to participate in production chains organised by multinationals, enjoy technology transfer and spillover, and enhance productivity through process innovation. Because

of its relatively small population, Lao PDR may not need a full-size industrial agglomeration such as the Bangkok Metropolitan Area, but can eventually form a midsized one that will be an intersection of connectivity in the Mekong Subregion. At Tier 1b an innovation hub to develop product innovation is created. In addition to accumulating research and development (R&D), urban amenities to attract highly educated people are essential in this tier.

The objective of the three-tier development strategy is to make practitioners more familiar with the theory advocated by the third group of development literature by conceptualising the types of their participation in GVCs. Regions and industries in Lao PDR have good potential to develop their participation in GVCs and achieve balanced economic development. While some regions and industries should continue to make efforts to hook up with GVCs (Tier 3), the current priority must be to participate in production networks more tightly (Tier 2). At the same time, we can start planning the formation of midsized industrial agglomeration (Tier 1a). The higher the tier, the more sophisticated the connectivity that is required. Our development strategy must be planned and implemented in the particular geographical setting.

1.2. Key Elements: Geography and Connectivity

Geography and connectivity play a critical role in the three-tier development strategy. This is because the strategies discuss geographical cluster development associated with real world connectivity. Although it is seldom mentioned, development of Lao PDR since the 1990s has been largely influenced by geography and connectivity with its neighbouring countries. On the one hand, both development and stagnation during the 1990s were the result of deepening, as well as being overly dependent on, the relationship with the world economy via Thailand. On the other hand, recovery and high growth since the 2000s, including economic resilience to the global crisis that broke out in 2009, were the result of increased trade and investment with Viet Nam and China, in addition to Thailand.

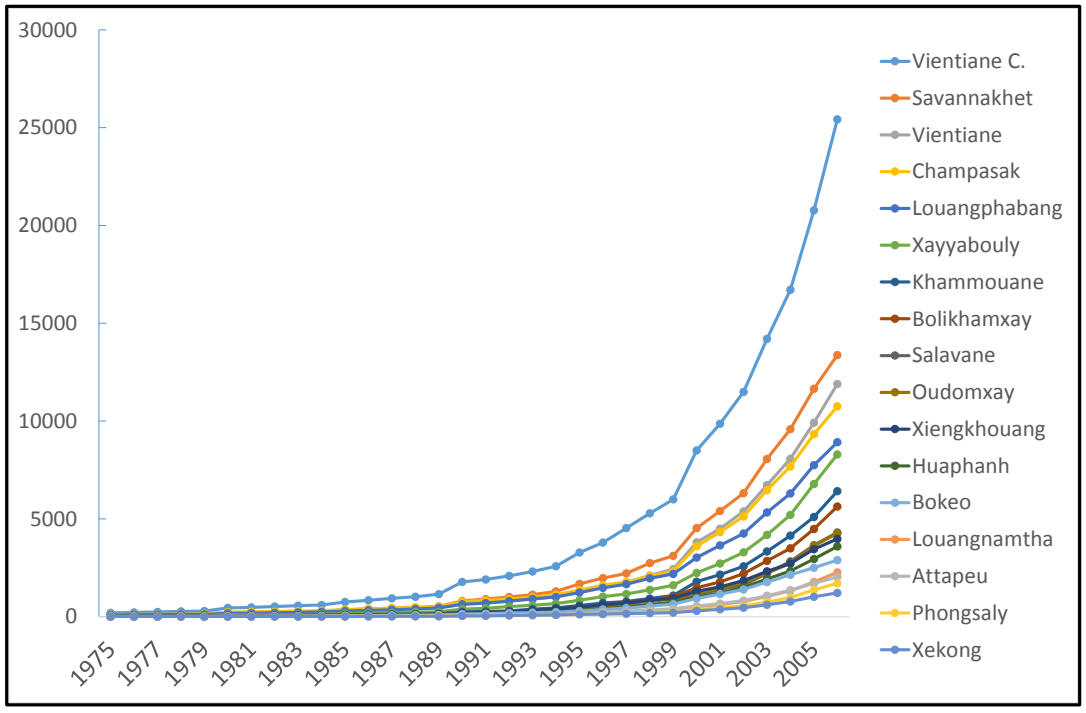
But for countries surrounded by rivers and mountains such as Lao PDR, connectivity does not work well without any infrastructure. More concretely, many hard and soft infrastructure should be put in place to enhance connectivity with neighbouring countries. The five friendship (international) Mekong bridges were completed between 1994 and 2015 to provide land linkage between many provinces in Lao PDR with Thailand and Myanmar. Several roads have been constructed and upgraded since the 1990s to better link Lao PDR to the East (Viet Nam) and to the North (China) despite mostly mountainous territory. As an example of soft infrastructure, systems such as border pass and truck passport were introduced when the First Mekong Friendship Bridge was opened in 1994 to facilitate the movement of people and economic activities across the border. In addition, bilateral trade agreements reducing tariffs by half on goods from Viet Nam and profound simplification of customs clearance on goods from China were introduced in the early 2000s. This in effect kick-started trade and investment between Lao PDR and its long-term political allies.

Ironically, the reason geography and connectivity play a critical role in the development of Lao PDR is in fact its location. Lao PDR shares its borders with five larger countries that have much bigger populations. All its 16 provinces and its capital share borders with at least one neighbouring country. Nine provinces share borders with two neighbouring countries. As a result, most of Lao PDR's provinces are physically closer to cities or regions in neighbouring countries than to its major local urban areas including the capital city, Vientiane. Hence, development in any part of Lao PDR has to take the external context into consideration.

Since the 1990s, connectivity with larger and often economically more advanced neighbours brought about larger economic impacts than before. Figure 1.2 depicts the number of accumulated firms located in each province between 1975 and 2006, which is aggregated from the economic census of 2006 (Ministry of Planning and Investment, 2010). Naturally, this figure excludes firms that disappeared before the economic

census. Except for former capital Louangphabang, the top nine regions, which managed to attract and generate a large number of firms, are connected to Thailand via the Mekong Bridge or through the Mekong River.

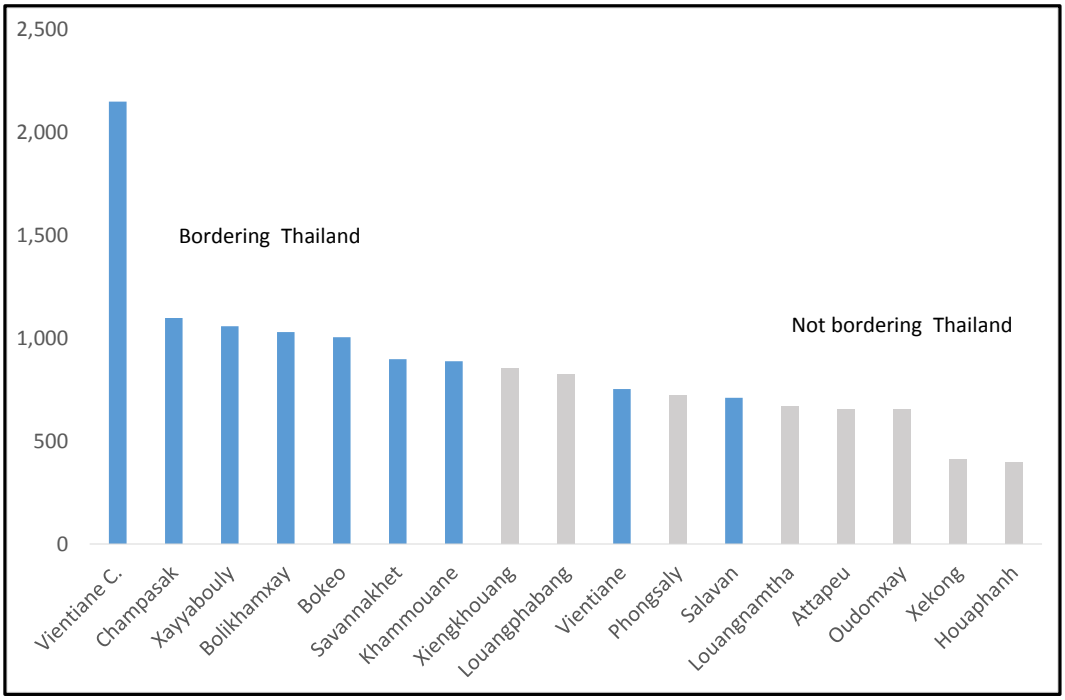
Figure 1.2. Accumulated Firms by Province (1975–2006)



Source: Compiled by authors based on Economic Census (2006).

The number of located firms almost corresponds to the disparity of average per capita income among provinces (Figure 1.3). Per capita gross regional product (GRP) in Vientiane Capital, is about twice as high as that of the second largest province, Savannakhet. Provinces bordering Thailand tend to be better off economically (Figure 1.3). Viet Nam and China's per capita gross domestic product (GDP) were only about a sixth and a half that of Thailand in 2005, respectively; therefore, connectivity with Thailand was expected to entail larger economic impacts. However, note that China's per capita GDP surpassed Thailand's in 2011 and that the gap between Viet Nam's per capita GDP and that of Thailand narrowed from about a sixth in 2005 to about a third in 2014. It is easy to see how connectivity with neighbouring countries could result in greater benefits for Lao PDR than in the past.

Figure 1.3. Per Capita Gross Regional Products (US$, 2010)



Notes: Grey (lighter) colour is province without border with Thailand.
Source: Ministry of Planning and Investment, Lao PDR (2011).

1.3. Potential Growth Opportunity

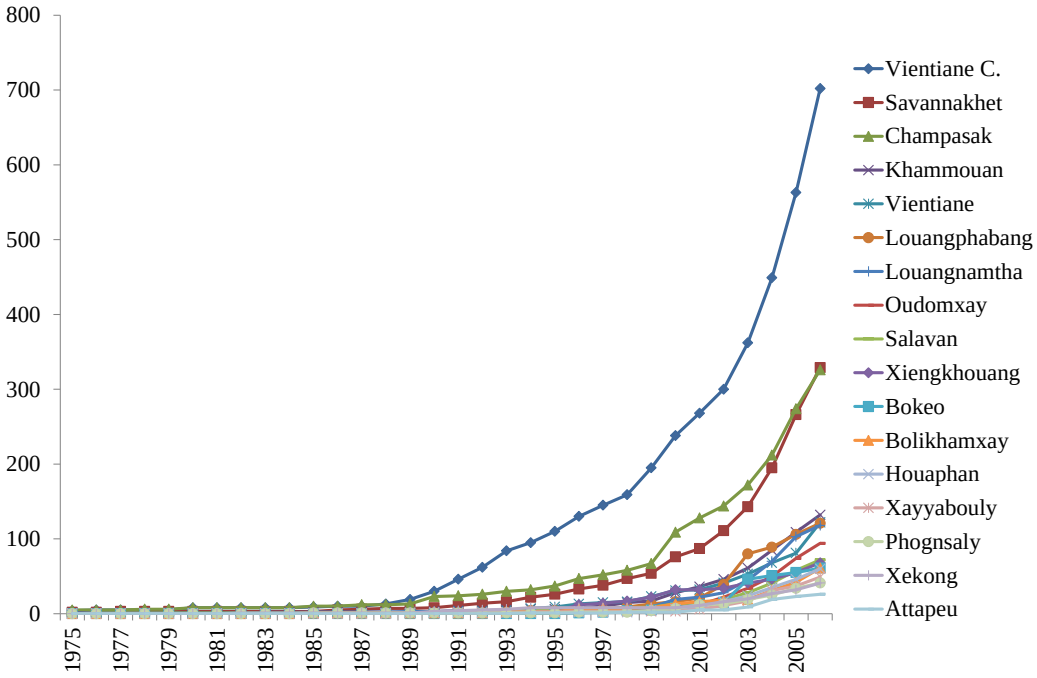
Medium- and long-term development challenges for Lao PDR are (i) sustaining high growth currently driven by exhaustible mineral resources and hydro energy with profound environmental impacts, and (ii) addressing widening regional disparity. The three-tier development strategy attempts to address both these challenges at the same time. Through detailed case studies (Chapters 5 and 6) and geographical simulation (Chapter 7), this study attempts to identify potential cluster development, potential connectivity, and potential segmentation of production networks for Lao PDR.

Potential Cluster Development

Why can clusters bring higher growth? Actually, clustering manufacturing industries is regarded as one way to achieve sustainable high growth. Ideally, the market decides where and what type of clusters should be formed and developed. But there are some reasons to believe that there is room for policy intervention and planning. First, cluster development, of whatever tiers, requires enormous amounts of infrastructure

development, which is extremely difficult without public financial involvement. Second, most expansion and development of cities have occurred adjacent to existing cities, which means that existing paths matter. It is therefore logical, or even effective, for the government to focus selectively on existing clusters.

Figure 1.4. Number of Accumulated Foreign Related Firms by Province



Source: Compiled by authors based on Economic Census (2006) by National Statistical Center.

Figure 1.4 clearly shows that when it comes to levels of foreign direct investment (FDI), which is one important indicator of the degree of participation in production networks, Vientiane Capital, Savannakhet, and Champasak stood out. Any potential development in Tiers 1, 2, and 3 in Lao PDR should include these regions. The first expected outcome of this report is to identify the potential cluster development in Lao PDR, through detailed case studies, which pay more attention to geography and connectivity, as well as through quantitative analyses using a geographical simulation model.

Potential Connectivity

Connectivity with, but not limited to, larger and richer neighbouring countries has had a very positive impact on Lao PDR since the 1990s. Nevertheless, current connectivity is still far from optimal, for example, when compared with ASEAN front runners

Singapore and Malaysia, not to mention integrated economies in other parts of the world. Connectivity in Lao PDR is mostly realised via border gates. As a consequence, hard and soft infrastructure that facilitate flows of goods, investment, and people through border gates largely define the degree of connectivity. Lao PDR has recently started single-window immigration and customs clearance at some borders with Viet Nam after several years of trial implementations. Expansion to other border gates is planned at the national level.

Using geographical simulation, this report aims to show quantitatively how increasing connectivity through the implementation of the single-window system can be expected to accelerate economic growth in Lao PDR. In addition to the theoretical analyses, it will also assess what kind of hard and soft infrastructure are needed to increase connectivity.

Potential Segments of Production Network to Participate

The benefits of participation in production networks, particularly in the globalised world, are well documented both in theory and practice. In accordance with this finding, the important thing for Lao PDR is to have a substantial involvement with production networks. However, it is impossible and impractical for Lao PDR, its cities, regions, and clusters to participate in all kinds of production networks so Lao PDR needs to identify potential locations and segments of production networks to join. Trade data provides important information about the potential segments of production networks with which Lao PDR can engage. Through analyses of trade statistics and industrial studies (Chapter 6), this report is able to suggest potential industrial segments and production networks in which the country may wish to participate.

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Chapter 2

The Phasing of Development Paths

The year 2016 is a unique year in the history of development planning in Lao PDR. In addition to the 8th Five Year Plan (2016–2020), the Government of Lao PDR presented a longer-term development plan – the Vision 2030 and 10 Year Development Strategy (2016–2025). This chapter briefly reviews these official plans, and then discusses how fostering industrial clusters and regional core cities can support efforts to achieve the targets set out in these plans.

2.1. 8th Five Year Plan, 10 Year Development Strategy, and Vision 2030

The 8th Five Year Plan or National Socio-economic Development Plan (2016–2020) (8th NSEDP) is set in the context of mid- and long-term government planning, particularly the 10 Year Development Strategy to 2025 and Vision 2030. Note that in this report the NSEDP is used interchangeably with Five Year Plan. These plans were approved by the National Assembly on 22 April 2016. Overall, the aim of the 8th NSEDP is to move Lao PDR out of the least developed country (LDC) category. Growth of productivity, consolidation of knowledge and skills, materialisation of comparative advantage, acquisition and application of science and technology, and continued diversification of the economy constitute central parts of these official plans. These components, which will transform the Lao PDR economy, require huge public and private investments, well-coordinated industrial policies, interconnected agriculture and services, education and technology, and greater integration into the regional and global economy and its value chains.

Both the 10 Year Development Strategy and the 8th NSEDP are designed in the context of changing domestic and global socio-economic environments. They also aim to become a guide to long-term development policies formulated by the government. Vision 2030 and the 10 Year Development Strategy will provide comprehensive

guidance for the 8th Five Year NSEDP and beyond. In terms of income, the 10 Year Development Strategy aims to double per capita gross national income (GNI) of Lao PDR by 2020, and Vision 2030 aims to quadruple per capita GNI by 2030. These short-, mid- and longer-term plans rely heavily on investment from and trade with neighbouring countries and other international partners. As a consequence, domestic, regional, and international economic environments are crucial to the success of these plans. The changing domestic and global environments, which are challenging or relevant to the Lao PDR economy, are as follows:

- Recent falls in commodity prices, for instance, suggest that over-reliance on the mining sector should be avoided.
- Government prioritises energy (hydro) over mining, but the prospects for the energy sector are also uncertain due to intense potential competition from Myanmar, which is likely to begin exporting power to the same markets as Lao PDR does.
- The Asian Economic Community (AEC) and transition from the Greater Mekong Sub-region (GMS) to the Association of Southeast Asian Nations (ASEAN) present both opportunities and threats.
- The emergence of new players (South–South and the increasing relevance of Lao PDR to its major South–South partners [Viet Nam, Thailand, China, Malaysia, and India]), the development of new financial institutions and functions (Asian Infrastructure Investment Bank, BRICS [Brazil, Russia, India, China, and South Africa], South–South Exchange Trust Fund, and One Belt One Road), and existing development banks having recently strengthened their loan functions (the Asian Development Bank [ADB] and the Japan Bank for International Cooperation [JBIC]), could present new opportunities for Lao PDR.

By taking into account the above-mentioned recent trends, Vision 2030 aims to achieve the following objectives:

- Ensure political and social stability.
- Achieve per capita income in 2030 four times that of 2015.

- Become an Upper Middle Income Country (the initiative to avoid the middle income trap).
- Have an industrialised and modernised economy with strong supporting infrastructure.
- Assure better living standards, human capital development, social security, and people being protected by law.
- Ensure smaller disparity between urban and rural areas.
- Conserve natural resources and use them efficiently.
- Ensure competitiveness, connectivity, and integration with the regional and global economies.

Based on the above objectives of Vision 2030, the priorities of the 10 Year Development Strategy have been set to cover seven sub-strategies as follows:

(1) Pursuing continuous, quality, balanced, sustainable, and green growth;

(2) Fully graduating from LDC status by 2020, and making progress on sustainable development goals (SDGs) (UNDP website);

(3) Human resources development;

(4) Sustainable and efficient utilisation and preservation of natural resources;

(5) Enhancing people's democratic administration system according to law;

(6) Global and regional integration and connectivity; and

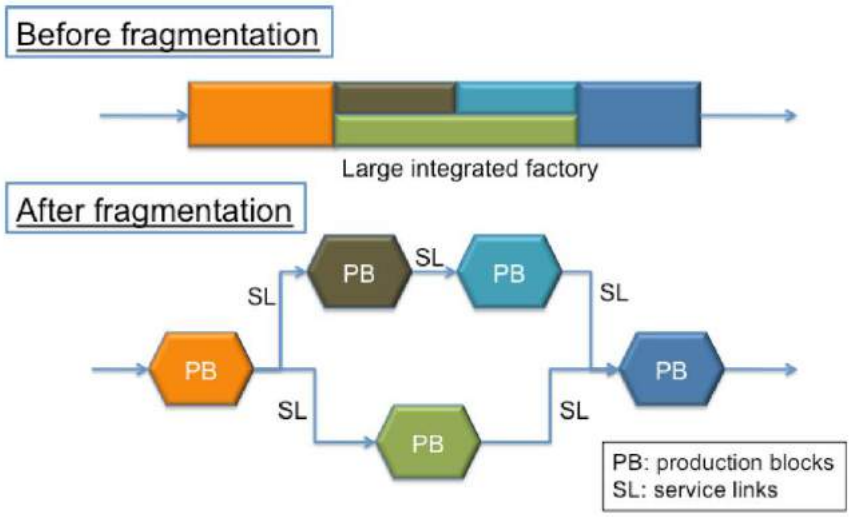
(7) Industrialising and modernising the country;

2.2. Participation in Production Networks and Formation of Midsize Agglomerations

Industrialisation in Asia has changed significantly since Japan's strive to catch up with Western powers at the beginning of the Meji Period (1868–1912). At that time, several modern industries were grown, mostly from scratch, through strong support from and full protection by the government. This model was later adopted by nearby countries,

which resulted in the Newly Industrialised Economies (NIEs) in Asia. But adopting this strategy has become increasingly difficult because transport costs (broadly defined as 'service link costs') on a global scale have recently decreased due to technological progress, even though it is not impossible (Figure 2.1).

Figure 2.1. The Fragmentation Theory



Source: ERIA (2015).

A reduction in service link costs through the use of more efficient transport technologies has made production – which had once taken place in large integrated factories – economically viable by carrying out different processes in different locations with different comparative advantages. Such a change is evident from the global patterns of foreign direct investment (FDI) flows. Labour-intensive production processes were relocated to lower-wage developing countries, whereas capital and skill-intensive processes, such as research and development (R&D), remained or expanded in industrialised countries. In other words, since the mid-1980s, the world economy has started to shift from traditional 'industry-by-industry' to 'process-by-process' international division of labour (ERIA, 2015: CADP 2.0). This has been especially the case in the ASEAN region since the 1980s. Participation in fragmented production networks, through active promotion of inward direct investment, has been

the most important growth engine in most countries, including the wealthy city states of Singapore and Brunei Darussalam, upper middle-income Malaysia and middle-income Thailand, Indonesia, Philippines, and Viet Nam, and low-income countries such as Lao PDR, Cambodia, and Myanmar.

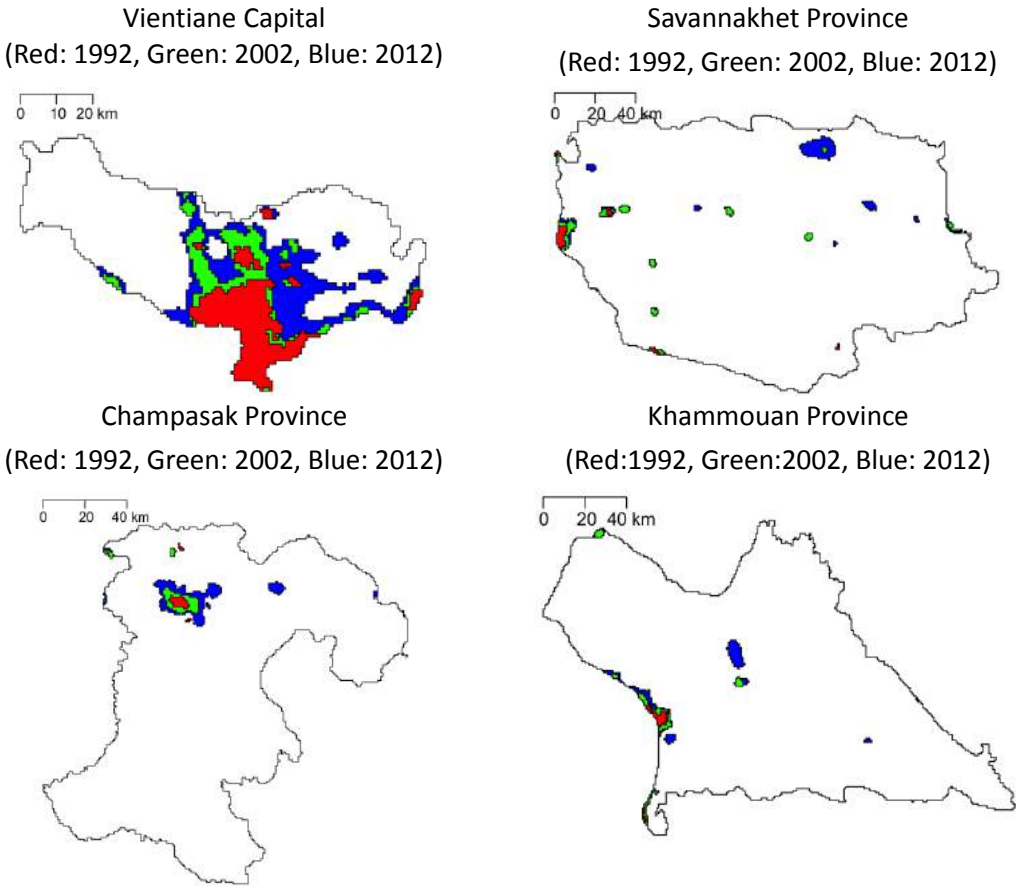
Reducing service link costs is clearly very important for any cities or countries if they wish to participate in production networks. But how to reduce these costs is not straightforward. Good infrastructure, both hard and soft, must be installed and efficiently operated. However, infrastructure alone would not be sufficient. Although modern bridges significantly reduce transportation costs across rivers, more would be needed to attract substantial production blocks. The economics of agglomeration, as developed in recent years, provides useful insights. In essence, agglomeration or concentration of production factors and producers generates feedback effects that create larger agglomerations in particular locations. Lao PDR currently is well behind the rest of ASEAN in terms of both the number and size of its agglomerations. For Lao PDR to be able to continue to grow in the medium and longer term, formation of several midsize agglomerations is absolutely necessary.

2.3. Regional Core Cities and Rural Developments

Addressing regional disparity is another major goal of Lao PDR's official mid- to long-term development plans. It is not difficult to see that while per capita GDP increased more than sevenfold since 1990s, the rise has been concentrated in the capital city, major provinces, and areas close to Thailand. Conventionally, rural development has been considered independently without explicitly taking into account urban (city) development (Hayami, 2007). But in reality, rural and urban areas dynamically interact during the process of development (World Bank and International Monetary Fund, 2013). On the one hand, cities depend on surplus labour and agricultural products from rural areas during the early stage of industrialisation. Rural areas, as a whole, are

also significant markets for goods manufactured in cities. On the other hand, rural areas cannot do without cities to sell their products.

Figure 2.2. Urban Area Expansion in Major Provinces
(Based on Night-time Light Observed from Space)

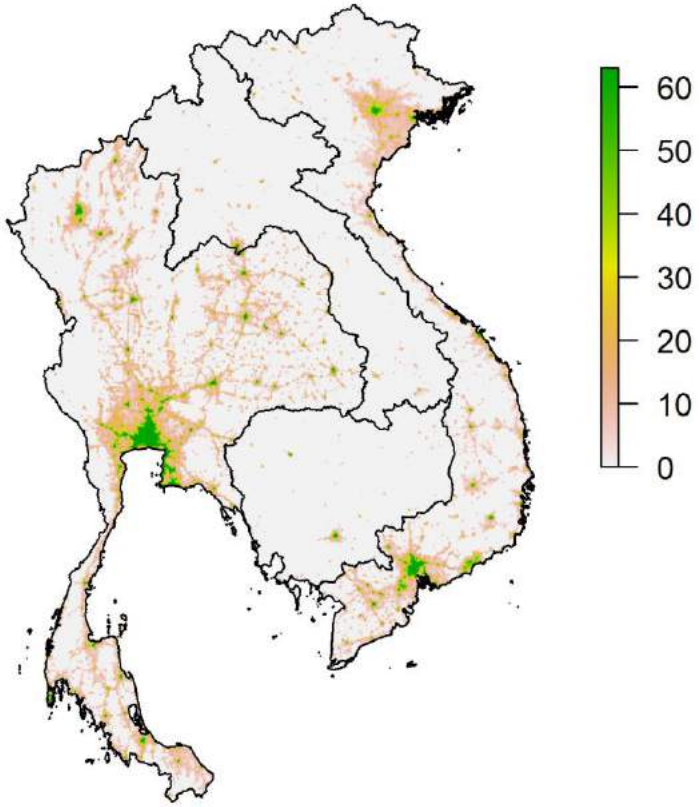


Source: Created by the author (Keola) based on Defense Meteorological Satellite Program–Operational Landscan System (DMSP–OLS) and Global Administrative Unit Layers (GAUL).

Figure 2.2 shows how city development in Lao PDR since 1990s has been concentrated in the capital city. The lit area, a proxy of an area with better infrastructure, in Vientiane Capital, was about 486 square kilometres (km^2) in 1992, which is much larger than 34–60 km^2 in other selected provinces. The lit area in the Vientiane Capital grew to about 1,314 km^2 in 2012. The lit area in Savannakhet was only about 60 km^2 in 1992, and although it expanded significantly to about 372 km^2 in 2012, the new agglomerations are scattered over a much larger area. Due to large-scale mineral

extraction in Sepon in rural Savannakhet, it has expanded to the largest lit area in Savannakhet. The lit area in Champasak is concentrated in the conventional city area but it is much smaller than Vientiane Capital. The lit area in Khammouan is small, but scattered with a significant expansion in the non-city (hydropower plant) area.

Figure 2.3. Urban Areas in Selected Countries of the Indochinese Peninsula (Based on Night-time Light in 2012)



Source: Created by the author (Keola) based on DMSP–OLS and GAUL.

The overall picture of lit areas, including cities in Lao PDR and selected countries in the Indochinese peninsula, is shown in Figure 2.3. Several agglomerations are conspicuous. Lao PDR and Cambodia have an absolute shortage of cities compared with neighbouring countries such as Thailand and Viet Nam. In particular, the capital city of Lao PDR is relatively small and far away from most other regions of the country, and therefore, it would be difficult for Vientiane Capital to develop as a city alone without improving connectivity with the neighbouring regions. In subsequent chapters, this

report will elaborate on how industrial estates and enhanced industries are needed to address the regional disparity that exists in Lao PDR.

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Chapter 3

Well-Coordinated Policies

Even well-intended policies may not efficiently produce expected results without support of relevant well-coordinated policies and their effective implementation. In some cases, the combination of well-intended but inconsistent policies may lead to worse outcomes. For example, a policy aiming to promote a cluster of the electronics industry would not be fruitful if high tariff rates are imposed against the import of electronic parts and components. This argument also holds for the development of hard and soft cross-border infrastructure, which aim to enhance connectivity. A cross-border bridge would not efficiently generate expected cross-border movements of goods, investment, and people without user-friendly rules, regulations, and operation. Furthermore, most policy targets would not be achievable without sufficient human capital specifically educated to carry them out. For example, construction and electrical engineers are indispensable for a successful energy industry. This chapter discusses well-coordinated policies by assessing interrelationships among these related policies.

3.1. Industrial Promotion Policies and International Trade Policies

The aim of industrial promotion policies in Lao PDR is to foster diversified industries that will help achieve the country's objectives of industrialisation and modernisation. In brief, industrial promotion policies include the following five goals: (1) To promote small and medium-sized enterprises (SMEs), which presently account for 97 percent of manufacturing activities. Although SMEs have significantly contributed to job creation, businesses in this sector are usually unorganised and not very competitive, and therefore their capacities need to be enhanced (MOIC, 2014). (2) To promote and develop import substitution products of selected goods to reduce overdependence on imports. (3) To push forward export-oriented industries with high value-added

products, such as electronic products and garments. (4) To develop human capital to integrate with and compete in the global economy.

Historically, industrial development in Lao PDR has occurred in the three development periods: (i) nationalisation or collectivisation between 1976 and 1985, (ii) preparation for the New Economic Mechanism between 1986 and 1990, and (iii) implementation of the New Economic Mechanism since 1991. The adoption of the New Economic Mechanism is also widely known as Lao PDR's transition to a market economy.

To create a level playing field and facilitate conditions favourable to industrial development in Lao PDR, the government enacted the Business Law in 1994. All types of businesses, categorised by ownership (i.e. private, state-owned, union-owned, and joint-venture enterprises) were treated equally subject to this law. The private sector was encouraged to participate in various industrial fields of the economy, but not in those designated as sensitive–for instance, fuel, electricity, water, telecommunications, timber, mining, medicine, and the alcohol and tobacco industries. The introduction of the Industrialisation and Modernisation Strategy (2001–2020) in 2002 and the current revision of the 10 Year Development Strategy (2016–2025) endorsed by the National Assembly in April 2016, which reflects the changing international and domestic environments, make clear the government's intention to develop the industrial sector as an engine of growth in the economy. At present, in addition to tens of garment factories, there are 15 processing factories with an investment value of more than 50 billion Laotian kip, including maize drying, Jatropha extraction, rubber and sugar factories, as well as beverage companies' factories established by, for example, Beer Lao Ltd, Lao Asia-Pacific Brewery Ltd, and Lao Indochina Tropicana. These factories have contributed to job creation and income increases for over 160,000 people.

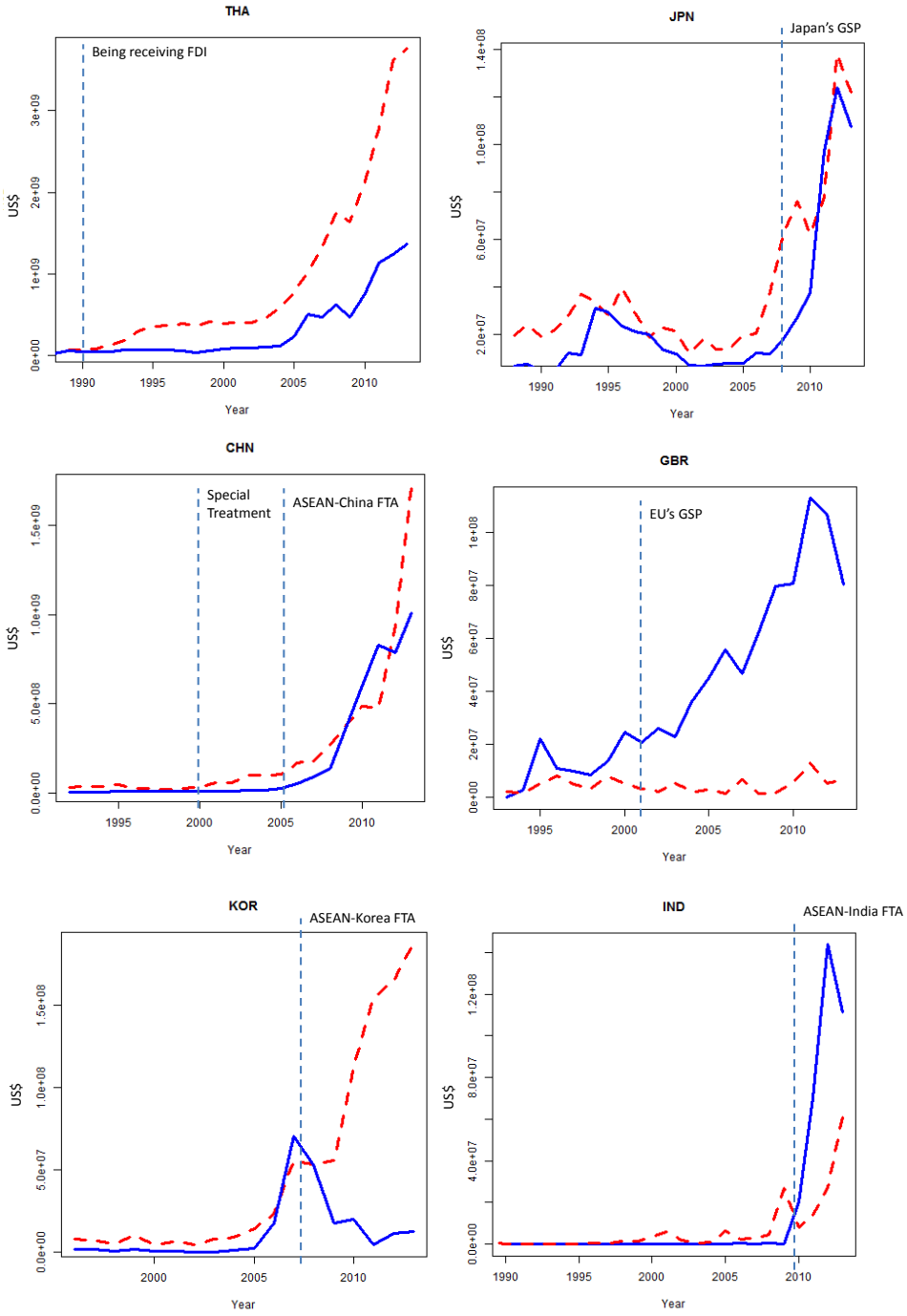
In fact, the government links the achievement of its Vision 2030 to the attainment of an annual gross domestic product (GDP) growth rate of 8 percent from the present to

2030, on the basis of total investments of around 30 percent of GDP in each year. More than 50 percent of the investment is expected to come from foreign investors. To this end, Lao PDR has made huge progress in introducing trade and investment liberalisation policies, following successful examples in advanced Southeast Asian countries. For example, the government abolished, in practice, a tax on loss-making enterprises (1–2 percent of total sales) in the mid-2000s by revising the tax law in 2015. The tax on loss was a special measure introduced to secure fiscal revenue, which had declined sharply in the aftermath of the Asian financial crisis in 1997. Various incentives such as the profit tax exemption period and customs duty drawbacks were introduced in conjunction with the development of Special and Specific Economic Zones (SEZs).

More importantly, the government has devoted continuous efforts to securing preferential and favourable tariff arrangements through bilateral and multilateral frameworks. This includes the free trade agreements (FTAs) with Thailand (1991), Association of Southeast Asian Nations (ASEAN)–China (2004), ASEAN–Republic of Korea (2007), ASEAN–Japan (2008), ASEAN–Australia–New Zealand (2010), and ASEAN–India (2010), as well as Lao PDR's accession to the World Trade Organization (WTO) in 2013, and several generalised schemes of performances (GSPs). These arrangements undoubtedly contributed to the dramatic increase of foreign direct investment (FDI) flows from an annual average US$18 million during 2001–2005 to about US$367 million from 2011–2014 (World Bank, 2015). Furthermore, the high-level Regional Comprehensive Partnership (RCEP) under negotiation is expected to promote the efficient formation of supply chains throughout East Asia, which would also benefit Lao PDR's industrial development.

Since most industries in Lao PDR not only require imports of inputs but also aim at external markets, they are closely related with international trade. Figure 3.1 shows how international trade in Lao PDR is strongly influenced by FTAs and GSPs.

Figure 3.1. FTA/GSP and Export in Lao PDR



FTA = free trade agreement; GSPs = generalised schemes of preferences; THA = Thailand; JPN = Japan; CHN = China; GBR = Great Britain; EU = European Union; KOR = Korea; ASEAN = Association of Southeast Asian Nations; IND = India.
Source: Computed by authors (ERIT) based on COMTRADE.

Exports to major European Union (EU) economies (e.g. the United Kingdom [UK]), Japan, China, and India increased after FTAs or GSPs had entered into force. Exports to the UK increased irrespective of the trend of imports from the UK, whereas the increase of exports to Japan was accompanied by an increase of imports from Japan. It is a well known fact that exports of garment products account for the bulk of recent increases in exports to the UK and Japan. At the very least, obtaining GSPs from the EU and Japan have benefited the development of the garment industry in Lao PDR. In addition, exports of minerals to China and India increased after the conclusion of FTAs with these countries, which were made within the framework of ASEAN.

The conclusion of this section is that industrial development policies are not likely to function without necessary and appropriate international trade policies. This is especially the case for a small economy such as Lao PDR that needs to import many inputs from other countries and have access to much larger markets beyond its own border.

3.2. Hard and Soft Infrastructure Development

Many hard infrastructure have been introduced in Lao PDR since the beginning of the 1990s. National Road No. 13, running from the north to the south, and several East–West national roads had been repaired, upgraded, and constructed by the beginning of the 2000s. To date, four Mekong Friendship Bridges (from the First to the Fourth Bridge) linking Lao PDR's populated areas to Thailand were opened sequentially in 1994, 2006, 2011, and 2013. Another Mekong Friendship Bridge linking the northern part of Lao PDR to Myanmar was completed in 2015. International border gates, through which formal international trade is carried out, have also been installed. Although these infrastructure have significantly increased cross-border movements of goods, investment, and people, there is still a lot of room for further improvements. As a reference, the Comprehensive Asia Development Plan (CADP) 2.0 formulated by

the Economic Research Institute for ASEAN and East Asia (ERIA), which drew up a comprehensive list of prospective infrastructure development projects, such as roads, bridges, railways, airports, and others, would be very useful for an assessment of what infrastructure developments are needed in Lao PDR.

The number of people crossing the First Mekong Friendship Bridge at the most popular entry point in Lao PDR was about 1.15 million in 2014, which amounts to about 3,000 people per day. The number of vehicles entering Lao PDR via the Second Mekong Friendship Bridge was less than 100,000 in 2014, including 30,000 trucks of several sizes, which translates to only about 82 trucks a day on average. These figures are much lower than what these cross-border infrastructure can handle. We can compare this finding in an international context by looking at similar cross-border bridges in other regions. For instance, more than 20 million people crossed a bridge linking the southern part of Sweden to the capital city of Denmark in 2014 and about 19,000 vehicles crossed the same bridge every day. The number of heavy goods vehicles passing through Switzerland was more than 1 million in 2014.

Nevertheless, while hard infrastructure are a prerequisite, they would not produce expected results without the necessary soft infrastructure prepared. Soft infrastructure can be regarded as anything relevant to rules and regulations applied to the way hard infrastructure are operated in reality. Hence, we need to keep in mind that both hard and soft infrastructure are indispensable for ensuring connectivity, which facilitates economic activities within and across the country.

3.3. Human Capital Development

Assessing the current development of the Lao PDR economy, we find that many important positive trends in economic and social aspects have emerged, including more rapid economic growth, greater poverty reduction, and improved education. Lao PDR recorded an annual average economic growth of 7 percent from 1996 to 2015.

GDP per capita increased from US$319 in 2001 to US$1,857 in 2015. The poverty rate also decreased, from 33.5 percent in 2003 to 27.6 percent in 2008, and 23.2 percent in 2013. Life expectancy increased from 49 years in 1980 to 69.4 years in 2015. The adult literacy rate increased from 66 percent in 2010 to 81.3 percent in 2015. These trends clearly demonstrate human capital accumulations, which in turn will stimulate future growth.

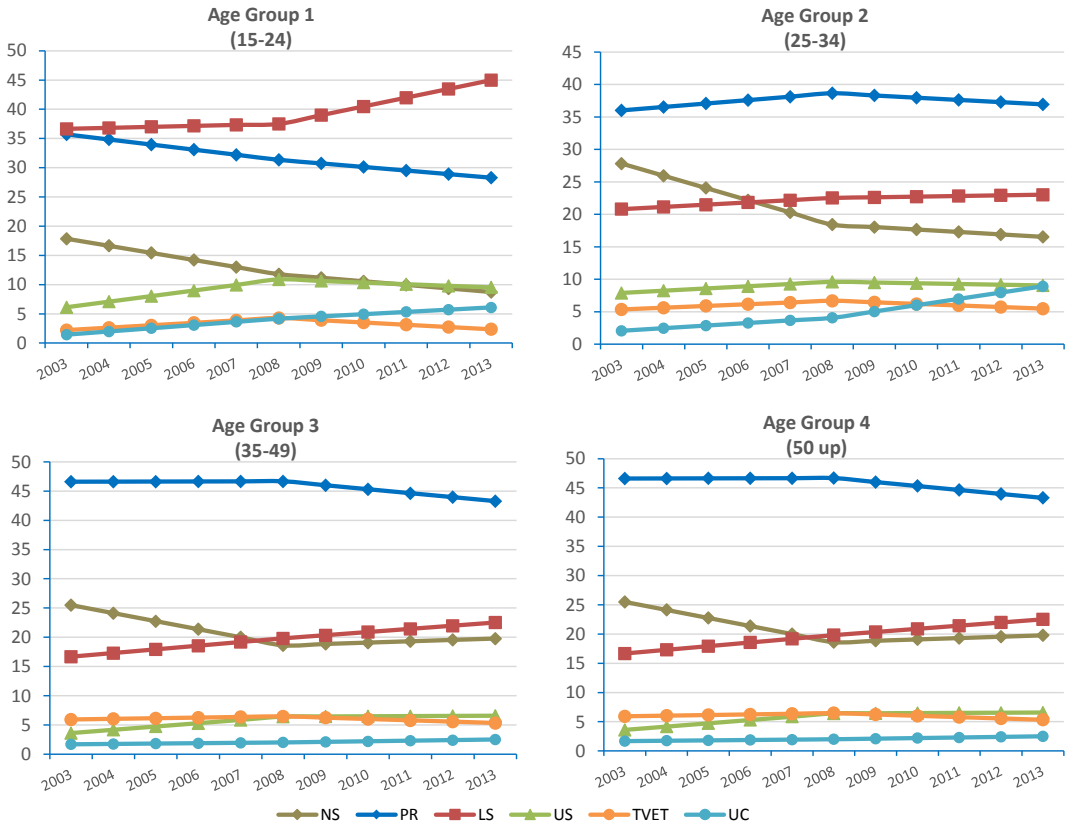
In 2015, Lao PDR's population was 6.4 million people, with an average growth rate of about 2 percent per year. When we compare the share of educational attainments to total workforce among four age groups between 2000 and 2013, we can see that the young generation today has better access to basic education than the older generations did (see Figure 3.2.). For the youngest group (15–24 years), those with lower secondary education made up the largest group throughout 2000–2013, whereas the population in the other age groups had the largest share of primary education. For the age groups 15–24 and 25–34 years, the share of those with college and vocational education increased steadily. Based on the current trend of increasing educational attainment, future Lao workers are expected to be much more educated than the current workforce.

The latest assessment for the human asset index (HAI) conducted in 2015 demonstrates that Lao PDR has moved beyond least development country (LDC) status. The HAI indicators include the under-5 mortality ratio, the prevalence of undernourishment in the total population, the adult literacy rate, and the secondary school gross enrolment rate. Lao PDR improved its performance for all the HAI indicators from the previous assessment in 2012.

Based on information provided by Child Mortality Estimates, which is the web-based data source used for assessing the under-5 mortality rate in the HAI calculation, the under-5 mortality rate is estimated to have decreased from 71.4 percent in 2013 to 66.7 percent in 2015. The latest data on the prevalence of undernourishment in Lao

PDR's overall population shows a declining trend (FAO, 2015). The adult literacy rate also improved, from 72.7 percent in 2005 to 79.9 percent in 2015 (UNESCO, 2015). Furthermore, according to the latest millennium development goal (MDG) assessment in 2015 (GOL and UN, 2015), the secondary school gross enrolment rate also increased from 50.5 percent in 2013 to 64.6 percent in 2015.

Figure 3.2. Educational Attainment of Workforce by Age Group



NS = no schooling, PR = primary school; LS = lower secondary school; US = upper secondary school; TVET = Technical and Vocational Education and Training; UC = University or College.
Source: Author's (NERI) calculation based on LECS III, IV, and V.

However, in spite of these improvements in social indicators related to the HAI, Lao PDR did not exceed the HAI reference point stipulated in the 2015 Commission on Population and Development assessment. The HAI of Lao PDR was 60.8 in 2015, which is about 92 percent of the HAI threshold (i.e. the HAI must be higher than 66 to qualify). With

respect to the human development index (HDI), Lao PDR ranked 139th out of 187 countries in 2013. The HDI index improved from 141st position in 2010, but the country's rank remains low.

These findings indicate there are many challenges in human capital development that need to be addressed, as also pointed out in the 8th Five Year Plan (2016–2020). Low educational attainment is considered highly correlated with low wages and limited labour market opportunities, which result in lower productivity and higher poverty (World Bank, 2013). Although there has been substantial progress in educational attainment since the beginning of the 21st century, the average primary school completion rate remains below the desired target. According to the above-mentioned latest MDGs review, Lao PDR achieved a net enrolment ratio of 98.5 percent, which meets the MDG target related to enrolment. However, the completion rate of grade 5 has remained low, at around 78 percent, still far below the 95 percent target for 2015.

As the review also pointed out, this low completion rate is caused mainly by the fact that most children drop out in the first school year or do not progress to the next grade level. This implies that children are likely to lack readiness to start school and have limited access to early childhood education services. More precisely, the possible reasons for dropping out could be a lack of well-equipped schools, limited capacity of teachers, direct and opportunity costs of schooling for families, insufficient funding to support investments in improving the quality of education, and others. The completion of primary school is constrained by these factors and, therefore, early-year primary schooling is a key bottleneck in the country's basic education system.

Moreover, despite steady progress in increasing the enrolment rate in primary and lower secondary school (Table 3.1), there is concern that a large proportion (30 percent) of children did not continue their study to the upper secondary level, which might negatively affect the overall education level of the future population (GOL and

UN, 2013).

Table 3.1. Enrolment Rate in Basic Education
(% of population in relevant age group)

	1992	1995	2000	2005	2012	2013	2014
Primary education	58.8	65.2	77.3	84	95.2	96.8	98
Lower secondary education	28.9	39.3	53.3	62.7	64.7	69	74.4
Upper secondary education	11	17.4	34.6	36.8	34.7	37.3	41.3

Note: The enrolment rate for primary education is net enrolment. The enrolment rates for lower and upper education are gross enrolment.
Source: Reported by Government of Lao PDR (GOL) and the United Nations (2013).

The mismatch between demand and supply of skilled labour – both in terms of quantity and quality – is another prevailing issue in Lao PDR. The Lao PDR government and its development partners such as international development banks have dedicated great efforts to improving vocational education and training by investing their resources in revamping the Technical and Vocational Education and Training (TVET) system. Higher education systems have also been undergoing reforms since 1995. This resulted in an increase in the number of higher education and vocational schools from 55 units in 2000 to 163 units in 2014 (Table 3.2).

Despite such efforts, the vocational education system fails to produce workers at a quality level that employers find satisfactory and are willing to properly reward (World Bank, 2013). This reflects the fact that an improvement in the quantity and quality of

Table 3.2. Number of Higher and Vocational Education Units in Lao PDR

	2000	2005	2010	2011	2012	2013	2014
University	1	3	5	5	5	5	5
College	5	25	99	108	108	111	111
TVET	49	47	39	39	48	47	47
Total	55	75	143	152	161	163	163

TVET = Technical and Vocational Education and Training.
Source: Lao Statistics Bureau.

higher education has not kept up with evolving labour market needs, which suggests that the focus of the education system itself is the root cause of this mismatch. According to the World Bank (2013), the focus should be not only on increasing quantity (i.e. increased enrolment, higher labour participation rates, etc.) but also on improving quality to enhance the workforce's basic skills (such as cognitive skills) and equipping tertiary students with relevant, job-specific technical skills.

A recent study on job matching of TVET graduates in Lao PDR, which is a case study of Pakpasak Technical College, suggests that the mismatch occurred in vocational education, not the whole TVET system, and the causes of the mismatch are job selection pressure by family, the unavailability of relevant jobs, the personal preferences of workers who dislike their field of study, a preference on the part of jobseekers for working places close to their homes, wishing to have much leisure time in their private lives, and a desire to secure tenure jobs (Onphanhdala and Thongsavath, 2015). A lack of accurate, consistent, and up-to-date labour market information is another reason for the mismatch. This makes it difficult for the relevant authorities to design a vocational and skills training curriculum that satisfies present and future needs in the labour market.[2]

The challenges of human development have also been a reflection of commonly known issues of low labour productivity. Table 3.3 shows a comparison of labour

[2] This argument is based on the technical report to the 38th ASEAN Confederation of Employers (ACE), Chief Executive Officers (CEOs) and Board of Directors (BOD) Meeting held on 12 January 2013.

productivity between Lao and Thai workers in various sectors in 2010. In the manufacturing and agricultural sectors, the Thai workers were 3.6 and 6.5 times more productive, respectively, than the Lao workers.

Table 3.3. Lao and Thai Workers' Productivity in 2010

Sectors	Productivity (US$/worker)		Thai/Lao (x more productive)
	Lao	Thai	
Agriculture, forestry, and fishing	517	1,875	3.6
Mining and quarrying	17,049	201,279	11.8
Electricity and water supply	14,081	45,433	3.2
Manufacturing	2,324	15,160	6.5
Construction	2,786	3,106	1.1
Services	2,333	8,182	3.5
All sectors	1,167	6,799	5.8

Note: Productivity = Real GDP (US$)/Number of employees.
Source: Author's (NERI) calculation based on Thai data from Office of the National Economic and Social Development Board (GDP) and National Statistical Office, Ministry of Information and Communication Technology (Labor) and Lao data from Lao Statistic Bureau.

Demand for skilled labour continues to increase, and the gap between demand and supply of skilled labour is filled by the inflow of foreign workers. The main finding from a recent study of skilled labour employment conducted by the Asian Development Bank (ADB) (2015a) was that multinational enterprises (MNEs) in Lao PDR employ a common strategy of sending staff holding high-level positions from their headquarters to their subsidiaries in Lao PDR. Since the existing pool of local workers does not yet possess the necessary knowledge and technical know-how, it is difficult for local personnel to substitute for foreign personnel at the same work level. In mid-level management jobs, however, local personnel may be able to substitute for foreigners in areas such as marketing and administration, if they can successfully upgrade their job skills (ADB, 2015a).

Deepened regional integration makes human capital development even more critical for the development of Lao PDR. The ASEAN Economic Community (AEC) envisioned

by the AEC Blueprint advocates removing not only barriers in trade of goods and services between member states but also barriers in labour mobility, from the end of 2015. This gives rise to opportunities as well as challenges in terms of human resource development. Labour mobility will be promoted through memoranda of understanding on mutual recognition between member states of nationally endorsed education and training qualifications. This will put some useful pressure on Lao PDR to build up its human capital, and this mobility will also increase the pool of human capital available for economic development.

The changing age structure of Lao PDR's population, the so-called demographic dividend, is another opportunity for Lao PDR to benefit from human capital development. This change indicates that the proportion of the population of working age will increase, which implies that Lao PDR will be able to depend on a higher number of workers than the current level. Lao PDR's population is expected to see robust population growth, at a projected rate of between 1.7 percent and 2 percent from 2015 to 2050.[3] More precisely, the current official projection shows an increase in Lao PDR's population from 1.71 million in 2015 to 1.91 million in 2030, and to 10.25–10.72 million in 2050. Over the period of the 8th Five Year Plan, the number of school-aged children (5–14 years old) is projected to decrease by 3.7 percent, whereas the working-age population is expected to increase by 10.6 percent and the elderly population by 10.1 percent. The working-age population is expected to start to still slowly rise in 2050.

In line with the above discussion, we present the following policy suggestions for human capital development:

[3] This estimate is provided by the Lao Statistics Bureau. A population census was completed in 2005 and a further decennial population census was undertaken in 2015, with preliminary results expected in the first quarter of 2016.

- Human capital development should start before the schooling stage to ensure that the later stages of education produce a capable and competent workforce that can be utilised for further industrialisation. Lao PDR needs to ensure, therefore, that basic literacy skills are provided through expanding and strengthening early childhood development and education.
- Given the current quality of the education and training system in Lao PDR, job-relevant skills for industrial development can be enhanced through collaboration between training institutions and firms, particularly through internship programmes and on-the-job training. In addition, the government can implement the human capital training programmes provided by international agreements concluded between ASEAN and other partner countries (e.g. human resource training programmes formulated by the ASEAN Economic Ministers–Ministry of Economy, Trade and Industry of Japan (AEM–METI) Economic and Industrial Cooperation Committee [AMEICC]).
- At the same time, firms should be provided with incentives to encourage knowledge transfer at the firm level, which upgrades Lao workers' skills and increases the opportunities to substitute for foreign workers in high-skilled positions.
- To fully benefit from the comparative advantage of the demographic dividend, job-relevant, specific technical skills and high-quality jobs should be provided to the growing working age population.

3.4. Nurturing an Efficient Financial Sector

The 8th Five Year Plan (2016–2020) set a target for investment of about one-third of GDP, or about US$27 billion for the five-year period. FDI and private domestic investments are expected to cover about half (54–58 percent) of this target amount. They have continuously been the biggest source of development financing in Lao PDR since the beginning of the 2000s. There is nevertheless a significant change in the 8th Five Year Plan as to how finance is planned for development in Lao PDR. The planned

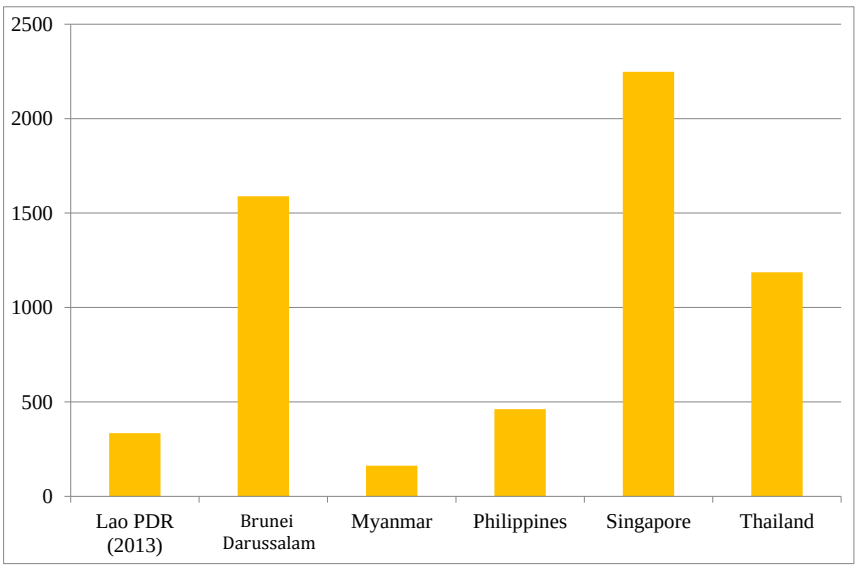
target for investment that should be financed by financial institutes has been raised from 10–12 percent of total investments in the 7th Five Year Plan (2011–2015) to 19–21 percent in the 8th Five Year Plan. In relative terms, this change amounts to doubling credit provided by financial institutions in development financing.

The role of financial institutions' credit has been growing, with the financial sector exceeding the target set in the 7th Five Year Plan. Although credit from financial institutes had been expected to account for 10–12 percent of total investments (or US$15 billion) between 2011 and 2015, the actual result was about double this target. Indeed, the target was subsequently realigned with this new reality. At least nine new, mostly foreign, banks have been established since 2010. Credit from these new banks played a significant role in the rapid increase of bank credit during the period of implementation of the 7th Five Year Plan.

For banks to be able to lend, money must be deposited with them in the first instance. Saving with banks, including the holding of bank accounts, is still in the early stages in Lao PDR. In 2013, there were 335 bank accounts per 1,000 persons in Lao PDR (Figure 3.5). This is higher than Myanmar (162.9) and close to the Philippines (461.9), but far lower than in more industrialised countries such as Thailand (1,186.5) and Singapore (2,247.8).

Although the number of banks in Lao PDR, including foreign banks from industrialised and neighbouring countries, has increased steadily in recent years, the bulk of their lending has concentrated on real estate transactions. Financing real estate requires less sophisticated financial knowledge because the availability of properties would work as collateral.

Figure 3.3. The Number of Bank Accounts per 1,000 Persons



Source: World Bank Database.

This is very different from the operation of financing firms, which requires expertise that is usually specific to particular industries. Nurturing the financial sector with diversified lending capacities is indispensable for industrial development in Lao PDR.

Nonetheless, the experience of an industrialised country such as Japan shows that the lending capacity of financial institutes is not sufficient. Lending to infant industries generally involves high risk, as SMEs often do not have sufficient assets to offer as collateral to secure large amounts in loans. National or public financial institutes may be required to facilitate a quicker lending process while minimising the risk to private lenders. Furthermore, as an instrument for nurturing efficient financial sectors, we can consider the establishment of a National Credit Guarantee Association, which would be expected to enable SMEs to borrow from banks. (For details, see the analysis of the finance sector discussed in Chapter 6.)

3.5. From Resource Curse to Resource Blessing

The energy and mining sectors have been Lao PDR's two most important engines of growth since the 6th Five Year Plan (2006–2010). Exports of electricity and minerals were about US$570 and US$1,286 million, respectively, in 2014 (Bank of the Lao PDR, 2015). Lao State Holding Enterprise (LSHC), a state corporation of Lao PDR primarily involved with the financing of the energy industry, was established in 2006 and has large stakes in nine major power projects in the country, such as the Namtheun 2 Power Company and Hognsa Thermal Electric Power. LSHC often involves foreign partners. Since the revenue and management of the energy sector are devoted to LSHC, it not only reinforces bargaining power vis-à-vis the regulatory authority, but also facilitates the effective use of the large revenues as its disposal for development purposes. LSHC's investments in energy projects are still mostly funded by loans from international development banks such as the World Bank and ADB. Such loans also function as channels of official development assistance (ODA) that can be used in business-oriented investments.

Similar state enterprises do not exist in the mineral sector. This may be due to the fact that although income from the mineral sector is much larger than that from the energy sector, in absolute terms direct revenue for the government from the mineral sector is still smaller than from the energy sector. However, the mineral sector will become increasingly important for the Lao PDR economy, as can be seen from the number of approved FDI projects in the sector. Establishing a similar mechanism in the mineral sector is important and should be recommended. The establishment of special funds based on temporary but high revenue from the mineral sector is required. Such funds will not only secure revenue from the mineral sector but will also be used for necessary infrastructure investments, and the effective use of such funds will also reduce the risk of suffering the so-called Dutch disease, which phenomenon suggests that an

expansion in the resource sector weakens the manufacturing sector (Insisienmay et al., 2015).

Mineral resource development in Lao PDR is still in its early stages. Larger-scale commercialised mines only began operating in 2005. There has not been much evidence so far of a so-called resource curse (which means that countries rich in resources stagnate) in Lao PDR. The Laotian kip appreciated from 2007 to 2014 at an annual average rate of three percent (ADB, 2015b). Insisenmay et al. (2015) found weak evidence of symptoms of the 'Dutch disease' in Lao PDR and they proposed five treatments to cope with it: (1) invest the revenue from resource exports in infrastructure and education; (2) reduce import barriers against capital and equipment imports; (3) establish a natural resource fund and a foreign exchange equalisation fund; (4) modernisation and technological upgrading through economic integration; and (5) establish a comprehensive bank for efficient trade and investment activities.

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Chapter 4

Immediate Issues

Lao PDR's economic development faces many challenges, and some fundamental issues will need to be addressed sooner rather than later. This could have positive effects on the economy as a whole. This chapter focuses on the following issues: (1) extending the national electricity grid, (2) expanding trade and investment relationships beyond countries Lao PDR shares a border with, (3) mobilising manpower, and (4) managing the trade deficit.

4.1. Extending the National Electricity Grid

Modern economic activities cannot be carried out without electricity and water. Many factories in developing countries make use of groundwater, but self-sufficiency in terms of electricity is mostly impossible. The lack of a decent electricity supply has actually been a major reason why several designated special economic and border economic zones in Lao PDR did not progress as planned.

In some academic studies economic growth is measured from outer space, using satellite data on lights at night as a proxy (Henderson et al., 2012; Keola et al., 2015); economic development has not been achieved without electricity. Although electricity generated from hydropower is a major export item of Lao PDR, most of the country is still dark at night when observed from outer space. The share of lit-up areas in Lao PDR was only about 3 percent in 2013. This is extremely low compared with Thailand (36 percent) and Viet Nam (30 percent), and also even lower than Cambodia (4 percent) in the same year.

According to official statistics, nearly 90 percent of families in Lao PDR have access to electricity. However, this figure includes unstable off-grid electricity such as generated from diesel, solar, etc. Inclusion of such sources overestimates the rate of access to electricity, especially of economic activities; it is also an inadequate reflection of the availability of electricity for manufacturing. Both quality and quantity are of critical

importance for evaluating the availability of electricity used for manufacturing activities.

Table 4.1 shows that the majority of transmission lines in Lao PDR are of the 22 kilovolt (kV) type. Such transmission lines can transmit electricity only over short distances and are not suitable for large-scale manufacturing plants. Transmission lines of the 115kV type – which are suitable for large-scale manufacturing plants – have a total length of only about 4,500 km in Lao PDR, which is approximately twice the distance from the north to the south of the country. This compares very unfavourably with Thailand, for example, where in 2016 transmission lines with a capacity larger than 115kV total more than 32,000 km, of which 28,000 km has a capacity of over 230kV. In the context of the development of industrial clusters, the installation of transmission lines with higher capacity, from power plants to planned industrial and major urban areas, is an issue that Lao PDR needs to urgently address.

Table 4.1. Length of Major Transmission Lines in Lao PDR (km)

	500kV	230kV	115 kV	35 kV	22 kV
2011	54	406	3,343	188	17,127
2012	54	406	4,554	152	20,613
2013	54	406	4,357	199	22,474
2014	54	481	4,539	220	24,688

kV = kilovolt.
Source: Electricité du Laos.

4.2. Expanding Trade/Investment Relationships Beyond Immediate Neighbours

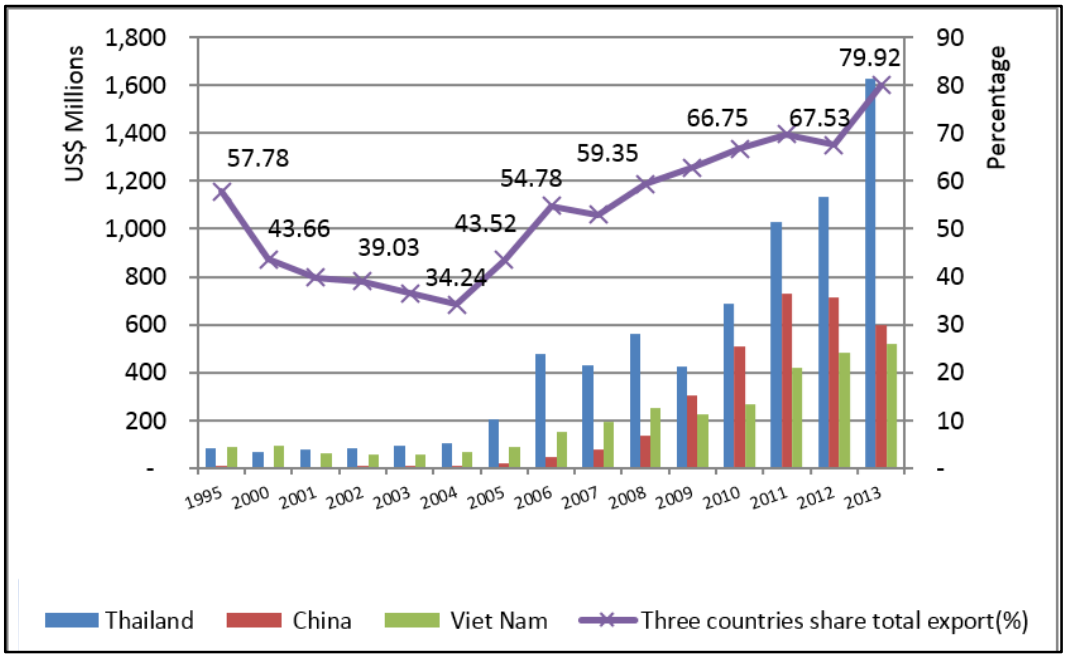
Lao PDR has trade relationships with more than 50 countries around the world, but a high share of its exports go to neighbouring countries, such as Thailand, Viet Nam, and China, as can be seen in Figure 4.1. The export share of these three countries accounted for 57.8 percent of Lao PDR's total exports in 1995 and this increased to 79.9 percent in 2013[4]. Exports to Thailand recorded remarkably strong growth during this period, from US$83.30 million in 1995 to US$1.63 billion in 2013, which was 47.5 percent of total exports in 1993. Geographical proximity and similarity of cultures and

[4] ADB database, 2014.

traditions make Thailand Lao PDR's closest trading partner. Exports to Viet Nam remained almost constant from 1995 to 2005, but exports expanded strongly in 2006–2013, increasing from US$151.45 million to US$519.11 million. Total exports to China, which is regarded as a potentially huge market, were higher than exports to Viet Nam after 2008, reaching US$595.75 million in 2013.

An increase in both bilateral and multilateral trade agreements may have been a significant factor explaining the rapid growth of Lao PDR's exports, from US$330 million in 2000 to US$2.59 billion in 2013. However, average exports under the preferential treatment of the Association of Southeast Asian Nations (ASEAN) Free Trade Agreement (AFTA) decreased slightly, from 8.77 percent in 2010 to 6.97 percent in 2013. Furthermore, Lao PDR's average exports to its ASEAN dialogue partners under the preferential tariff treatment in 2013 were diversified, for example, to ASEAN–Korea FTA (AKFTA) (37.32 percent), ASEAN–Japan Comprehensive Economic Partnership (AJCEP) (5.82 percent), and ASEAN–China FTA (ACFTA) (less than 1 percent).[5]

Figure 4.1. Lao PDR's Major Trading Partners



Source: ADB database (2014).

[5] Author's (ERIT) calculation based on the MOIC database of 2014.

Lao PDR's main exports are still mostly made up of mineral products, which accounted for more than half of the country's total exports in 2005–2013, and they declined by 38.6 percent from 2010 to 2013. This is because the Lao PDR government suspended foreign direct investment (FDI) in mining development projects in 2011, which caused export of mineral products to fall sharply. Exports of industrial products increased from US$126.17 million in 2005 to US$1,092.34 million in 2013, and electricity exports rose from US$101.19 million to US$586.12 over the same period.

In summary, the national export strategy sets out nine main priority areas as follows:

(1) Electricity
(2) Tourism
(3) Organic agricultural products
(4) Mineral products
(5) Garments
(6) Lao silk and cotton handicraft
(7) Wood products
(8) Medicinal plants and spices
(9) Products from local talent

It also formulates seven cross-sectoral strategies:

(1) Export quality management
(2) Trade finance
(3) Trade information services
(4) Competitiveness development
(5) Marketing
(6) Import for re-export
(7) Concept note for drafting a strategy on export of Lao labour

The overall industry and trade strategies from 2016 to 2025 and the Vision 2030 will mainly focus on three priority strategic pillars to promote industry and trade activities in both the domestic and international dimensions. These three strategic pillars aim at deepening economic integration, improving the business environment, and enhancing the competitiveness of enterprises.

Economic integration will be utilised to gain the benefits from multilateral, regional, and bilateral cooperation. At the same time, the business promoting environments should be supported to assist private sectors by reducing the cost of doing business. The main focus in that regard remains on improving trade facilitation, simplifying business regulations, and improving access to finance and skilled labour. These efforts will also play a role in promoting investment in infrastructure as well as competition in service sectors. The policy will continue to support strengthening public–private dialogue on the business environment at the central and provincial levels. Moreover, the policy will focus on enhancing enterprise competitiveness through facilitating access to business advisory services and on supporting sector-specific, export-oriented, and non-resource sectors.

Overall, what the Lao PDR government will try to achieve from 2016 to 2020 is to completely solve cross-cutting issues regarding industrialisation and modernisation of industries and trade structures. This will enable the processing industries in agricultural crops, and the wood, rubber, textile, garment, auto assembly, and electronic equipment industries to integrate into regional supply and value chains, or to push the country's enterprises towards integration with global production networks. Finally, Lao PDR will utilise the available regional and global free trade agreements (FTAs) to promote trade of goods and services for the country's development.

Export promotion cannot be discussed without practical consideration of markets. Except for agricultural and mineral products, Lao PDR's neighbouring countries do not provide the significant volume of markets needed in relation to the above-mentioned nine priority areas.

Garment, for instance, is mostly exported to developed countries, such as those of the European Union (EU), Japan, and the United States. But the export value of garment products produced by Lao PDR remains small, in the order of hundreds of millions of US dollars, whereas in Cambodia it amounts to several billion US dollars. Hence, further tapping the garment product markets in developed countries could create a source of stable exports for Lao PDR. Considering the fact that the garment industry employs the largest number of regularly paid workers, this would also contribute to inclusive development. Diversification of exports traditionally going to its

neighbouring countries would also help reduce Lao PDR's risk exposure. The country was hit hard during the Thai Financial Crisis in 1997–1998, and it should be prepared for economic slowdown in any of its neighbouring countries.

4.3. Mobilising Manpower

The population of Lao PDR was less than 7 million in 2015, and it is the smallest country in the ASEAN region apart from the city-state of Singapore. It is quite small, compared with populations of about 14 million in Cambodia and 60–90 million in Myanmar, Thailand, and Viet Nam. As the segments of production networks in which Lao PDR and neighbouring countries try to participate require large numbers of low-wage workers, that bigger neighbouring countries such as Thailand and Viet Nam would have larger clusters is to be naturally expected. The large development gap of industries (e.g. garment industries) between Lao PDR and Cambodia, however, cannot be explained solely by Lao PDR's small population. Although Cambodia's population is only about twice that of Lao PDR, the garment industry in Cambodia employs more than 300,000 people, which is nearly 10 times more than in Lao PDR.

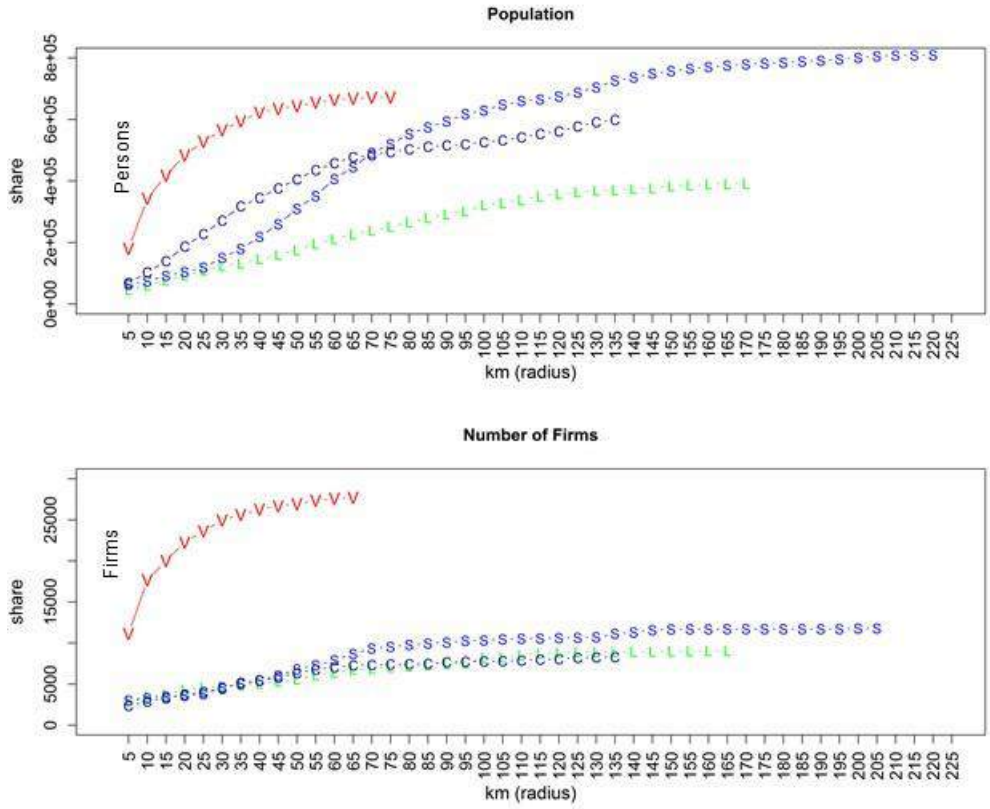
Figure 4.2 shows that population concentration could be a major reason for this large difference between the two countries. First, it is demonstrated that population size aggregated by administrative boundaries is not a good proxy of available labour force. This is because administrative boundaries are often subjectively defined, and can vary greatly in terms of size and shape. The populations of Vientiane Capital, Champasak, and Savannkhet in 2006 were about 600,000, 500,000, and 800,000 people, respectively.

But the number of people living away from the centre of urban areas provides a completely different picture. More than half of the population in Vientiane Capital lives within a 25 km radius from the city centre (Figure 4.2 upper). In contrast, this range extends to more than 60 km for Champasak or more than 100 km for Savannakhet. People in these provinces need to travel to work. In developing countries where transport costs are relatively high, it is difficult for people to commute tens of kilometres to work. A round trip bus fare from the capital city centre to the main

campus of National University of Lao PDR in Dongdok is about US$1, which is more than one-fifth of the average daily wage.

In short, what is important is the absolute number of people living within a commutable distance. Because a large number of people live in the provinces, Vientiane Capital has the biggest concentration of available labour foce. This seems to be the reason for the large difference in the number of firms between the Vientiane Capital and the major provinces (Figure 4.2, bottom).

Figure 4.2. Share by Distances from the Centre of the Capital City and Major Provinces (2006)

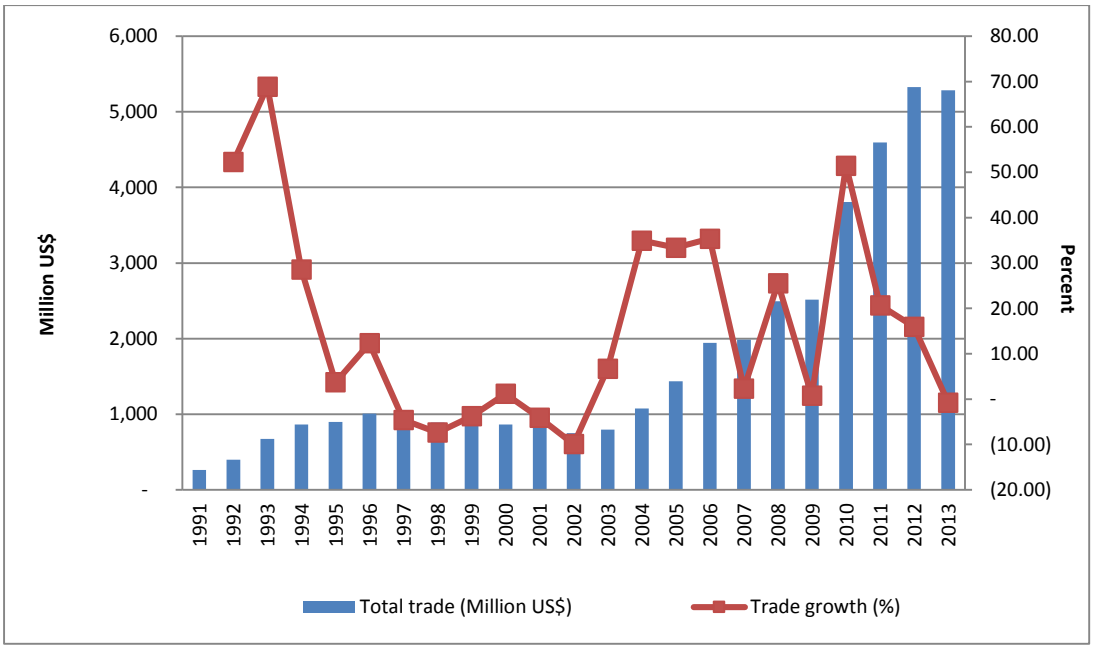


Note: The centre is defined as the place with the highest number of firms. C, L, S, and V denote Champasak, Louangphabang, Savannakhet, and Vientiane Capital, respectively.
Source: Computed by the author (NERI) based on Economic Census 2006 and Population and Housing Census for the locations shown.

4.4. Managing the Trade Deficit

As Lao PDR is closely integrated with global trade, the country has experienced an increase in trade volumes since the 2000s (Figure 4.3). Increased participation in international trade over the past decades led Lao PDR to higher and higher levels of trade (both imports and exports), from US$262 million in 1991 to US$5,284 million in 2013. Although 1992 saw strong trade growth (68.9 percent), it declined steadily from positive growth in 1993 to negative growth during and after the Asian financial crisis (1997–2002). Moreover, negative growth of total trade in 2013 was a consequence of decreases in both export and import values in 2013.[6]

Figure 4.3. Lao PDR's Trade Tendency, 1991–2013



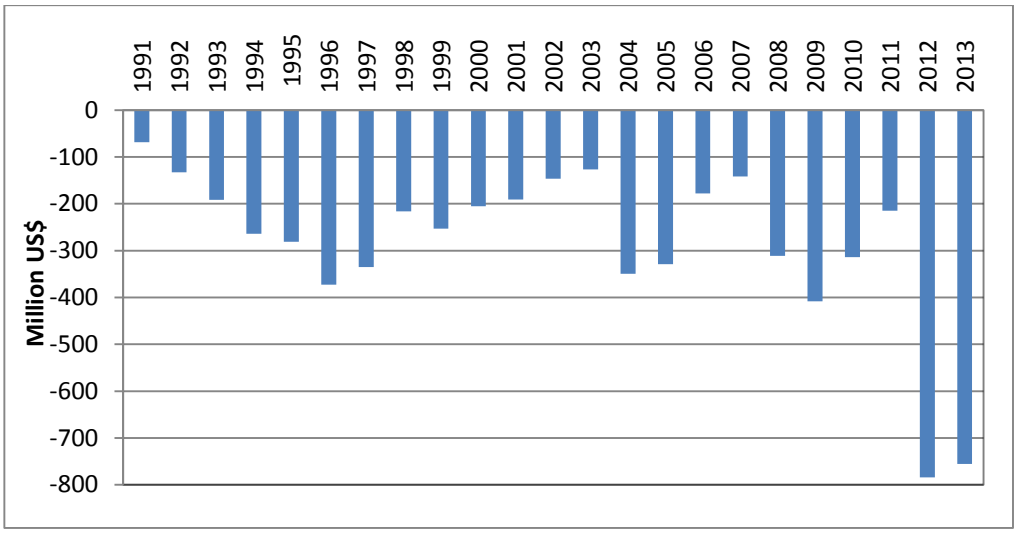
Source: Bank of Lao PDR.

Lao PDR's outward-led growth policy has brought great economic benefits over the past decades. Gross domestic product (GDP) grew constantly at an annual average 7 percent, with foreign investments playing a key role in Lao PDR's exports and imports. However, the influx of foreign investment into the country inevitably led to higher trade deficits at least in the short and medium term. The available statistical reports

[6] The Annual Economic Report 2013 of the Bank of Lao PDR revealed that Lao PDR's export value in 2013, a large proportion of which was generated by mining exports, decreased due to falling prices of world mineral goods. In addition, the import value of consumer goods also declined in 2013.

from the National Statistics Bureau and international economic institutions (World Bank and International Monetary Fund) show that Lao PDR always had more imports than exports since the country started to engage in foreign trade in 1986. Figure 4.4 illustrates that Lao PDR's trade balance was negative every year from 1991 to 2013. The most significant features during those periods were observed in 2012 and 2013, with the trade deficit rising to US$784 million in 2012 (the highest recorded level) and slightly decreasing to US$756 million in 2013.

Figure 4.4. Lao PDR's Balance of Trade



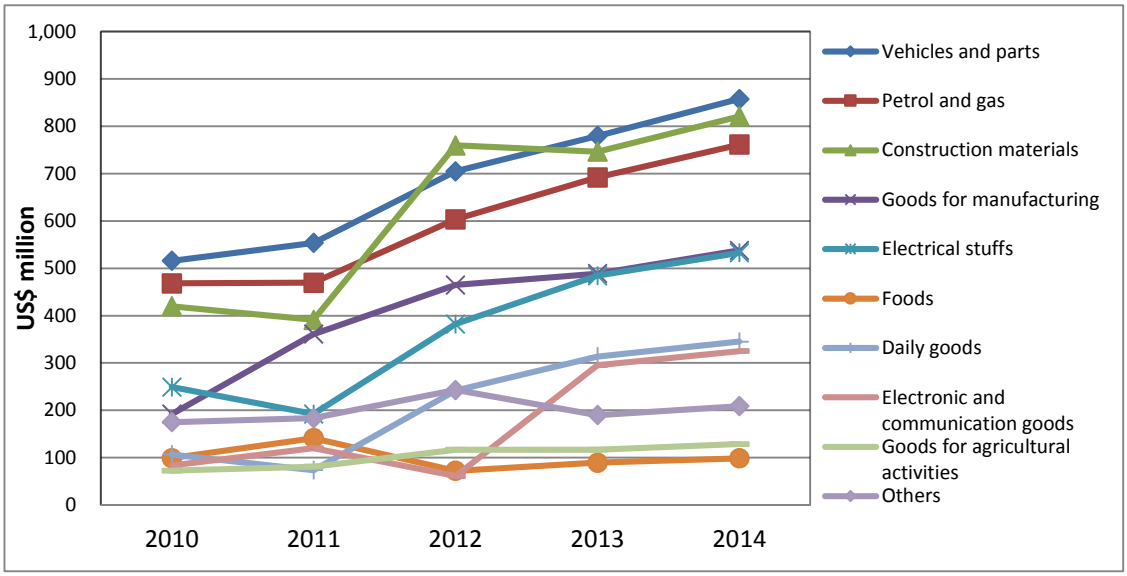
Source: Bank of Lao PDR.

Trade deficits are likely to be the 'norm' for developing countries like Lao PDR where high economic growth resulted from strong growth of foreign investment in the resources sectors (hydropower and mining). In Lao PDR this started in the 1990s when large foreign investment projects were initiated, the most prominent being the Sepon gold mine in 2003 and the Num Theun II hydroelectric power project in 2005. However, many large foreign investments projects approved by the government of Lao PDR are in the early stages of operation or still under construction and thus the value of capital imports still far outweighs that of goods exports,[7] which threatens to further increase Lao PDR's trade deficit.

[7] According to the Bank of Lao PDR's annual economic reports from 2004 to 2013 and the World Bank's *Annual Economic Monitor* from 2013 to 2015.

Another reason for Lao PDR's trade deficits is that its domestic producers are less competitive than foreign suppliers. Lao businesses are mostly small production bases managed by small and medium-sized enterprises (SMEs) that are often reported to lack finance and production diversity.[8] Hence, Lao PDR has to import capital and consumer goods it cannot purchase from local producers (Figure 4.5), which contributes to its negative trade balance.

Figure 4.5. Lao PDR's Main Import Items



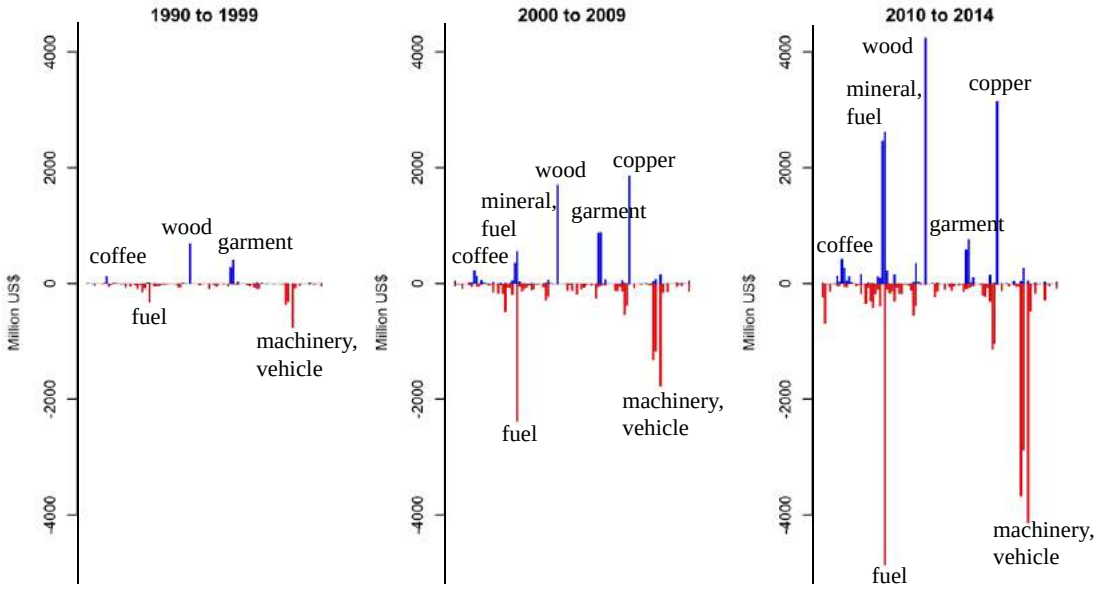
Source: Author-calculated data from the Department of Import and Export, Ministry of Industry and Commerce (MOIC).

Figure 4.6 provides a broader and longer-term view of the accumulated export and import values of Lao PDR, which were aggregated into three periods. It obviously depicts the two most significant sources of Lao PDR's trade deficit: imports of fuel and vehicles. If the trade deficits of these two items are not addressed, the problem of Lao PDR's large trade deficit will unlikely be resolved, or at least be reduced to a sustainable level. Industrial studies in Chapter 6 assess biodiesel as a potential solution to Lao PDR's present complete dependence on imported oil. This problem needs to be addressed urgently because the value of oil imports will increase dramatically in case of further steep price rises in the future. The impact of a sudden rise in the oil price on

[8] This observation is extracted from 'Export Dynamics and Diversification in Lao PDR: An Analysis of the Product Space', conducted in 2010 by Record and Nghardsaysone of the World Bank research team.

the Lao PDR economy could be catastrophic. Of course, biodiesel alone will be far from sufficient. A diversification of energy sources to get away from Lao PDR's dependence on oil is highly necessary.

Figure 4.6. Lao PDR's Exports and Imports by HS 2-Digits



Source: Compiled by author based on COMETRADE.

4.5. From Tariffs to Taxes

Joining AFTA in 1997 (it is now the ASEAN Trade in Goods Agreement – ATIGA) and the World Trade Organization (WTO) in 2013 were Lao PDR's internationalisation milestones. Lao PDR's government enforced the amended laws on customs in 2011, on taxes in general in 2011, and on value-added taxes in 2012; these are highly consistent with international rules and regulations. The changes in customs law in terms of tariff rates can be seen in the Lao tariff nomenclature, which has been periodically updated. In fiscal year 2013–2014, Lao PDR practically applied tariff rates of 0–5 percent to 99 percent on all merchandise goods imported under ATIGA and had removed 203 items from the sensitive list to the inclusive list by the end of 2015.[9] Under the WTO commitment, Lao PDR has already bound tariff rates on an average of

[9] This information is reported on the ASEAN website (www. asean.org).

18.8 percent for all imported goods (10,696 items), 19.3 percent for agricultural goods, and 18.7 percent for industrial goods.[10]

Table 4.2 illustrates Lao PDR's customs history from 1993–2008. The tariff rates were reduced from the highest interval of 5–100 percent in 1993 to 0–20 percent in 2008. Imported agricultural and industrial materials for production purposes were free of duties, but for commercial purposes the rate is 5, 7, or 20 percent. All in all, Lao PDR's tariff rates have been reduced to the lowest level in line with the ATIGA schedule the country had committed to.

Table 4.2. Lao PDR'S Customs History

	Post-1993 reform (%)	End 2000 (%)	End 2005 (%)	End 2008 (%)
Agriculture				
Seeds	20	5	n.a.	0
Fertilizer	5	5	5	0
Fisheries	5–10	n.a.	n.a.	0–7
Stock farming				
Feed	5	5	5	0
Other	5–30	5–30	5–30	5
Manufacturing				
Raw materials	5–10	5–10	5	5
Packaging	10–20	10–20	5	0
Energy	5–15	5–20	5–20	0–5
Machinery and equipment	5–20	5–20	5–10	0–5
Trucks, tractors	5–30	5–30	5–30	0–20
Protected local manufactures	30–80	30–40	n.a.	n.a.
Luxury consumer goods				
Food	20–80	10–30	10–30	0–5
Non-food	10–100	10–40	10–40	0–20

Source: Vixathep (2007) and Lao tariff nomenclature, Customs Department (2015).

In line with the reductions in tariff rates, tax rates have been raised, which has played an important part in the Lao PDR government's revenue increases. Currently, the government levies three types of tax – excise, profit, and value-added – on all imported goods, which has mitigated the loss of national revenue due to the reductions in tariff

[10] The data cited is from Lao Economic Monitor in 2013, provided by the World Bank.

rates. The tax rates are broadly differentiated into two groups – indirect tax and direct tax. By comparing these two taxes, we can see that the indirect tax has an essential role in the government's tax revenue, in particular, the tax imposed on luxury goods (Table 4.3). Moreover, Figure 4.7 illustrates that the proportion of tax revenue in gross domestic product (GDP) has been much higher than that of tariffs in 2000–2014, and is expected to continue to increase in the projection period, i.e. from 2015 to 2019.

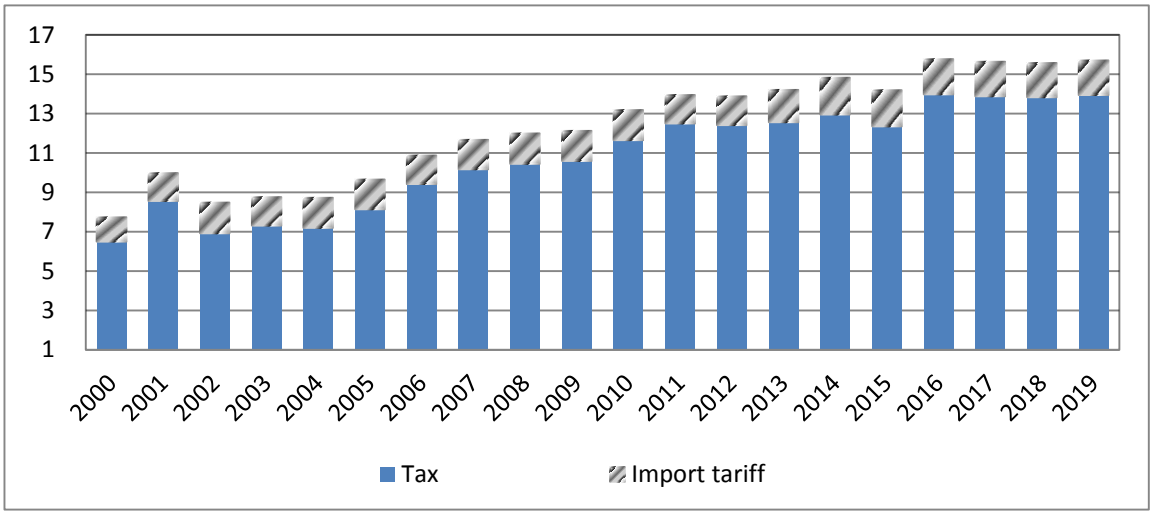
Table 4.3. Lao PDR's Tax Rates

	Interval tax rate (%)	Mean	S.D
Indirect tax			
1 Value-added tax	10	–	–
2 Excise tax			
Goods:	5–150	31.59	32.42
Services:	10–80	29.29	28.93
Direct tax			
Profit tax	5–24	14.80	7.60
Income tax	5–24	14.33	6.89
Lump-sum tax	3–7	5	1.22

S.D. = standard deviation.
Note: The highest tax rates are for cars – from 25–150 percent.
Source: Author's (ERIT) calculation from tax law, MOF (2012).

Figure 4.7 also shows how tax revenue has increased steadily since 2000s, whereas tariff revenue has remained more or less the same in absolute terms. Apart from tax revenue from mineral and resource industries, most tax is collected from import goods at the point of import, and therefore its function is similar to that of tariffs. Although tariffs are also a source of revenue and protect local industries, they are by definition a barrier to the smooth movement of goods across borders called for by international production networks. For the benefit of countries, regions, cities, and clusters hoping to join and benefit from production networks, efforts should be made to avoid misuse of taxes as tariffs.

Figure 4.7. Proportion of Tax and Tariff in GDP (%)



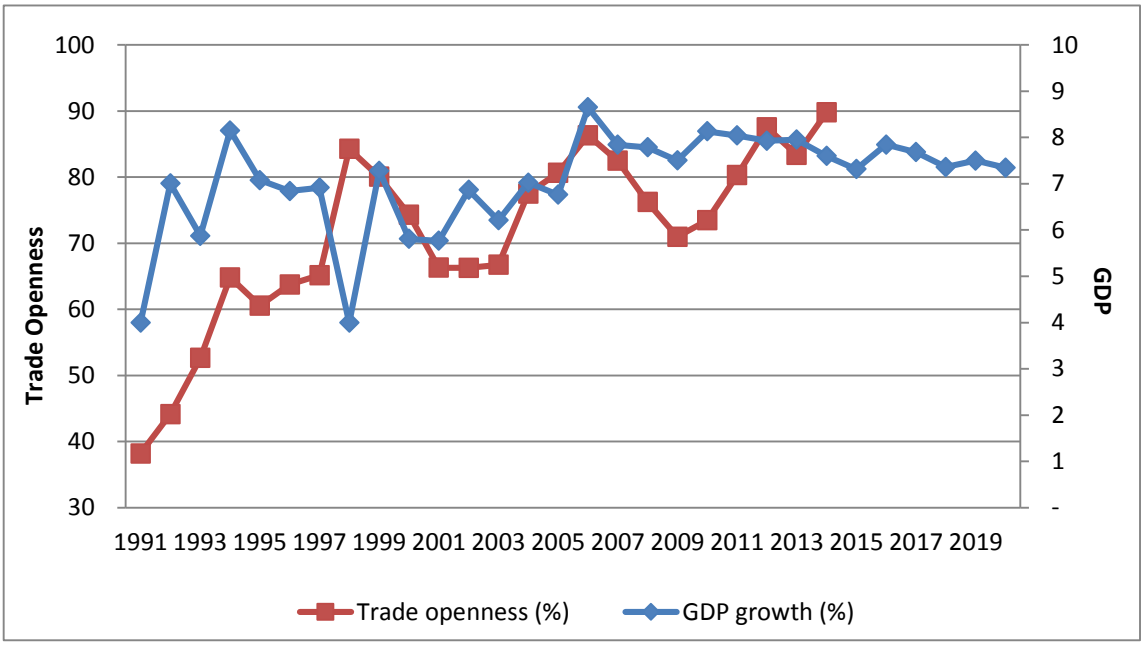
GDP = gross domestic product.
Note: Data shown from 2013 to 2019 are projected values.
Source: Ministry of Finance, Lao PDR.

4.6. Expanding Trade/Investment Relationships beyond Immediate Neighbours

Lao PDR has been regarded as one of the high GDP growth countries in the region. Its annual average 7 percent GDP growth from 1991 to 2014 (Figure 4.8) was higher than other least developed countries (LDCs) that recorded average growth of about 6 percent over the same period.[11] Lao PDR's GDP growth has seen strong fluctuations since the country's substantial integration into global trade. GDP growth dropped sharply in 1998 when the country was hit hard by the Asian financial crisis, and GDP growth fell to a record low of 4 percent. After 1998, GDP growth got back on track with growth rates of 6–8 percent from 1999 to 2014. Since 2005, the services sector has been the leading contributor to GDP growth, with an average annual of 3 percent growth, compared with 2.5 percent and 2 percent, respectively, for agriculture and industry.[12] The IMF has projected average annual GDP growth of 7.5 percent from 2015 to 2020 for Lao PDR.

[11] Reported by World Bank data (www.worldbank.org)
[12] Reported by Bank of Lao PDR.

Figure 4.8. GDP Growth and Trade Openness of Lao PDR

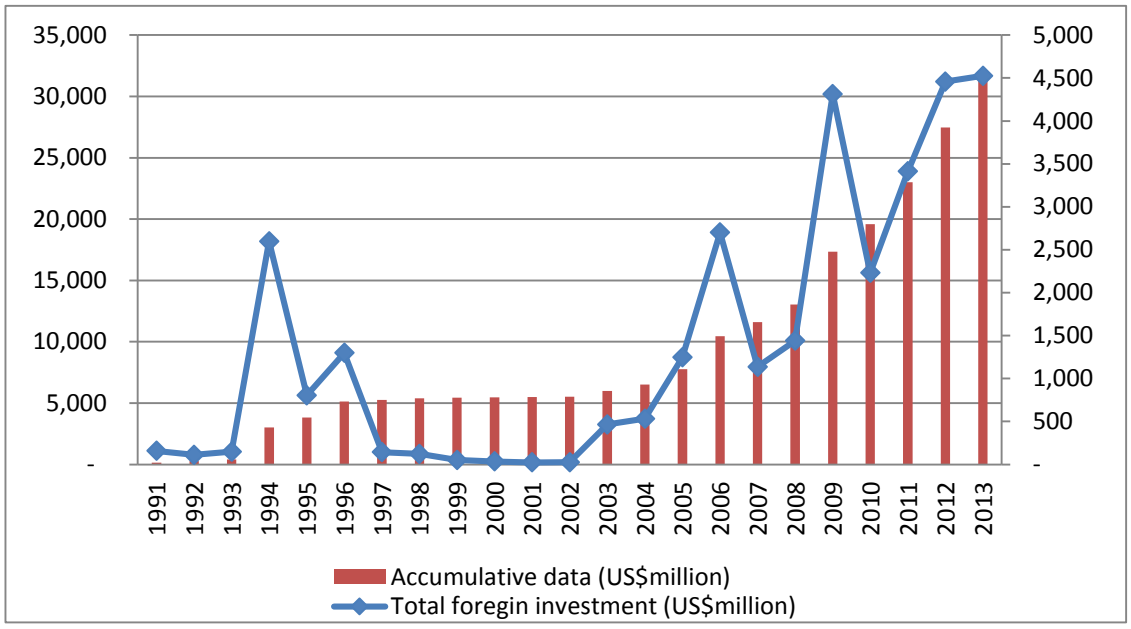


GDP = gross domestic product.
Source: Bank of Lao PDR and International Monetary Fund (IMF) data.

Since Lao PDR's introduction of a market economy in the late 1980s, the country has eagerly participated in international trade forums, joining the AFTA in 1997 and the WTO in 2013. This gave Lao PDR access to wide global markets and enabled it to attract more foreign investment. According to the trade statistical reports of the Bank of Lao PDR, average annual trade growth from 1991 to 2013 was about 16.5 percent and trade openness increased from 38.2 percent in 1991 to 89.8 percent in 2014 (Figure 4.8).

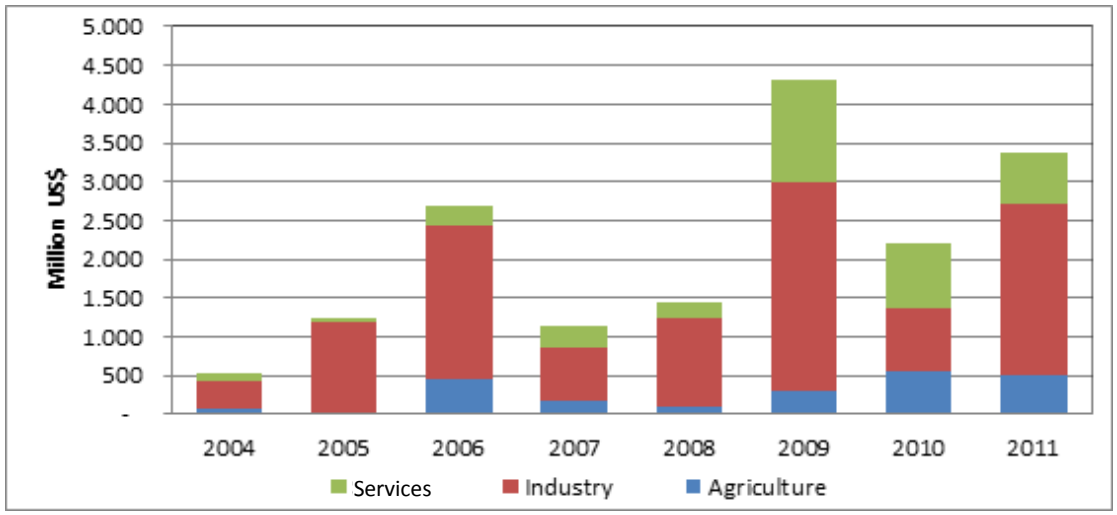
FDI also showed an upward trend over the same period, even though it saw sharp fluctuations from year to year. Figure 4.9 shows that FDI inflows to Lao PDR were almost US$32,000 million in 2013, which is 200 times higher than in 1991. Although annual inflows of FDI fluctuated, its pace of growth rose from 1991 to 2013. The Asian financial crisis seems to have had a long-term effect on FDI in Lao PDR, as it fell sharply in 1997–2002. After 2002, FDI inflow was back on track and reached new highs in 2006, 2009, and 2013. Furthermore, according to Figure 4.10, the industrial sector attracted most FDI from 2004 to 2013.

Figure 4.9. Lao PDR's Foreign Investment Inflows



Source: Bank of Lao PDR, Lao Department of Statistics, Ministry of Planning and Investment.

Figure 4.10. Foreign Investment by Sectors



Source: Lao Department of Statistics, Ministry of Planning and Investment

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Chapter 5

The Development of Industrial Estates

5.1. Industrial Estate Development in Neighbouring Countries

5.1.1. Economic development and industrialisation

Economic development has been deeply connected to industrialisation. Since the industrial revolution in Britain in the 18th century, industrial development has uplifted the living standards of most countries in Europe, the Americas, and East Asia. The Association of Southeast Asian Nations (ASEAN) countries are no exception to this. With Singaporeans leading the way, the people of the ASEAN region have benefitted from their countries' industrialisation.

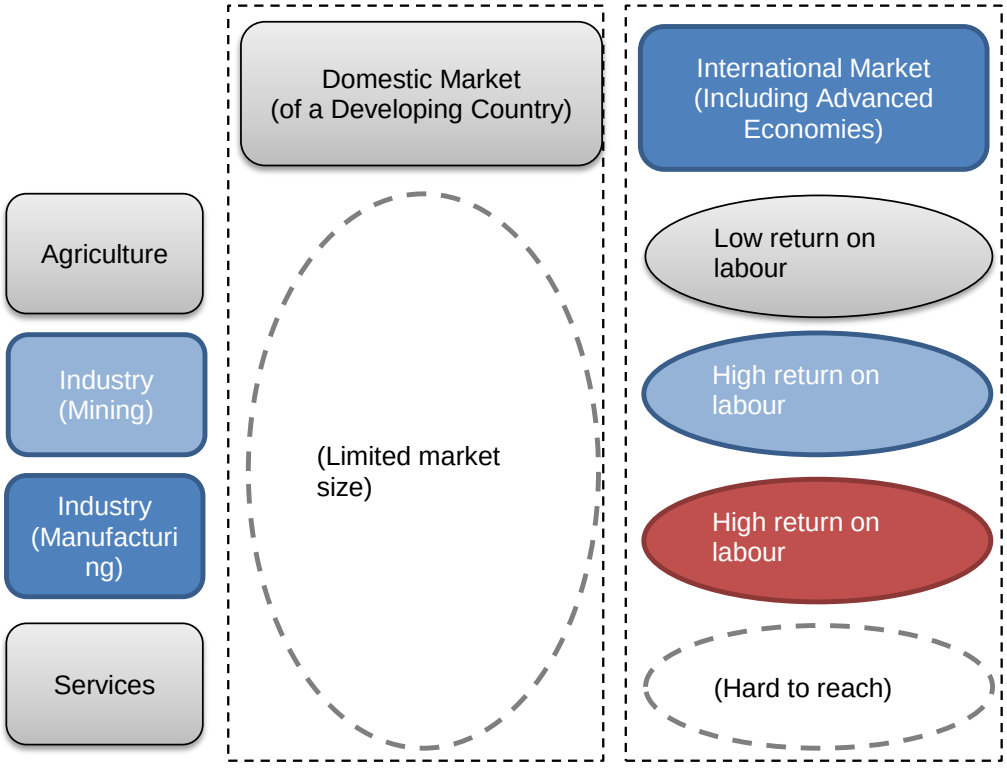
There are drivers of economic development other than industrialisation: improvements in agricultural technology/productivity and/or innovations in the services sector can be the primary drivers of a country's development. But industrial development, particularly in export-oriented manufacturing industries, has been the lynchpin of economic development, as demonstrated by many empirical cases.

A simplified illustration (Figure 5.1) shows a typical situation faced by a developing country. Its domestic market size is limited because of its present income level. Moreover, its pace of expansion cannot exceed by more than its economic growth rate. On the other hand, demand from the international market – especially from advanced economies with higher purchasing power – is virtually unlimited. Thus, exports are deemed essential for rapid economic growth, the so-called process of the economy taking off. In fact, this process can be seen in many Asian economies.

Among the various exporting sectors, manufacturing tends to be the driver of balanced development in the economy. Agricultural products can be a source of income, but labour productivity in the sector is often limited. If a country is resource rich, mining can yield high income but is low in job creation. This leads to the income distribution being skewed and inequitable economic development, unless the

government intervenes and imposes profit redistribution. As for the services sector, most of the market is domestic, as catering to advanced economies is often unfeasible.

Figure 5.1. Drivers of Economic Growth for a Developing Country

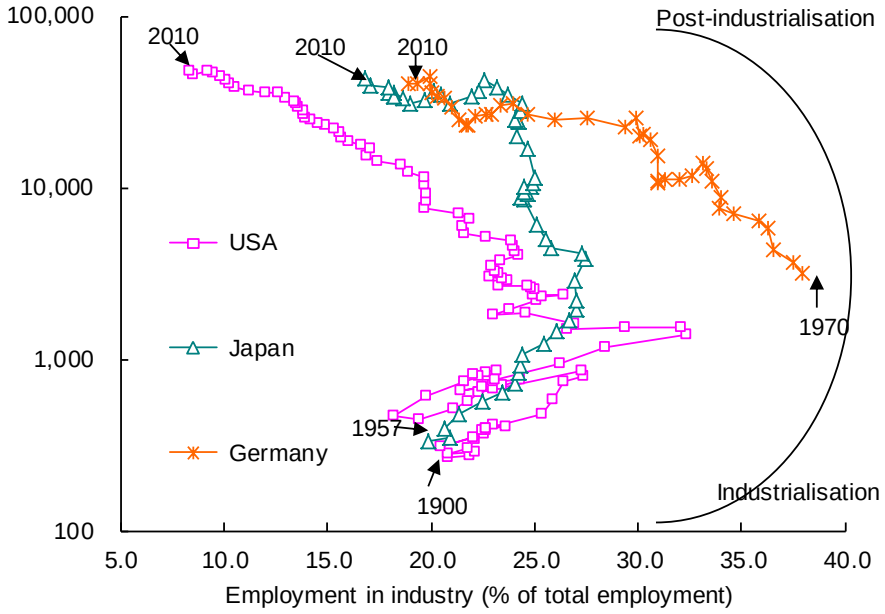


Source: Daiwa Institute of Research Ltd (DIR).

Empirical examples indicate that industry expansion is prominent in the early to middle stages of economic development. Figures 5.2 and 5.3 depict the historical trajectories of economic growth and industrialisation, measured in gross domestic product (GDP) per capita, and industry's share of employment.

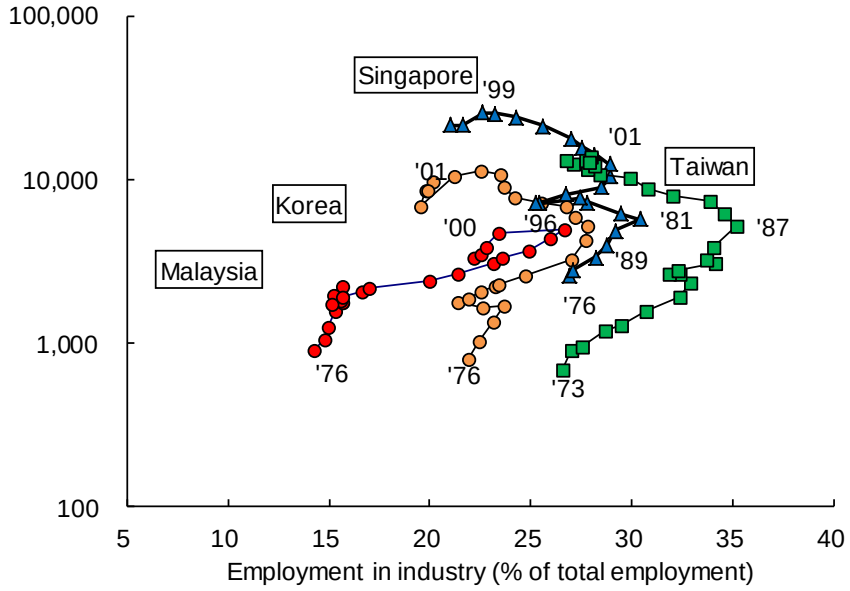
In large economies (e.g. the United States [US], Japan, Germany, and China) and newly industrialised smaller economies (e.g. Singapore, Malaysia, Republic of Korea [henceforth, Korea], and Taiwan), economic growth was accompanied by a rise in the industry's share of employment, with the peak being around 30 percent. In the latter case, the industry's share of employment grew continuously until GDP per capita reached US$5,000–10,000.

Figure 5.2. GDP per Capita (US$) and Employment in Industry (%)



GDP = gross domestic product.
Source: Haver Analytics; compiled by DIR.

Figure 5.3. GDP per Capita (US$) and Employment in Industry (%)



GDP = gross domestic product.
Source: World Bank data from *World Development Indicators*; compiled by DIR.

5.1.2 Overview of industrial estate development in neighbouring countries

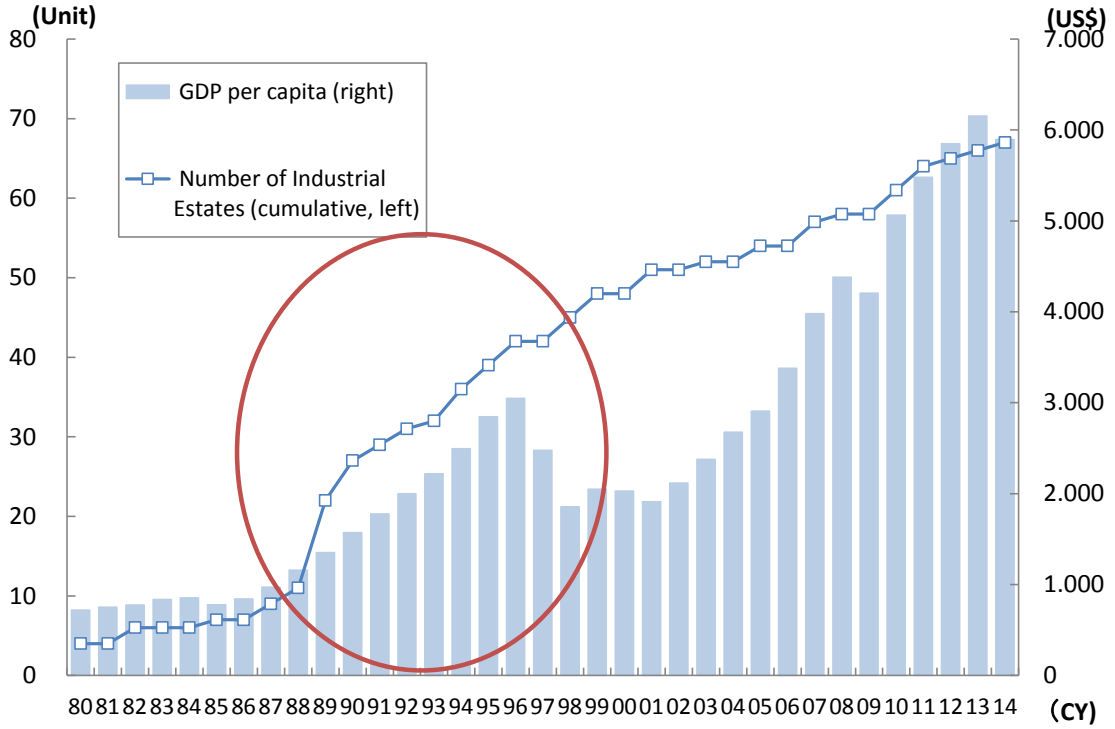
For manufacturing industries to develop in a country, availability of adequate land is an essential precondition. Moreover, the land needs to be equipped with basic infrastructure, such as water, electricity, gas, transportation, and telecommunication. Although individual manufacturers can create infrastructure in some cases, the cost of doing so would be a heavy burden for most and would therefore discourage many potential companies from building new factories. As public infrastructure benefits from economies of scale advantages, land development of multiple industrial plots in a single area, or an 'industrial estate' (IE), has emerged as an effective strategy.

The world's first IE dates back to the 19th century. In 1896, Trafford Park Estates Co., Ltd. was established in Manchester, United Kingdom, as a private real estate business. Three years later in the US, Clearing Industrial Districts were developed in Chicago as another pioneering project. These pioneering IEs gradually attracted attention as desirable locations for investment. In 1911, Ford established its first overseas assembly plant in Trafford Park Estates. However, it was after the Great Depression that IE development became a prominent public policy issue. The British government took the initiative of implementing an industrial estates construction programme to mitigate unemployment in the so-called depressed areas. As the programme succeeded in promoting industrial development, government-led IE development became recognised as an effective policy option.

In the ASEAN region, Singapore's Jurong Industrial Estate was planned as early as 1961, when the Government of Singapore developed an industrialisation programme with the help of a Dutch economic advisor. Its construction started in the following year, and it expanded so rapidly that it laid the foundation for Singapore's economic success. By 1976, as many as 650 factories were in operation within a land area of 12 km^2 (Singapore Government, National Library Board, n.d) Thailand and the Philippines started IE development in the 1960s, too, although their industrialisation was slower than that of Singapore. Cambodia, Lao PDR, Myanmar, and Viet Nam started their IE development much later, in the 1990s and 2000s. In this report, the cases of Thailand, Cambodia, and Viet Nam are discussed as a reference for IE development in Lao PDR.

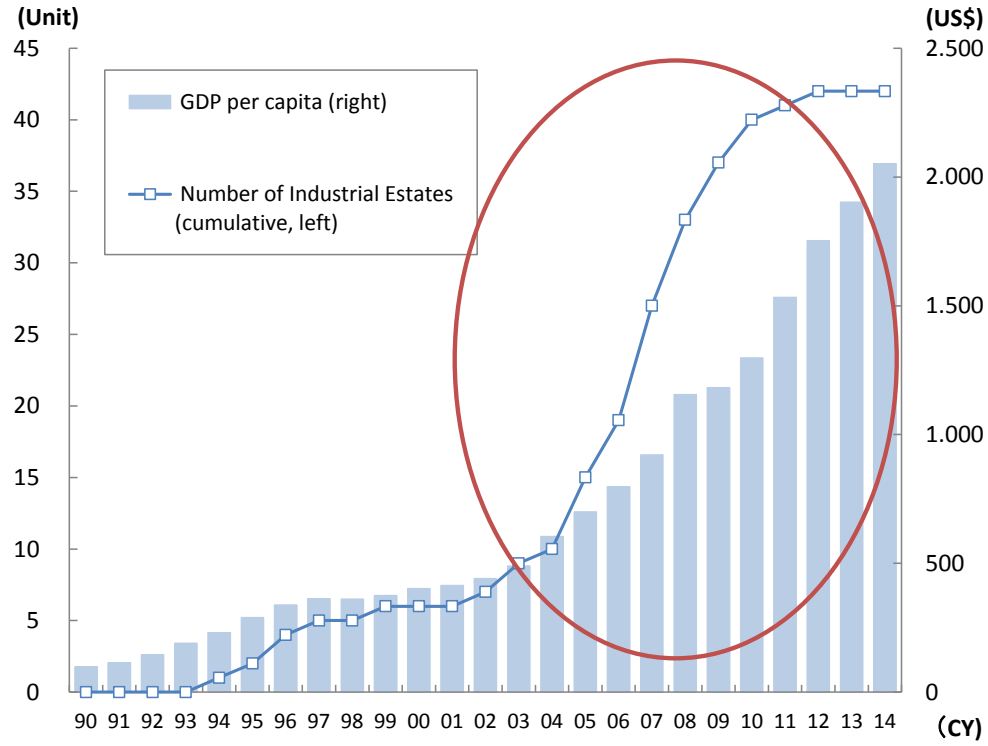
Looking at the historical development of IEs, it can be argued that IE development laid the foundation for rapid economic growth in neighbouring countries. In the case of Thailand, several industrial estates were developed from the late 1980s to the early 1990s, which led to it dropping the tag of 'least developed country.' In the case of Viet Nam, IE development accelerated after the early 2000s. Compared with its stagnated development from 1995 to the early 2000s, Viet Nam's economic development has been remarkable since the acceleration of IE development.

Figure 5.4. Thailand's GDP per Capita and Number of IEs (historical changes)



GDP = gross domestic product; IE = industrial estate.
Note: For 'Number of Industrial Estates,' IEs without establishment year information are excluded.
Source: Compiled by DIR from IMF and various sources (individual IEs' websites, etc.).

Figure 5.5. Viet Nam's GDP per Capita and Number of IEs (historical changes)



GDP = gross domestic product; IE = industrial estate.

Note: For 'Number of Industrial Estates,' IEs without establishment year information are excluded.

Source: Compiled by DIR from IMF and various sources (individual IEs' websites, etc.).

5.2. The Case of Thailand

5.2.1. Development history

5.2.1.1. FDI-driven and export-oriented economic development

The beginning of Thailand's IE development goes back to the late 1950s, when Thailand initiated its industrialisation programme during the Sarit Administration (1958–1963), on the basis of a policy suggested by the World Bank. Salient features of the Sarit Administration's industrial policy are evident in the following three initiatives: (1) seeking private sector–led industrialisation; (2) utilisation of inward foreign direct investment (FDI); and (3) preparing the first national five-year development plan (National Economic and Social Development Plan). The plan was so sagacious that it recognised the importance of IE development for an FDI-driven and

export-oriented economy. Sarit's industrial policy not only laid the foundation for Thailand's IE development plan but also formulated the overall national industrialisation strategy.

Under the second Thanom Administration (1963–1973), Thailand's IE development plan became a reality. Thailand's first government-developed IE, named Banchan Industrial Estate, was created in 1969. Furthermore, the first private sector–developed IE named Nava Nakorn Industrial Zone was constructed in 1971 by Nava Nakorn Public Company Limited. All of these frontrunner IEs were located in the Bangkok area.

5.2.1.2. Establishment of the Industrial Estates Authority of Thailand

Another notable development during the second Thanom administration was the establishment of the Industrial Estates Authority of Thailand (IEAT) in 1972 under the Revolutionary Decree No. 399. IEAT is a state enterprise attached to the Ministry of Industry. Since its establishment, it has been playing an important role in the promotion and regulation of IEs throughout the country. The scope of IEAT's activities is prescribed by the IEAT Act, B.E. 2550, which was enacted in 1979, under the Kriangsak Administration (1977–1980). The act also provided to enable foreign companies located in IEAT's IEs to take advantage of incentive measures under certain terms and conditions.

Table 5.1. Chronology of Thailand's IE Development

1958	The Sarit Administration (1958−1963)
1963	The second Thanom Administration (1963−1973)
1969	Banchan Industrial Estate was created as Thailand's first government-developed IE
1971	Nava Nakorn Industrial Zone was constructed as Thailand's first private sector-developed IE
1972	Industrial Estates Authority of Thailand (IEAT) was established
1977	The Kriangsak Administration (1977−1980)
1979	IEAT Act, B.E. 2522 which prescribed the scope of IEAT 's activities was enacted

IE = industrial estate.
Source: DIR.

5.2.1.3. Location choice of IE and rural development

a) Concentration of IEs in Bangkok and Surrounding Areas

Thailand's IE development is indicative of its rural–urban gap. However, at the onset of IE development, the gap between the urban core and the rural periphery expanded with the increase in the number of IEs. That was partly because Sarit's development strategy did not pay much attention to regional economic disparities. Seeking private sector–led development resulted in centralisation of IEs in Bangkok and its outskirts. Given the accessibility to Laem Chabang port and Don Mueang international airport, it is not surprising that Bangkok and the surrounding provinces seemed to be the best FDI destinations for foreign investors. In fact, the Banchan Industrial Estate, the first government-owned IE, was created in Bangkok and the Nava Nakorn Industrial Estate was also constructed in Pathum Thani, the northern part of Bangkok Metropolis as the first private IE. Moreover, Lad Krabang Industrial Estate, the second government-developed IE in the country, was also set up in Bangkok. Due to the rapid industrialisation in the late 1980s, major urban problems such as insufficient labour force, burgeoning wages, and congestion in Bangkok and its vicinities became worse.

b) Zoning as a solution for bridging the gap

To tackle these difficulties, the Board of Investment (BOI) devised an investment incentive scheme called 'Zoning' in 1987. This scheme divided the country into three zones on the basis of the level of regions' economic development. Zone 1 comprises Bangkok and the bordering provinces, Zone 2 consists of the provinces around Bangkok, and Zone 3 covers the remaining peripheral provinces with low per capita income. The lower the development in the zone, the higher the incentives available for investors. The aim of the scheme is to attract more investment into less developed areas and to narrow the income gap among regions. However, the scheme did not yield the intended outcome.

Since many of the foreign investors – some of whom are IE developers – have chosen to locate in Bangkok and the surrounding areas for the region's attractive investment climate, over 70 percent of the total 74 IEs in Thailand are located in Zone 1 (14 IEs) and Zone 2 (41 IEs). Zone 3, in spite of offering more generous incentives and larger designated areas, has only 19 IEs (ASEAN–Japan Centre website).

c) Role of the Eastern Seaboard (ESB)

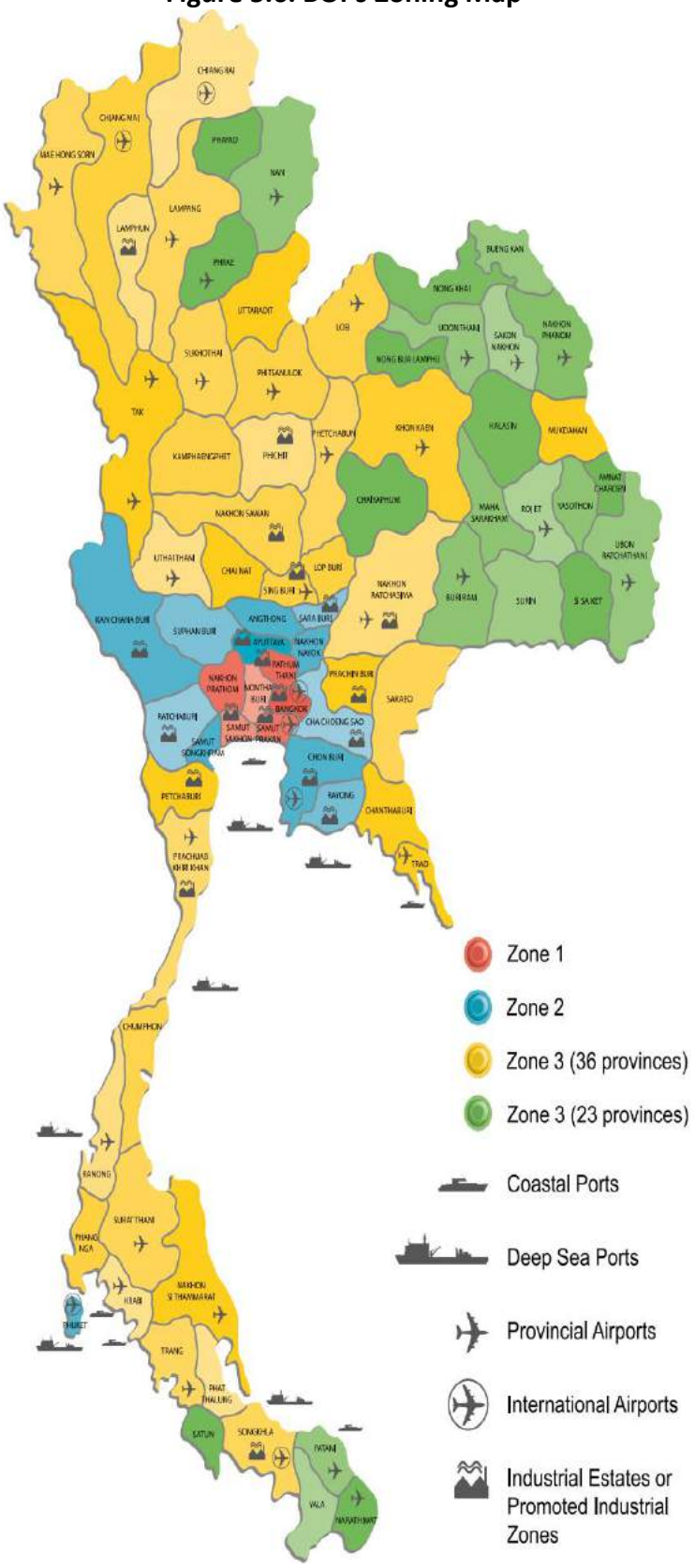
The centralisation of IEs in Bangkok and the surrounding areas, especially in the eastern part, is attributable to the development of the Eastern Seaboard (ESB), which made a significant contribution to Thailand's industrialisation in the 1980s and 1990s. No sooner had a natural gas field been found in the Gulf of Thailand in 1973–1977 than the Thai government laid down the development of the seaboard as the top priority in its industrial policy. In the midst of the first oil shock, the new discovery of natural resources evoked huge demand for infrastructure development projects in the region, resulting in 180 billion yen of Japan's official development assistance (ODA) disbursement during 1982–2000. Since then, ESB has been home to heavy chemical industries. After the opening of Laem Chabang port in 1991, export-oriented manufacturers also started to locate in the area and as the demand for factories with appropriate infrastructure grew, so did the supply. As a result, IEs are numerous in the region. For example, there are as many as 15 IEs in Rayong Province (Zone 2) alone. In 2015, the BOI's zoning scheme was abolished and was replaced by the new incentive scheme, which focuses more on rural development and industrial upgradation to high value-added products.

5.2.1.4. Key success factors of Thailand's IE development: the case of ESB

In general, it is believed that ODA can contribute to recipients' development by financing their capital shortage. This is apparent in the case of Thailand. As stated in the previous section, Japan's ODA played an important role in the development of the ESB, which formed Thailand's deep agglomerations of heavy chemical and automotive industries in the eastern part of the country. It can be said that Japan's ODA was imperative at the initial stage of promoting industrialisation in Thailand.[13] However, ODA is only assistance in terms of finance and more than that is needed to fully achieve the development goals of the recipient countries.

[13] The importance of ODA for industrialisation can be also observed in other countries, for example, the recent Thilawa SEZ in Myanmar.

Figure 5.6. BOI's Zoning Map



BOI = Board of Investment.
Source: BOI.

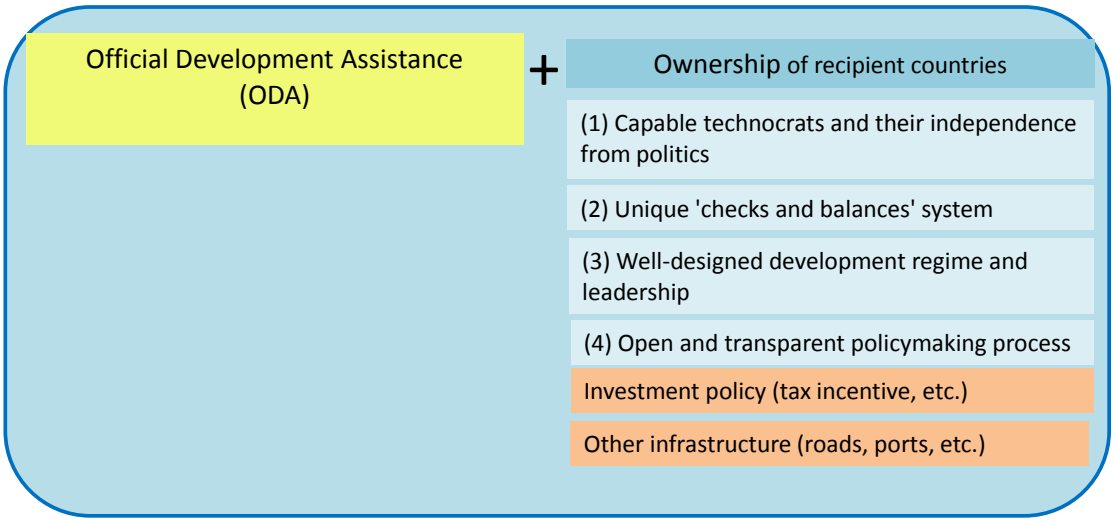
According to Shimomura (2000), who studied the aid effectiveness of Thailand's ESB development as a case, ownership of recipient countries is vital in maximising the effect of financial assistance from donor countries and achieving endogenous development. Shimomura (2000) stated that the essence of Thailand's success of the ESB development project is evident in the following four points: (1) capable technocrats and their independence from politics; (2) Thailand's unique 'checks and balances' system, which kept one strong interest group from taking control; (3) the Prem administration's development regime; and (4) its open and transparent policymaking process that was unintendedly realised by the intervention of mass media.

The implication of the experience of ESB is that it is important not only to have a good political institution and capable technocrats, but also to have a system of checks and balances that is based on the country's social and cultural characteristics for developing countries to make effective decisions that the government commits to, Shimomura (2000) concluded.

Adding to those institutional factors, Thailand's success implies that development of other infrastructure and investor-friendly investment policies are needed to attract foreign investors to IEs. Thailand has also been successful in meeting this challenge. Thailand's IE development strategy included not only construction of IEs but also had a lot to do with construction of other infrastructure – for example, the highway and industrial roads connecting Bangkok and ESB and the deep sea port in Laem Chabang and Map Ta Phut, which provided a gateway to foreign markets and has attracted export-oriented manufacturers.

As for investment policy, BOI's successful zoning scheme induced foreign investors to locate in ESB, which was classified into Zone 2 or 3 (Figure 5.6), where investors can enjoy generous incentives such as tax deductions. Moreover, if the IEs are approved by IEAT, the investors can enjoy IEAT's incentives such as the right to own land and applications can be made at one-stop-service centres located within the estates.

Table 5.2. Key Success Factors of Thailand's IE Development (The Case of ESB)



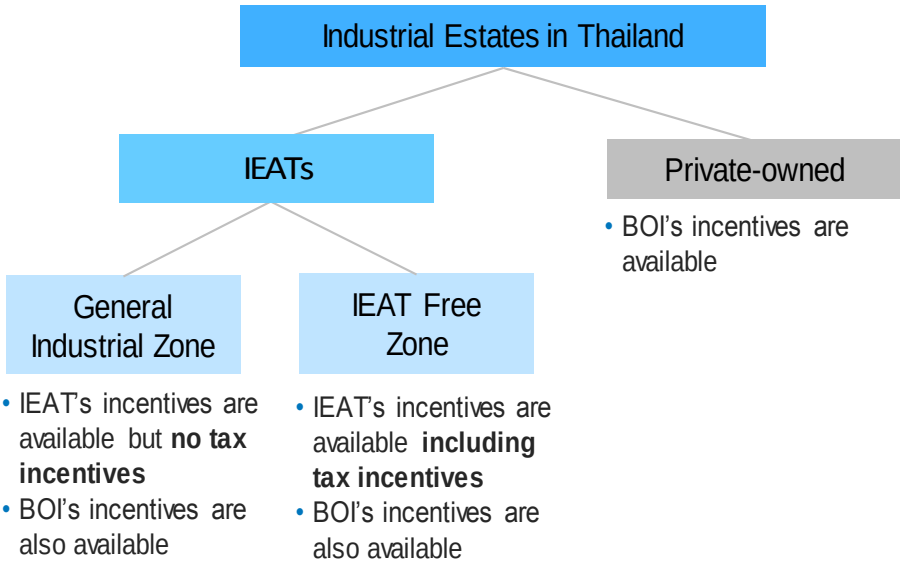
IE = industrial estate; ESB = Eastern Seaboard.
Source: Compiled by DIR based on Shimomura (2000).

5.2.2. Structure and organisation

5.2.2.1. Three types of IEs

The number of IEs in Thailand is reportedly 73 and most of them are developed and/or managed by IEAT, as mentioned in the previous section. IEs in Thailand are categorised into three types according to the management systems: (1) IEs developed and managed by IEAT; (2) IEs co-developed and co-managed by IEAT and a private developer; and (3) IEs fully developed and managed by private developers. The difference is apparent in the names of the IEs. All IEAT IEs, including the ones co-developed with a private developer, are named industrial 'estates,' and IEs that are entirely developed and managed by private developers are named industrial 'parks' or 'zones' because completely private IEs are not allowed to be named industrial 'estates.'

Figure 5.7. Three Types of IEs in Thailand



IE = industrial estate; IEAT = Industrial Estates Authority of Thailand; BOI = Board of Investment.
Source: Various materials compiled by authors.

5.2.2.2. Characteristics of IEAT's IEs

IEAT's IEs can be divided into two types according to the available incentives: one type is located in the General Industrial Zone (GIZ) and the other is in the IEAT Free Zone. In both types of IEs, investors are allowed to own land; to procure visas and work permits of foreign engineers, professionals, and accompanying families; to make overseas remittances in foreign currency; and to avail themselves of the BOI incentives.

Additionally, investors in the IEAT Free Zone are entitled to enjoy tax incentives including exemption from import duty, value-added tax (VAT), and excise tax on machines, apparatus, and other tools used in production, and from export duty and VAT on imported goods for re-export or resale.

Table 5.3. Investment Incentives Available for Different Types of IEs

	IEAT's Free Zone	IEAT's GIZ	Private IE
BOI's incentives	Yes	Yes	Yes
Land ownership	Yes	Yes	No
Visas/work permit	Yes	Yes	No
Remittance	Yes	Yes	No
Import duty	Yes	No	No
Export duty	Yes	No	No
Excise tax	Yes	No	No
VAT	Yes	No	No

IEAT = Industrial Estates Authority of Thailand; BOI = Board of Investment; GIZ = General Industrial Zone; IE = industrial estate; VAT = value-added tax.
Source: IEAT and various materials.

5.2.3 Effects and challenges

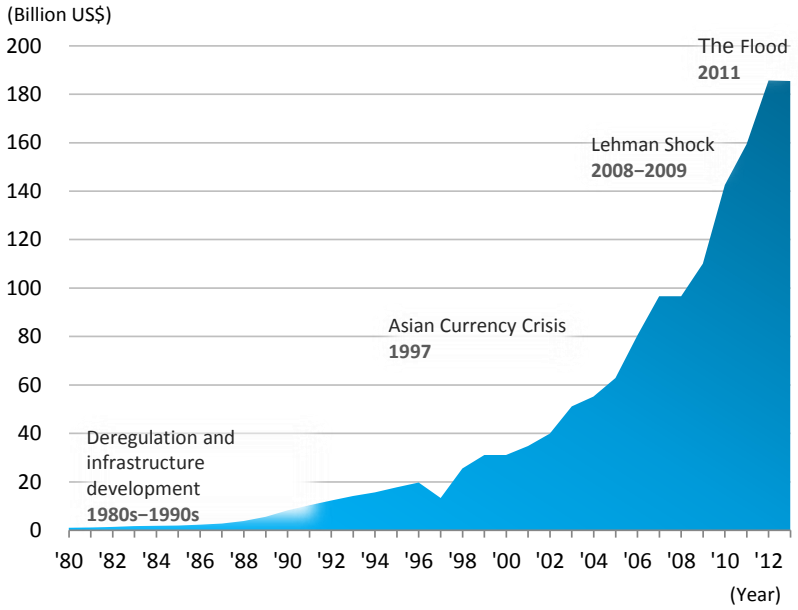
(a) Positive effects

(1) Increasing inward FDI and forming agglomerations

IEs have played a pivotal role in attracting FDI to Thailand. Since most foreign investors in Thailand were manufacturers, well-developed infrastructure was a key determinant of investment.

Thailand's inward FDI in the 1970s amounted to B5,395 million (Thai baht) and 38 percent of total investment was in the textile industry. However, in the 1980s, inflows shot up to B56,742 million, which was over 10 times larger than that in the 1970s. During that period, the fastest-growing investment was in the electrical appliances industry, which increased nearly 12 times. In the 1990s, inflows increased six times and reached B316,296. The fastest-growing industry was the machinery and transport industry, which also grew over 12 times. From 2000 to 2009, total FDI inflows reached B1,287,908 million and investment in the machinery and transport industries comprised 34 percent of the total.

Figure 5.8. Inward FDI Stock in Thailand



FDI = foreign direct investment.
Source: UNCTAD and various materials.

Table 5.9. Inward FDI Flows in Thailand by Sector

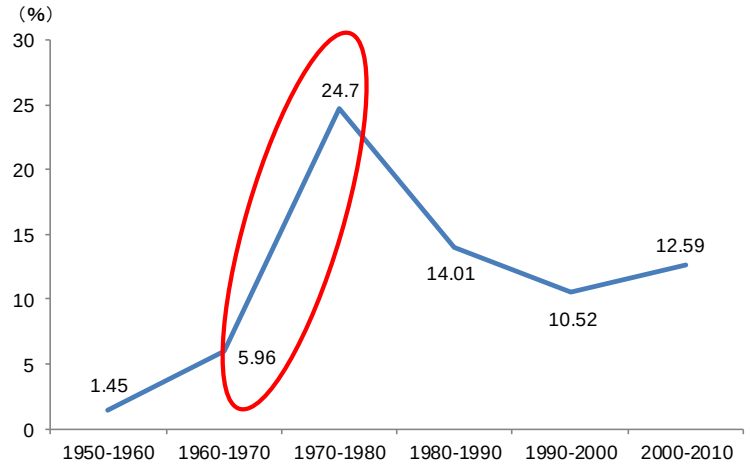
(B million)	1970–1979	1980–1989	1990–1999	2000–2009
Industry Total	5,395	56,742	316,296	1,287,908
Food and Sugar	571	4,452	22,142	54,737
Textiles	2,047	3,791	14,387	18,221
Metals and Non Metallic	247	6,543	46,046	96,673
Electrical Appliances	1,148	20,385	88,311	257,150
Machinery & Transport	328	2,901	68,146	431,590
Petroleum Products	216	1,626	4,901	27,151
Chemicals	648	6,819	38,422	111,542
Construction Materials	-68	209	3,369	7,754
Others	258	10,016	30,571	283,090

FDI = foreign direct investment; B = Thai baht.
Source: Bank of Thailand.

(2) High growth of exports

Spurred by the influx of FDI in export-oriented manufacturers, Thai exports saw rapid growth in the 1970s and 1980s. Thailand's export growth rate was an annual average 1.45 percent in 1950–1960 and 5.96 percent in 1960–1970. The growth rate skyrocketed in 1970–1980, to 24.70 percent, and it was 14.01 percent in 1980–1990, when Thailand started developing IEs.

Figure 5.10. Thailand's 10-Year Average Export Growth Rates



Source: United Nations Conference on Trade and Development (UNCTAD).

(b) Challenges: development gap between Bangkok and other regions

In the process of Thailand's rapid industrialisation, construction of IEs was centralised in Bangkok and the surrounding areas. This could have generated a negative effect as it might have increased development gaps among regions.

Table 5.10. Gross Regional Product (Bangkok and Vicinities 1.0)

	1995		2000		2005		2010	
	B mil.	ratios	B mil.	ratios	B mil.	ratios	B mil.	ratios
Bangkok & Vicinities	2,233,098	1.00	2,541,099	1.00	3,624,645	1.00	4,742,858	1.00
East	497,807	0.22	673,995	0.27	1,250,646	0.35	1,981,686	0.42
South	405,175	0.18	473,642	0.19	715,637	0.20	1,056,530	0.22
Northeast	386,984	0.17	470,381	0.19	654,743	0.18	1,046,815	0.22
Northeast	313,539	0.14	390,473	0.15	591,806	0.16	831,874	0.18
Central	214,081	0.10	311,239	0.12	460,544	0.13	662,066	0.14
West	159,927	0.07	199,189	0.08	288,310	0.08	387,986	0.08

B = Thai baht; mil. = million.
Note: The ratio figures are in proportion to the GRP of Bangkok and Vicinities.
Source: National Economic and Social Development Board (NESDB), Thailand.

In 1995, the gross regional product (GRP) in the East (0.42) was less than half of that in Bangkok and Vicinities (normalised as 1.0). The gaps were even worse in the South (0.18), the Northeast (0.17), the North (0.14), the Central region (0.10), and the West (0.07). But by 2010 the gaps had narrowed. For example, the GRP of the East increased

by 5–8 percentage points every five years from 1995 to 2010, which means that the economy of the East grew more rapidly than that of Bangkok and Vicinities. However, there were still gaps among regions; in particular, the West (0.08) was in desperate circumstances in 2010.

5.3. The Case of Viet Nam

5.3.1 Development history

In 1986, Viet Nam started to introduce a market economy system and attract foreign investment while maintaining a socialist system of governance under the Doi Moi reforms. In 1987, the Law on Foreign Investment was adopted, which was meant to attract investment for industrialisation. The resulting foreign investment was absorbed by industrial areas and they started to develop.

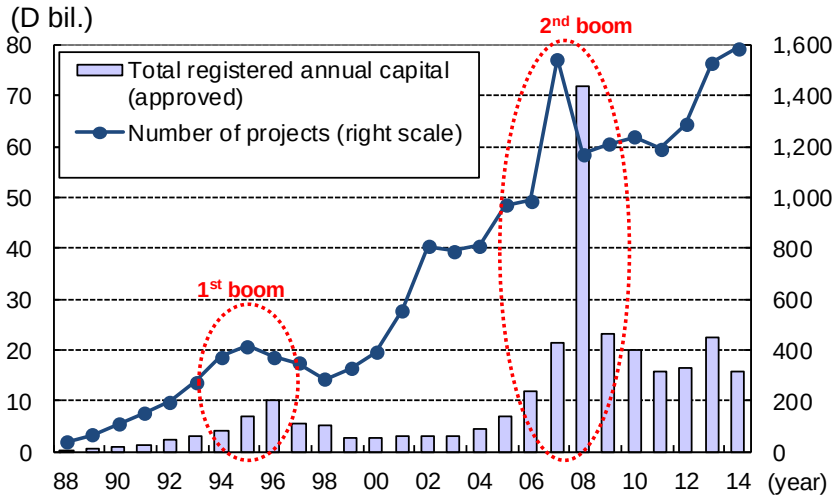
Viet Nam commenced development of export processing zones (EPZs) in 1991, with the aim of clustering export goods–producing companies, and of industrial parks (IPs) in 1994, where export regulations were relaxed. Although IPs did not enjoy tax treatment as favourable as EPZs, it was easy to conduct domestic trade within them. As a result, in 1995 a majority of EPZs transformed themselves into IPs. Moreover, with Viet Nam having joined ASEAN and having normalised relations with the US, the mid-1990s saw the country's first foreign investment boom.

Viet Nam's second foreign investment boom occurred in the mid-2000s. In addition to foreign enterprises' increased focus on Viet Nam from around 2003 as part of their 'China Plus One' investment strategies, the 2006 investment law reforms were instrumental in granting IPs preferential corporation and export taxes. Moreover, Viet Nam's accession to the World Trade Organization (WTO) in 2007 accelerated inward direct investment. The impact of foreign investment on Viet Nam's economy was significant – foreign investment sector exports accounted for over 50 percent of all exports in 2004 and this rose to 68 percent in 2014. The increase in foreign companies in Viet Nam has resulted in clear signs of worker shortage in IPs based in urban areas, leading to the suburbanisation of IPs.

The development of supporting industries has become a major challenge in Viet Nam. In 2012, the government announced its 'Development Plan for Small- and Medium-Sized Enterprises during 2011–2015 (Decision no. 1231/QD–TTg).' The plan encouraged the establishment of IPs, leased IPs, and industrial zones that are suitable for small and medium-sized enterprises (SMEs). This has led to the setting up of rental factories and the growing popularity of SMEs, which are expected to form the supporting industries.

In July 2015, both the New Law on Investments and the New Law on Enterprises came into effect, intending to promote the establishment of IPs, EPZs, high-tech parks, and economic zones as preferred investment zones. Although there remain many undeveloped provisions in the by-laws, investment approval procedures have been made more transparent, and the business and investment environment in Viet Nam is expected to improve further.

Figure 5.11. Viet Nam – Foreign Direct Investment Inflows



D = Vietnamese dong; bil. = billion.
Source: General Statistics Office of Viet Nam.

5.3.2. Structure and organisation

Each province's people's committee has an industrial park management committee, which is responsible for IP development plan preparation, investment promotion, tenant enterprise monitoring, related service proposals, and for issuing investment, import, export, and labour licences to tenant enterprises. The power to issue

investment licences to tenant enterprises was previously held by the Ministry of Planning and Investment, but was later transferred to the industrial park management committees under the 2006 Common Investment Law.

Since the development of IPs is seen as having a significant impact on Viet Nam's social economy, the power to decide IP development policy is held by the Prime Minister.

IP development and administration are conducted by state-owned, local, and foreign enterprises. Although local IPs have cost benefits in terms of rental costs, their tenancy rates in 2006 hovered around 20 percent, whereas foreign-owned IPs enjoyed a tenancy rate of 80 percent.[14] IPs developed by Japan, Singapore, and Thailand provide infrastructure development (including environmental measures) and extensive support, and such IPs have been successful in attracting foreign enterprises.

5.3.3. Effects and challenges

(a) Positive effects

(1) Increased inward FDI and formation of industrial clusters in the North and the South

IE development as well as the enactment and revision of investment laws and policies (e.g. Doi Moi reforms, WTO membership) has opened up Viet Nam to global markets, and has resulted in an increase in FDI. It has also led to industrial clusters with specific characteristics in each region. IPs and EPZs were established early in the southern regions, and hence industry clusters are relatively advanced there. In addition to export-processing enterprises, the southern regions also have many domestic-oriented food processing and consumer electronics enterprises.

The central government has been actively working on infrastructure and institutional development in the northern regions with a view to attracting investment. Efforts made in the early 2000s to develop infrastructure and institutions in the northern regions (centred on Ha Noi), in tandem with Canon (Japanese producer of office automation equipment) as an anchor enterprise, led to the establishment of industrial clusters. Efforts were also made to develop the infrastructure in Bac Ninh Province

[14] 'Fact-finding survey of recent Land Law and Enterprise Law revisions in Viet Nam' conducted by Organization for Small & Medium Enterprises and Regional Innovation (March 2006).

and Thai Nguyen Province to attract Samsung Electronics Viet Nam (SEV) and its suppliers by providing highly preferential corporation tax rates and a prioritised customs clearance system. SEV started the test production of smartphones in 2009, and by 2012 the company's exports accounted for up to 20 percent of Viet Nam's total exports, allowing Viet Nam to escape from its chronic trade deficit.

(2) Optimisation through devolution

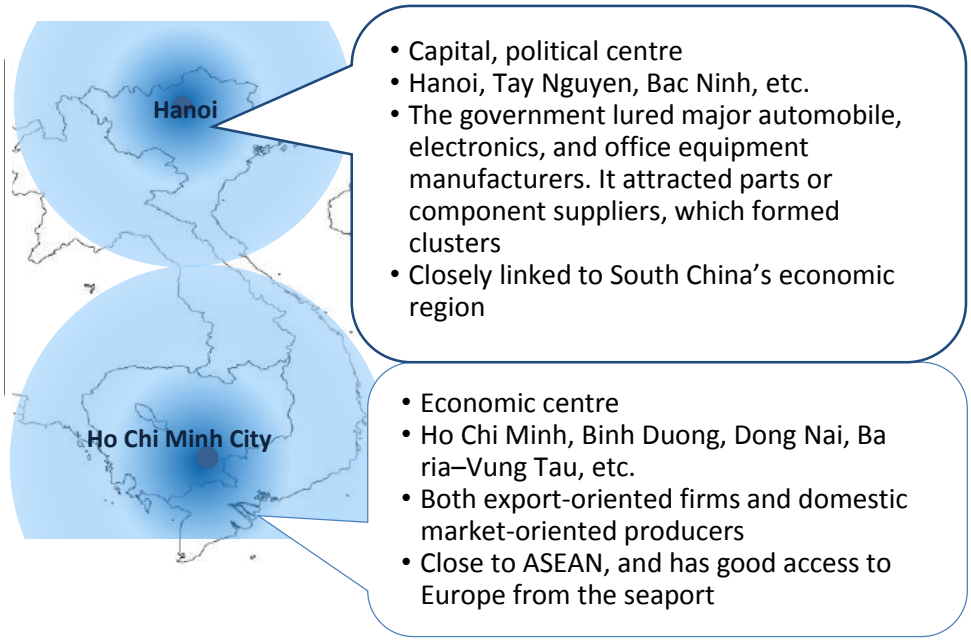
Through devolution, the central government empowered each region's people's committee and industrial park management committee to decide on investment policies for general investment projects, which is expected to optimise the time and efforts needed for investment procedures. This contributed to efficient investment promotion in the urban areas and nearby provinces, where the locations were favourable. However, this devolution did not by itself result in automatic success of IEs in periphery provinces.

(b) Challenges

(1) Development of IPs and increasing tenancy rates

Many local governments and enterprises build IPs to attract foreign investment in the hope of creating jobs and increasing revenue, which leads to unhealthy competition in unfavourable locations. With regard to various IP maintenance standards, some fail to match the needs of foreign enterprises or to satisfactorily take into consideration environmental factors. In other words, they do not provide the basic infrastructure needed to carry out the functions of an IP. This has resulted in IPs having conspicuously low tenancy rates, and hence the idea of shrinking or closing IPs through government policy is currently being considered. In August 2015, Lam Dong Province (located in the central plateau region of Viet Nam) submitted a proposal for an amendment to the IP development plan for 2020; it recommended shrinking the size of IPs and this was approved by the Prime Minister.

Figure 5.12. Characteristics of Two Main Areas



ASEAN = Association of Southeast Asian Nations.
Source: MAPIO and various materials.

As with IPs, the approval of a large number of investment projects without any deliberation has led to an increase in the number of projects that has never started. By 2014, 5,573 units aided by foreign investment (US$85.5 billion) were approved, but only 57 percent of these (US$49.9 billion) were operational. IP management companies are looking into ways to reclaim land from enterprises that do not actualise their investments as tenants. In urban areas such as Ho Chi Minh City, IPs have limited the acceptance of low-tech enterprises to increase tenancy rates, as the people's committee and the IP management committee relocate low-tech enterprises to suburban (other provinces) IPs.

(2) Preparing and making the legal framework transparent

The lack of a legal framework and the complexity of its administrative procedures have been the greatest risks in terms of Viet Nam's investment environment. Foreign enterprises and governments have sought reductions in the time it takes to acquire a licence and in the ambiguity caused by differing interpretations and execution of laws by a central government ministry and related provincial agencies. The New Law on Investments and the New Law on Enterprises were enacted in July 2015, and one of the aims of the revision had been to simplify investment procedures. But despite an

increase in the number of licences, even a month after the laws had been enacted no detailed guidance had been provided and approval procedures had been temporarily suspended.

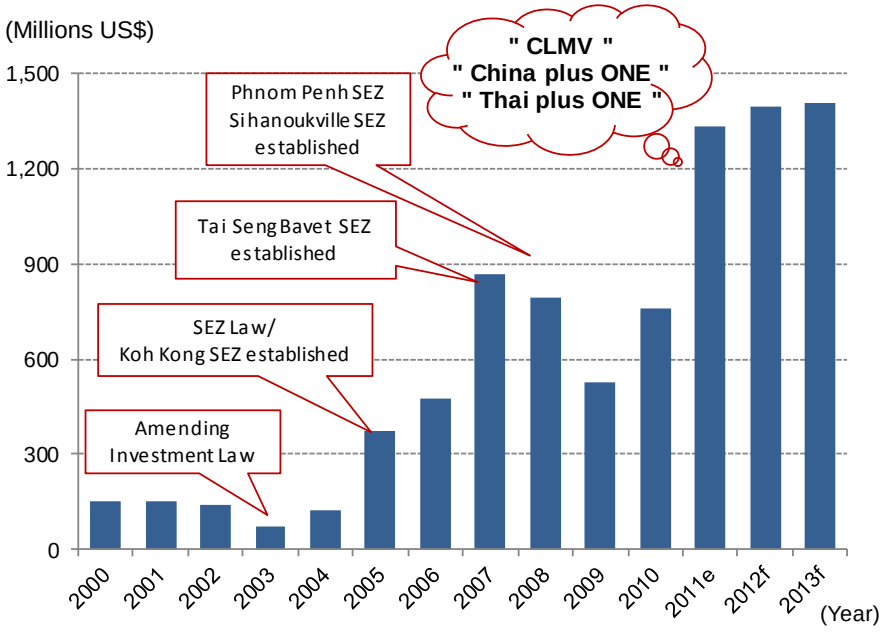
5.4. The Case of Cambodia

5.4.1. Development history

Establishment of IEs is a relatively recent development in Cambodia; it began in 2005. The government of Cambodia, in accordance with the rules of the WTO 2004 Protocols of Accession and those of compliance at the time of accession, has been working to improve the country's business and investment environment. The Council for the Development of Cambodia (CDC), which holds jurisdiction over the country's investments and reconstruction initiatives, was established by the Law on Investment enacted in 1994. Moreover, the 2001 Socio-Economic Development Plan (SEDP), which was intended to serve as an engine for economic growth and to attract foreign investment, was amended by the Law on Investment in 2003. In 2005, a decree was issued regarding Special Economic Zones (SEZs), which assigned responsibility for the development and management of SEZs to the Cambodia Special Economic Zone Board (CSEZB), which operates under the aegis of the CDC. Since 2005, various SEZ-designated areas have been established to attract foreign businesses, primarily in the manufacturing industry.

The SEZ law was enacted to further facilitate foreign investments according to the World Bank; since the establishment of SEZ-designated areas in 2005, investments have increased (Figure 5.13). Following a decrease in investments in 2009 due to the impact of the global economic recession, since 2010 Cambodia has seen high levels of foreign investment, even compared with 2008 and the previous years. In light of wage increases in neighbouring countries such as China and Thailand, Cambodia's abundant labour force and its geographical proximity have been contributing to increased investment. Throughout 2015, amendments to the Law on Investment and the SEZ law have been discussed to resolve any operational discrepancies. Although the amendments have yet to be finalised, they would contribute to a further streamlining of relevant laws and regulations.

Figure 5.13. Cambodia – Foreign Direct Investment Inflows

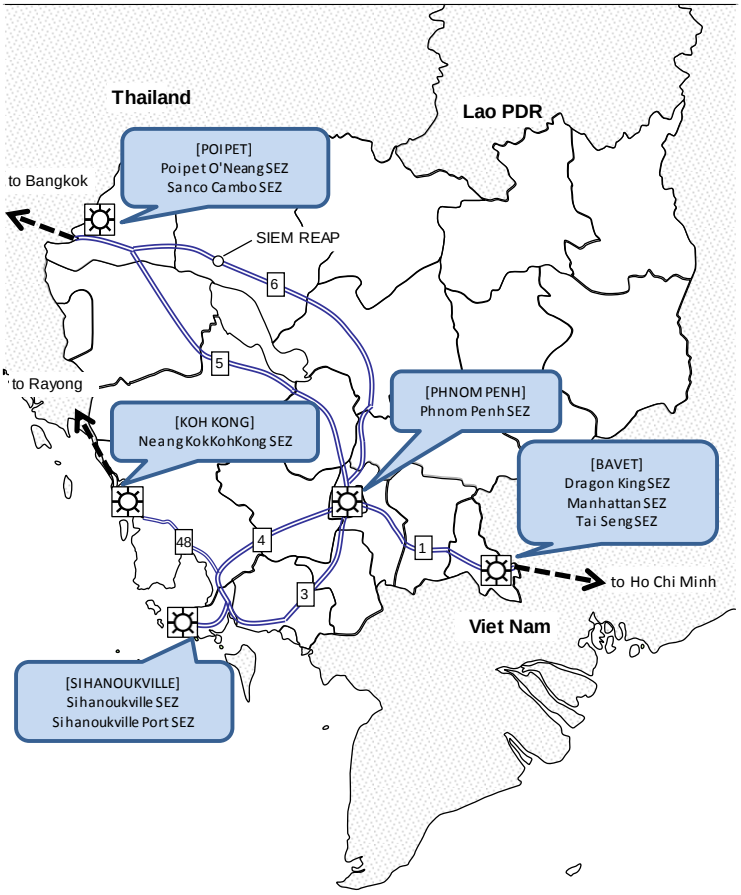


SEZ = Special Economic Zone; CLMV = Cambodia, Lao PDR, Myanmar, and Viet Nam.
Source: World Bank, 'East Asia and Pacific Economic Update Key Indicators.'

The establishment locations and operating policies for SEZs are decided by each SEZ management company. Main SEZ locations can be classified into three categories (Figure 5.14):

(1) the capital city area (Phnom Penh), which has advantages in securing workforce, living conditions, and relatively well-maintained infrastructure;
(2) the harbour area (Sihanoukville), which has locational advantage in exporting final products to European and American markets from the seaport; and
(3) the land border areas (Bavet, Poipet, Koh Kong), which become receiving bases for companies forming regional production networks (with Bangkok and Ho Chi Minh City areas).

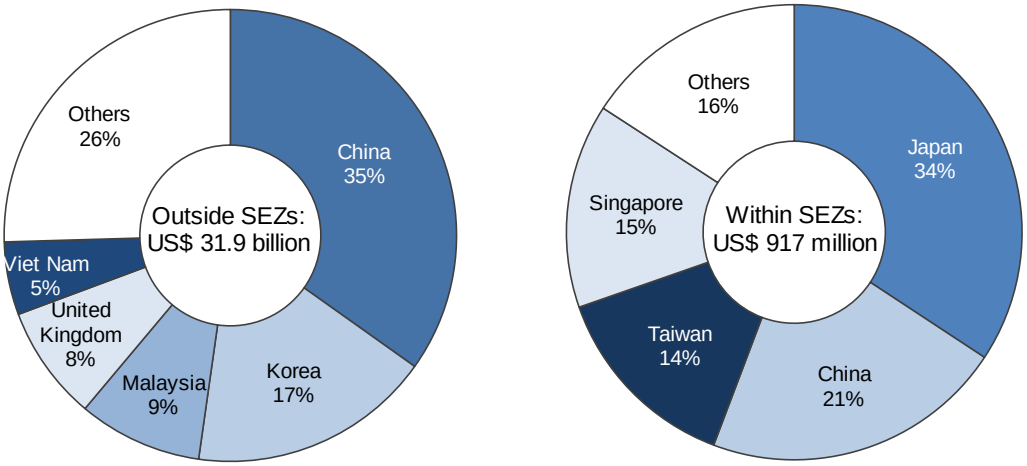
Figure 5.14. Primary SEZ Areas of Cambodia



SEZ = Special Economic Zone.
Source: Compiled from various materials.

In terms of investment amounts by country of origin as shown in Figure 5.15, China was the biggest investor outside SEZs from 1994 to 2004, accounting for about 35 percent of total investment, and Japan was the biggest investor within SEZs, accounting for one-third of total investment during the same period. Whereas Chinese investment largely goes into real estate development, Japanese investment mainly focuses on the manufacturing sector, resulting in the latter's higher share inside SEZs. From the manufacturers' point of view, investment incentives and well-developed infrastructure are the main reasons for residing within SEZs.

Figure 5.15. Foreign Investment in Cambodia (Outside SEZs and Within SEZs, 1994–2014)



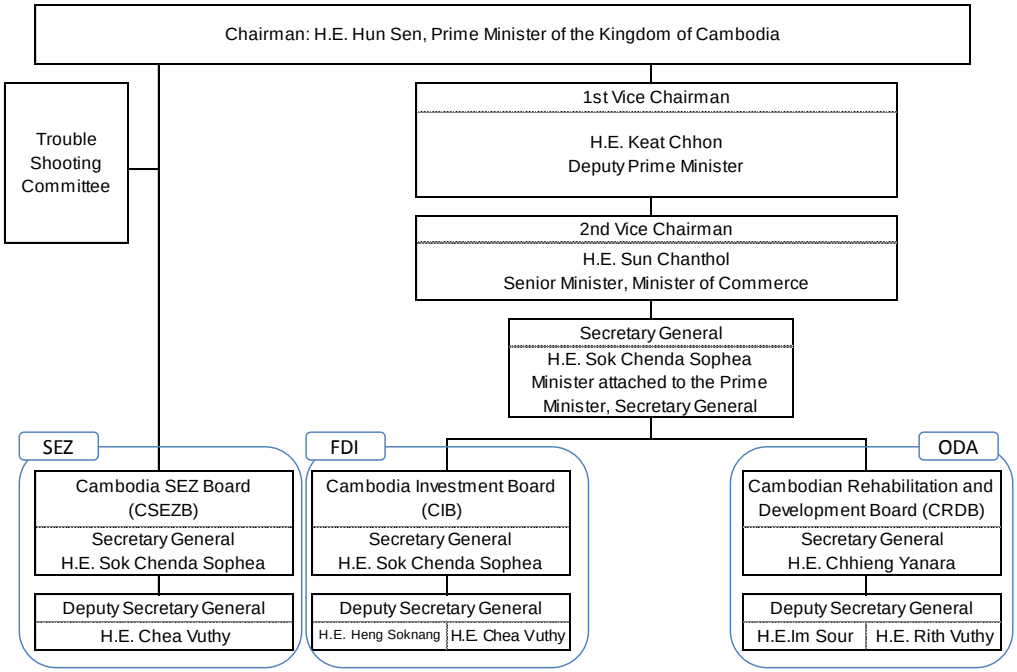
SEZ = Special Economic Zone.
Source: Compiled from CDC materials.

5.4.2. Structure and organisation

The CSEZB, which operates within the CDC, holds jurisdiction over investments in SEZs, and is also in charge of development, operation, and management of SEZs. The CDC, with the Prime Minister as its chairman, operates as the body specifically responsible for investment and reconstruction (support from abroad) activities in Cambodia, and handles the management and operations regarding investments altogether.

The CSEZB is responsible for approving requests for the establishment of SEZs and sending resident staff to the one-stop service office in SEZ areas. Overseeing the investment and reconstruction (support from abroad) activities directly under the Prime Minister allows for a speedy approval process due to a centralised authority and collective management system. It is beneficial for investors that one institution has jurisdiction over investments. It also makes the application procedures relatively simple.

Figure 5.16. Council for the Development of Cambodia (CDC): Organisational Chart



SEZ = Special Economic Zone; FDI = foreign direct investment; ODA = Official Development Assistance.
Source: Retrieved from CDC documents.

5.4.3. Effects and challenges

(a) Positive effects

(1) Attraction of foreign companies and job creation

FDI has been increasing since the establishment of SEZs. In addition, as reported by the Asian Development Bank (ADB), 93.8 percent of the companies within SEZs and 38.4 percent of those outside SEZs are managed by foreign capital (Warr and Menon, 2015). As SEZ development proceeded, Cambodia's secondary industry absorbed a large number of workers. According to World Bank statistics, the number of workers in secondary industries in Cambodia increased from 500,000 in 2000 to 1.6 million in 2012 and the proportion of workers employed by corporate entities rose from 15.2 percent in 2000 to 31.4 percent in 2011. According to Warr and Menon (2015), companies in SEZ-designated areas have relatively large-scale employment.

(2) Development of the export industry and its diversification

In Cambodia, most foreign companies residing in SEZ-designated areas engage in export processing operations. Moreover, some companies have developed region-

wide production networks that cover both Cambodia and its neighbouring countries. For instance, a car parts supplier transports materials from Thailand, then assembles in Cambodia and ships the products back to Thailand, where they are sold. Such participation in regional transactions brought about increased value added in Cambodia. It is hoped that such activities will help eliminate the trade deficit.

Moreover, the establishment of SEZs had resulted in an increase in the number of foreign companies in Cambodia, which eventually led to the entry of previously non-prevalent industries such as automobile parts, precision equipment parts, machines, and machine parts. However, diversification of the manufacturing industry has only just begun. To attract industries that use advanced technology in their manufacturing process, it is necessary to improve the investment environment, including the electricity supply.

(3) Infrastructure development inside and outside SEZs

As Cambodia's overall infrastructure is vulnerable, the SEZ secretariat and SEZ tenant companies have pushed forward infrastructure development and rehabilitation in and around SEZs. Although regional infrastructure issues (such as those relating to regional road networks and electricity grids) are not under the authority of the SEZ secretariat, tenant companies have collectively enjoyed much preferable treatment compared with other locations and companies.

(b) Challenges: disparity in management and operation of SEZs

While CSEZB acts as a centralised authority for investment procedures, daily management and operation are the responsibility of each SEZ management company. Among the authorised SEZs, some management companies exist only on paper and do not have any real operations. Also, there are cases in which the requirements of the SEZ are not met. From the investors' perspective, thorough examination of management quality is necessary prior to investment. Even if an SEZ seems to be in a good location, it may lack an operational SEZ office or properly developed infrastructure.

Generally speaking, the SEZs in the Bavet area are of relatively similar standards. The area has good access from Japan and Taiwan via Ho Chi Minh City, and all SEZs have a similar number of companies. However, the situation is different in other areas, where

SEZ management companies differ in quality. The gap is most significant between the two SEZs in the Sihanoukville district. While the tenant companies of Sihanoukville SEZ have exceeded 40 companies, three tenant companies remain in Sihanoukville Port SEZ. In the Poipet district, the planned establishment of a SEZ management office and operating system has been delayed. Due to the management company's poor performance, some companies are reported to have cancelled their planned investment in Poipet and chosen the Phnom Penh SEZ instead.

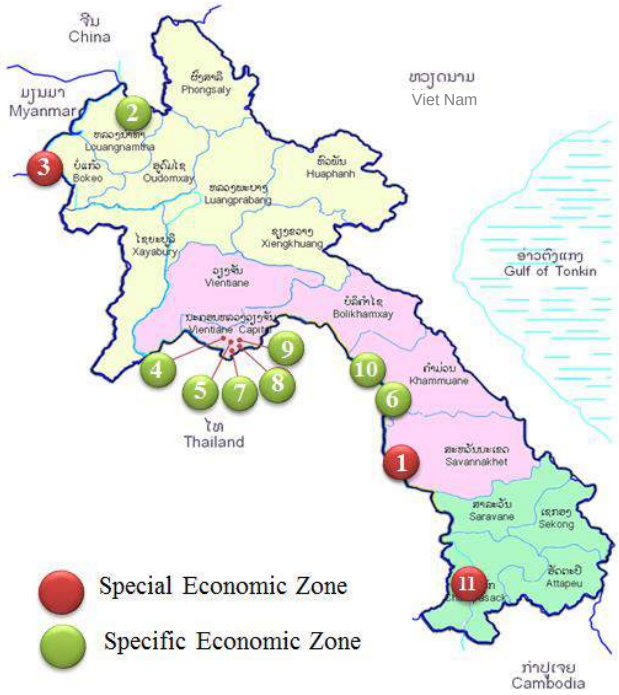
5.5. The Current Status of Lao PDR

5.5.1. Development history

IE development is a relatively recent topic in Lao PDR. Even though neighbouring Thailand started IE development in the 1960s, Lao PDR did not follow the same path. It was in 2002 that the Lao PDR government established a SEZ in Savannakhet, after the feasibility study on the Second Lao–Thai Friendship Bridge construction had been presented by the Japan International Cooperation Agency (JICA) (S-NCSEZ, 2012).

In 2002, the Savan–Seno SEZ was planned as an experimental site comprising 677 hectares of land in four zones, aimed at promoting domestic and foreign investment in the area. The Lao PDR government served as the developer for the Savan–Seno SEZ and its IE. The development of Savan–Seno SEZ was based on a specific Prime Ministerial decree (Decree on Special Economic Zone Savan–Seno, No. 148/PM, dated 29 September 2003). The Savan–Seno SEZ was intended to attract investment along Road No. 9 linking Thailand to Viet Nam, but its development did not progress smoothly and the government did not approve any other SEZ for a long time after that.

Figure 5.17. SEZs in Lao PDR



No.	IEs	Name	Year	Area(ha)
1	✓	Savan-Seno Special Economic Zone	2002	1,010
2		Boten Beautiful Land Specific Economic Zone	2003	1,640
3		Golden Triangle Special Economic Zone	2007	827
4	✓	Vientiane Industrial and Trade Area	2011	110
5	✓	Saysetha Development Zone	2010	1,000
6	✓	Phoukhyo Specific Economic Zone	2010	4,850
7		Thatluang Lake Specific Economic Zone	2012	365
8		Longthanh- Vientiane Specific Economic Zone	2012	558
9		Dongposy Specific Economic Zone	2012	54
10		Thakhek Specific Economic Zone	2012	1,035
11	✓	Champasak Specific Economic Zone	2015	995

SEZ = Special Economic Zone or Specific Economic Zone; IE = industrial estate; ha = hectare.
Source: S–NCSEZ presentation material.

The second SEZ was approved in 2010 in Luangnamtha Province (Boten–Daenkham SEZ). In the same year, a general decree (Decree on Special Economic Zone and Specific Economic Zone in the Lao PDR, No. 443/PM) was issued to clarify general provisions applicable to all existing and prospective SEZs. And in December of the same year, the Secretariat to the Lao National Committee for Special Economic Zone (S–NCSEZ) was set up under the Prime Minister's Office. The formation of S–NCSEZ was an administrative milestone in promoting SEZ development, as it demonstrated the government's commitment to and engagement in SEZ planning and development.

As of 2015, there were 11 approved Special Economic Zones or Specific Economic Zones (SEZs) in Lao PDR. IEs, however, are limited to only five SEZs, which are highlighted in red in Figure 5.17. According to information from S–NCSEZ, the Phoukhyo Specific Economic Zone is not ready to start operations. Considering that no significant IEs are available other than existing SEZs, operational IEs are limited to four locations in Lao PDR (Savan–Seno, Vientiane Industrial and Trade Area (VITA Park), Saysetha, and Champasak [Pakse–Japan SEZ]).

5.5.2. Structure and organisation

Lao PDR's SEZs are governed by the Lao National Committee for SEZ (NCSEZ), chaired by the standing Deputy Prime Minister. Daily administration is the responsibility of its secretariat, which had 112 staff on its rolls as of October 2015. Of these, around 60 were posted at the various SEZs, while the rest worked at the headquarters. The original plan of placing North, Central, and South SEZ Authorities (SEZAs) under the secretariat has not been realised yet.

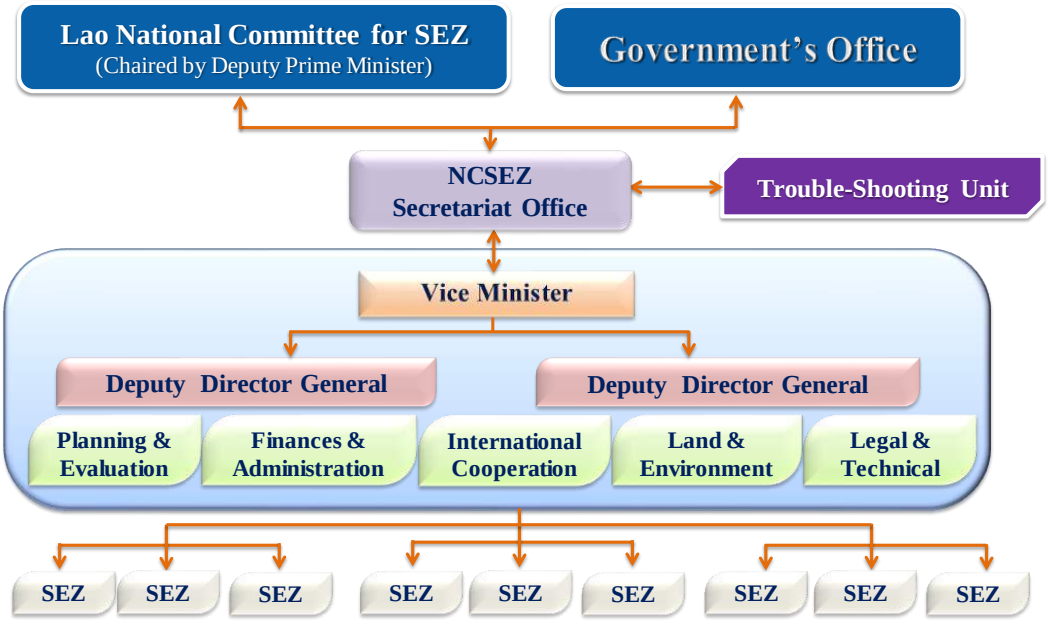
There are two types of SEZs in Lao PDR – 'Special Economic Zones' and 'Specific Economic Zones.' The Special Economic Zone has greater autonomy in approving investment licences, has multiple objectives, and covers a land area of at least 10,000 hectares. The Specific Economic Zone, on the other hand, should have one or a few specific objectives and must cover less than 10,000 hectares of land area. Following the establishment of this new authority, there have been many proposals from various provinces to establish SEZs. Among the 11 existing SEZs to date, two are Special Economic Zones and nine are Specific Economics Zones approved by the government.

Additionally, many other SEZ development projects are under review by the government.

As for local administration, each SEZ has an economic board for management of the zones, including infrastructure development. The economic board is a joint organisation of public authorities and private developers, and is headed by the majority shareholders of the SEZ; its main role is managerial decision-making. In addition, a management committee has been formed that deals with administrative matters (including licensing) in the case of Special Economic Zones. However, S–NCSEZ plans to abolish management committees in Special Economic Zones to make the management structure simple and coherent in all SEZs.

At each SEZ, the economic board or management committee serves as a window for investment applications. Although they deal with licensing and approval for investment, they are supposed to judge an application in light of the Law on Investment Promotion 2009. Any investor who is unsatisfied with the judgment is entitled to consult S–NCSEZ.

Figure 5.18. Structure of SEZ in Lao PDR



SEZ = Special Economic Zone; NCSEZ = National Committee for Special Economic Zone.
Source: S–NCSEZ presentation material; edited by DIR based on an interview.

5.5.3. Effects and challenges

SEZs have played a crucial role in attracting FDI, especially non-resource-based FDI, into Lao PDR. As one of the poorest countries in the region, the quality of hard and soft infrastructure is relatively poor. Therefore, the government designates investment-promoted areas such as SEZs, where the quality of infrastructure is generally better and FDI-related regulations are more streamlined. In addition, most of the SEZs are located in strategic locations with easy access to neighbouring countries. Investors who invest inside SEZs can benefit from these advantages. Investors who invest inside SEZs are generally more satisfied with the quality of government administration and infrastructure than those who invest outside these zones.[15]

SEZs have facilitated Lao PDR's connectivity with the regional production networks. Most of FDI inflows into Lao PDR has been in the natural resource sectors such as hydroelectricity and mining. Only recently has non-resource FDI linked with regional production networks begun to eye the opportunities in Lao PDR. Unlike other neighbouring countries, these companies decide to invest in Lao PDR mainly to benefit from low wages.[16] Reduction in transportation cost due to the improvement in transport infrastructure between Lao PDR and Thailand, more simplified and more efficient cross-border customs clearance, and a better investment climate have also contributed to a wider and deeper division of labour between Lao PDR and neighbouring countries. Light and labour-intensive manufacturing firms that have their production base in neighbouring countries, particularly Thailand, have begun to expand their activities to SEZs in Lao PDR. These include firms in garments, camera parts assembly, car parts assembly, electronic parts, components assembly, and a few other sectors. All products are then re-exported for further processing in Thailand. Other popular sectors include real estate, logistics, trading, and other services. Tables

[15] Foreign direct investors located inside SEZs give higher ratings for government administration, infrastructure, and other investment related indicators compared with those based outside the zones (Umezaki et al., 2014).

[16] According to Umezaki et al. (2014), 73 percent of the sample responded that their main reasons for investing in Lao PDR is to gain from low wages, whereas 87 percent of the sample in Myanmar and 91 percent of the sample in Viet Nam invest there for the benefits of new market opportunities.

5.11 and 5.12 show major activities of investors in Savan–Seno SEZ and Vientiane Industrial & Trade Area (VITA) Park, which are two of the most active SEZs in Lao PDR.

Table 5.11. Investment in Savan–Seno SEZ, Savannakhet

Investing Country	Committed FDI (%)	Major Sectors
Thailand	29	Developer of site A (80%), services, and manufacturing
Malaysia	23	Real estate, developer (site C), and services
Lao PDR–Japan	13	Developer (site B)
France	13	Manufacturing, real estate, investment consultancy
Japan	11	Manufacturing (80%), logistics, and other services
Lao PDR	6	Service (duty free and logistics, 56%); manufacturing (31%); trading (11%)
China	4	Garment, investment consultancy, trading
Korea	1	Service (factory for rent)
Netherlands	1	Real estate, manufacturing (airplane parts)
Australia	0	Trading and trade consultancy
Lao PDR–Thailand	0	Construction

SEZ = Special Economic Zone.
Source: Data from Lao National Committee for Special Economic Zone, estimated by the authors from NERI.

Table 5.12. Investment in VITA Park, Vientiane Capital

Investing Country	Registered Capital (%)	Major Sectors
China	34	Manufacture computers/telephone parts, welding, used metals, furniture
Japan	33	Manufacture electronic parts and tools
Thailand	21	Manufacture food and non-alcohol beverage products, process agriculture products
Malaysia	6	Real estate, services
Denmark	3	Garment
Lao PDR	3	Construction

VITA = Vientiane Industrial & Trade Area.
Note: Data includes only firms that have realised more than 50 percent of their intended operational capacity and excludes developers.
Source: Data from Lao National Committee for Special Economic Zone were estimated by the authors from NERI.

Despite recent positive developments in establishing SEZs in Lao PDR, several challenges should not be neglected. Following the success of Savan–Seno SEZ, many SEZs have been approved and most of them are in the pipeline. If many more SEZs are

developed, the potential benefits from SEZs might not be maximised. There could be greater competition among SEZs leading to a possible 'incentive war,' which will bring limited benefits to the economy. Linkages between foreign investors in the SEZs and local firms should be promoted more, so that there could be more spillover benefits for the rest of the economy. Improving labour skills is crucial for providing a high-quality workforce for these expanding SEZs.

5.6. Lessons and Policy Recommendations for Lao PDR

5.6.1. Lessons from neighbouring countries

The experiences of Lao PDR's neighbouring countries show that IEs play a key role in forming industrial clusters, which is essential for the industrialisation and economic development of an emerging country. Table 5.13 summarises the comparison of IEs/SEZs in Lao PDR and its three neighbours – Thailand, Viet Nam, and Cambodia.

Table 5.13. Comparison of IEs/SEZs in Lao PDR and its Neighbouring Countries

	Lao PDR	Thailand	Viet Nam	Cambodia
Start of SEZ/ Industrial Estates	1990s	1960s	1990s	Late 2000s
Approx. No. of Industrial Estates	4 (out of 11 SEZs)	80	300	14
Significant Industrial Clusters	(Emerging)	Automobile, electric machinery in/around Bangkok, heavy machinery and chemical in the Eastern Sea Board	Electronics and automobile in/around Ha Noi (e.g. Samsung and its suppliers), broader sectors in/around Ho Chi Minh City	RMG in the east border area, labour-intensive 'Thailand + 1' in the west border area, broader sectors in/around Phnom Penh

IE = industrial estate; SEZ = Special Economic Zone; RMG = ready-made garment.
Source: DIR from various materials.

In terms of development locations, lessons can be drawn from the experiences of Thailand, Viet Nam, and Cambodia. In the case of Thailand, IE development concentrated in the Bangkok metropolitan area and its suburbs. Although the country has greatly benefitted from the industrial cluster there, excessive concentration and regional imbalance have been a major concern.

On the other hand, nationwide IE development will not be the best policy either. As the Vietnam's experience shows, it will result in low occupancy in unfavourable locations and inappropriate allocation of the limited funds available. Viet Nam has succeeded in developing two main clusters in Hanoi and Ho Chi Minh City, but IE development in every province did not lead to cluster formation nationwide.

Cambodia's strategy has been reasonable in terms of balanced development without an inappropriate distribution of resources. It has chosen to focus on the Thai and Vietnamese borders and a seaport area, along with the capital city Phnom Penh. The border and the seaport areas have the advantages of lower trade cost compared with foreign industrial clusters (Bangkok is easily accessible from the Thai border, Ho Chi Minh from the Vietnamese border, and advanced economies from the seaport), although their development might be restricted by their population size. Meanwhile, Phnom Penh, being the capital and largest city, has benefitted from its human capital and abundant labour force. Thus far, Cambodia has taken a step forward to relatively balanced development through industrialisation; but many challenges remain.

Table 5.14. Development Locations and Results

	Locations	Positive results	Negative issues
Thailand	Mostly in/around Bangkok	Formation of a significant cluster in Bangkok	Excessive concentration and imbalance
Viet Nam	Many provinces	Formation of clusters in Ha Noi and Ho Chi Minh City	Low occupancy in unfavourable locations with poor infrastructure
Cambodia	(1) Phnom Penh, (2) Near Thai/Vietnamese borders, (3) Near a seaport	Formation of a cluster in Phnom Penh, with increased attention to border areas	

Source: DIR.

5.6.2. Policy recommendations

IEs will clearly not function without being equipped with adequate infrastructure. Both hard and soft infrastructure are indispensable – notably electricity, water, and administrative support. In terms of development locations, the Lao PDR government should consider at least the following factors in the formation of policies.

Population and Existing Economic Activities

As industrialisation cannot be possible without sufficient labour supply and supporting commercial activities, population and existing commercial activities are essential in forming an industrial cluster. Given the small population of Lao PDR, IE development has to locate in relatively big cities of several hundred thousand people. Otherwise, poorly located IEs would suffer from low occupancy or even bankruptcy, incurring a huge loss to the country as a whole. Therefore, policymakers should refrain from constructing more IEs than can be supported by potential demand and the local labour force, and should consider using resources effectively for the operation of IEs.

Access to Larger Industrial Clusters beyond the Border

As exporting manufacturers would be the main drivers of industrial development, the trading costs from domestic IEs should be minimised. Given the geographic location of Lao PDR, the agglomeration in Bangkok should be the prime industrial core to integrate with. Lao PDR would most likely receive the largest benefits from developing IEs that are close to the bridges over the Mekong River.

In this sense, IEs in Vientiane, Thakhek, Savan–Seno, and Pakse are ideally located in Lao PDR. But, in terms of integration with Bangkok, these four SEZs would have to compete with the Cambodian SEZs in Koh Kong in the southwest border area, and Poipet on the southern economic corridor. To successfully compete with Koh Kong and Poipet, Lao PDR needs to develop favourable business circumstances, especially in terms of shortening transport time to Bangkok and reducing logistic costs. To put it concretely, policymakers should consider (1) extending the business hours of customs clearance, (2) simplifying customs procedures, and (3) consolidating logistics services. (The third point will also be discussed in Chapter 6.) Given the limited resources available, for the time being Lao PDR should focus on further developing existing IEs.

In the longer term, agglomerations in Viet Nam may grow following Bangkok. If that happens, Viet Nam's neighbouring countries may benefit from developing IEs in that border area. Compared with Cambodia, Lao PDR has better access to Hanoi. To benefit from the linkage to the agglomeration of Hanoi, Lao PDR would need to improve the road infrastructure between Thakhek and Hanoi first.

Start-up Funding for Infrastructure Projects

In establishing a new IE, essential hard and soft infrastructure, such as electricity, transportation, and management offices, need to be prepared. The problem is that it will take much time and money to develop all types of infrastructure, and the Lao PDR government may find it difficult to properly equip IEs with all they need within a short period. Learning the lessons from early IE development in Thailand, policymakers are well advised to continuously negotiate with donor countries – such as China, Japan, the US, and the European Union as an entity – for future support of IEs and surrounding infrastructure development.

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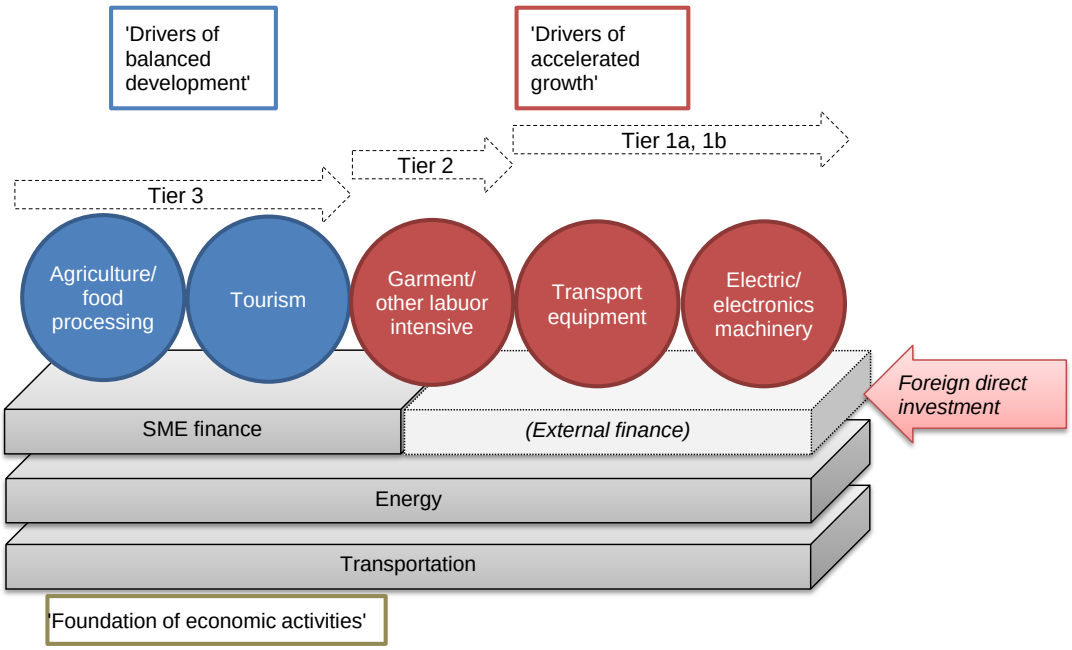
Chapter 6

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.

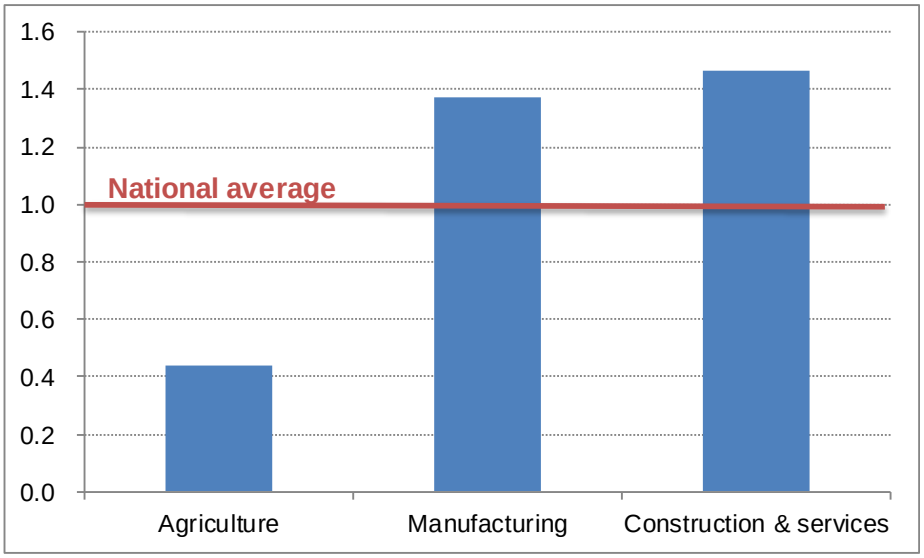
Within the broadly defined agricultural sector, the crop and livestock subsector has 83 percent of sectoral production whereas fisheries and forestry account for only 12 percent and 5 percent, respectively.[18] Hence, the remainder of this section focuses on the crop and livestock subsector. Rice, maize,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

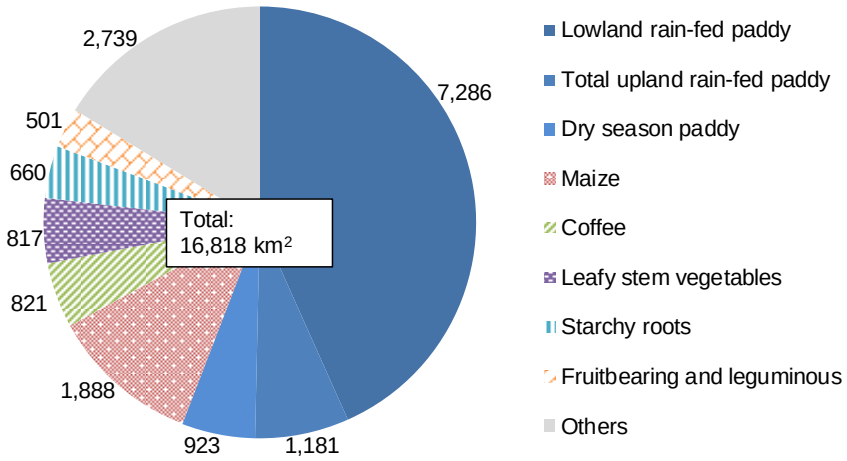
planted crops in Lao PDR. Among a total crop-planted area of 16,818 km^2, three kinds of rice paddy account for 9,395 km^2, or 56 percent. Lao PDR achieved national self-sufficiency in rice by 2000, and its production surplus was expected to reach 500,000 tonnes by 2015 (World Bank, 2014a).

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.

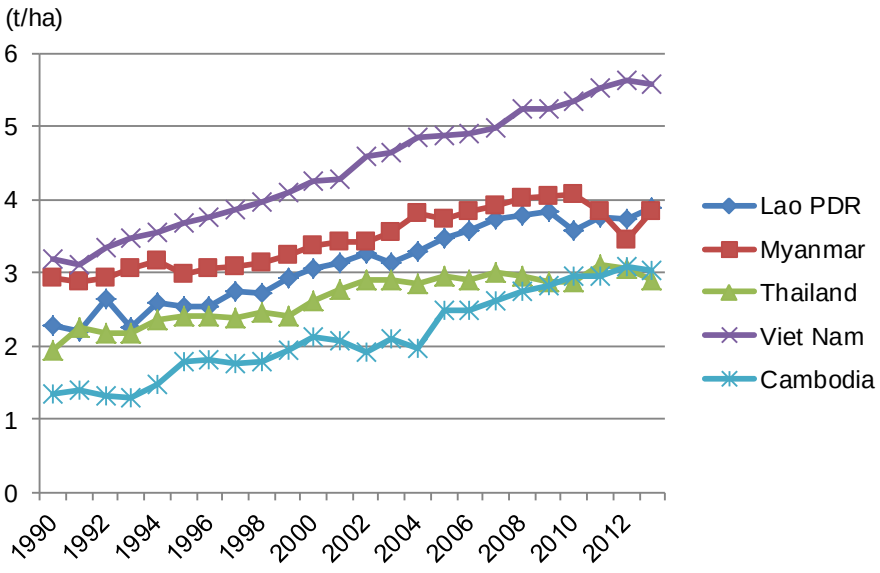
This subsection discusses rice and coffee production. These two crops represent Lao PDR's subsistence and commercial agriculture, respectively.

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

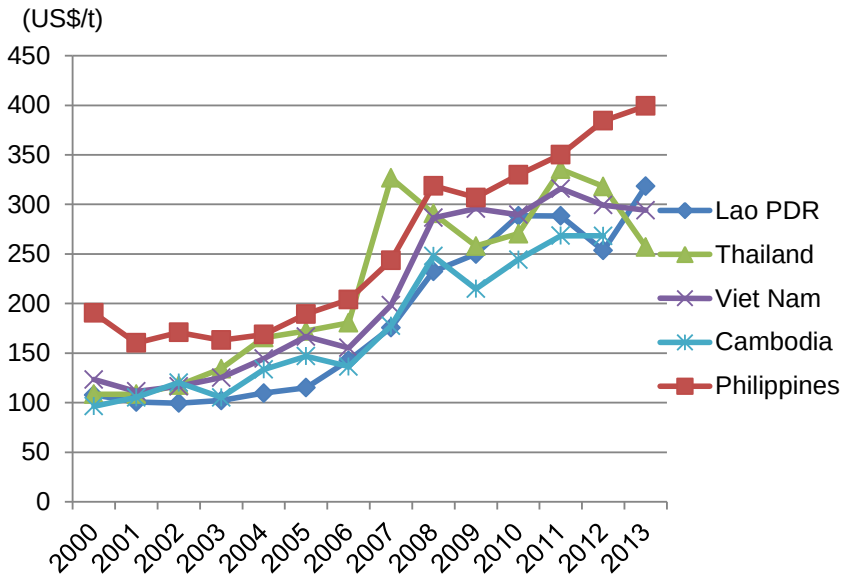


Source: FAOSTAT; compiled by DIR.

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%

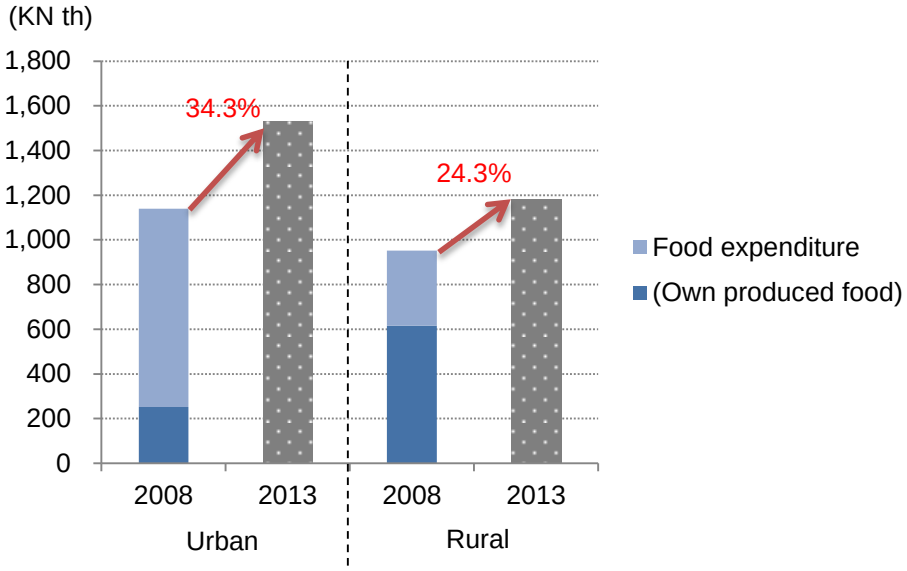
Note: Data shown is of Top 10 countries and Lao PDR, thus does not account for 100 percent of total world production.
Source: International Coffee Organization; compiled by DIR.

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

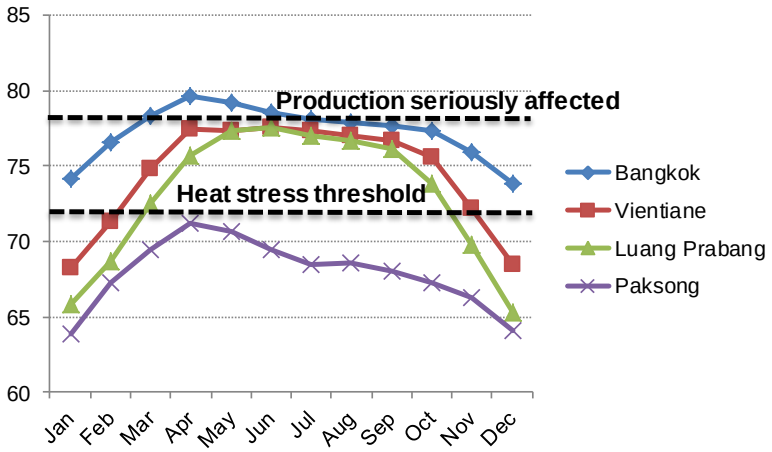
[19] THI is calculated from air temperature and relative humidity using the following equation:
THI = (dry bulb temperature oC) + (0.36 x dew point temperature oC) + 41.2.

[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

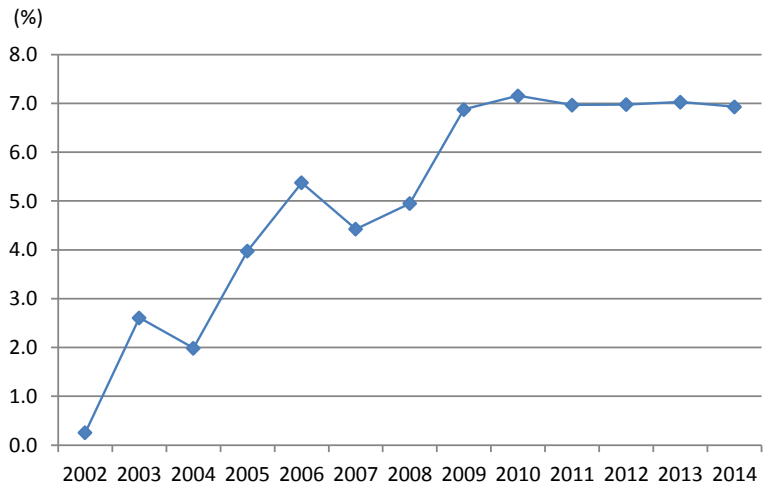
Name of Mineral	Unit	2006	2010	2011	2012	2013	2014
Anthracite	Tonnes	62,000	211,721	166,609	129,927	104,260	97,148
Lignite	Tonnes	319,242	501,622	511,700	575,387	403,925	22,352
Zinc	Tonnes	4,000	5,000	5,320	5,250	5,000	-
Gold alloys (Sepon)	Kg	12,439	4,742	3,595	3,249	3,838	-
Gold (Phongsaly)	Kg	-	-	-	-	-	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).

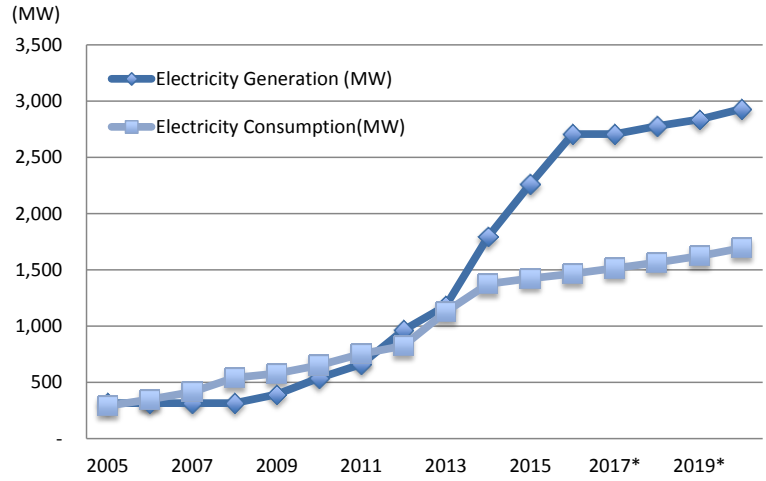
The cost of the NT2 project was US$1.45 billion, and 70 percent was financed through loans. The remaining 30 percent was funded through the joint venture of Nam Theun 2 Power Company (NTPC) consisting of Electricité de France (35 percent of the shares), the GOL (25 percent of the shares), Electricity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

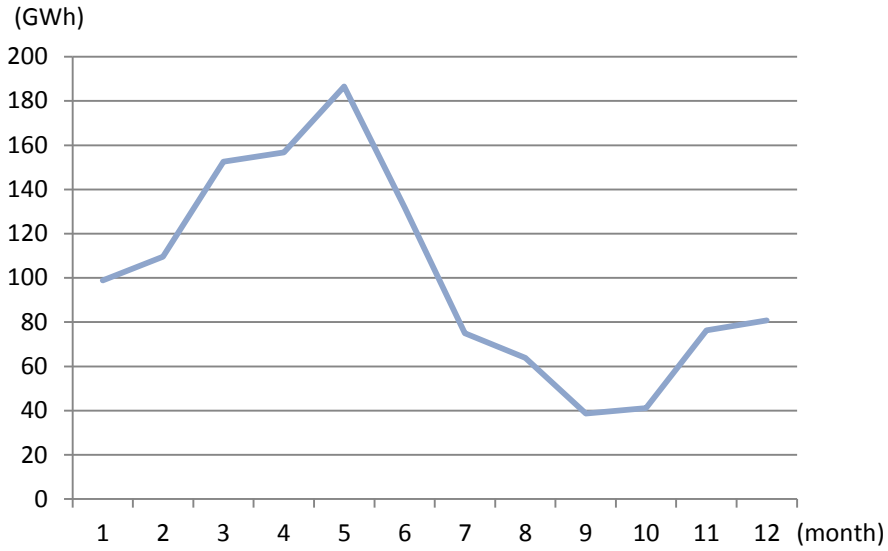
In terms of issues of the electricity sector, we note that electrification is still under way, that some electricity is being imported, and a certain amount is being exported. In the energy plan of Lao PDR, the rapid expansion of rural electrification is one of the major priorities of the government, 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.

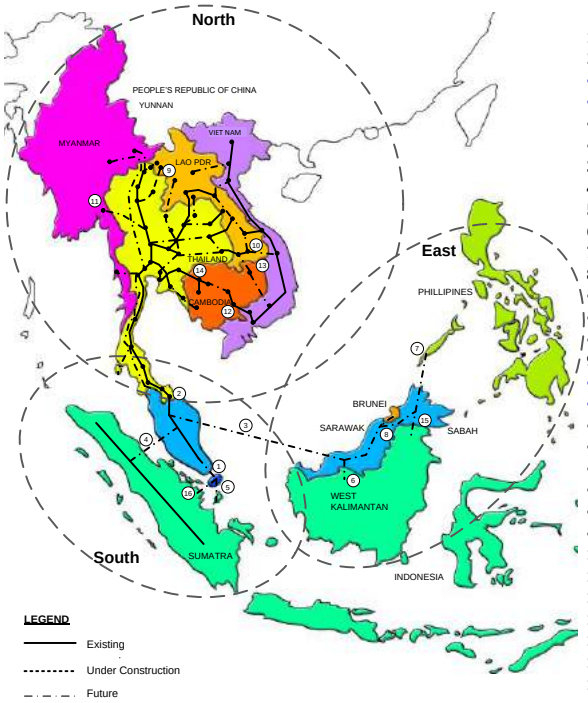
Table 6.10. Hydroelectricity Plan up to 2020

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.

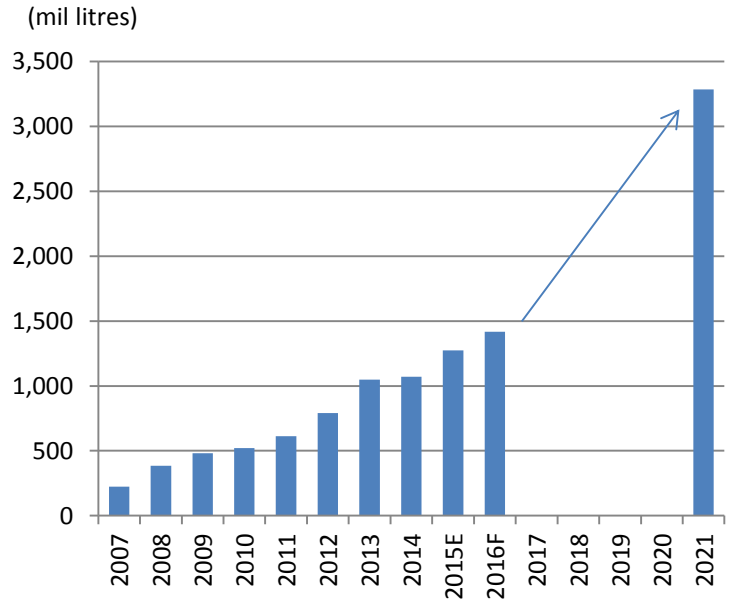
The second reason for expanding electricity exports to Viet Nam and Cambodia is to take preparatory steps for the formation of subregional grids. Subregional grids are positioned as one phase prior to the APG. If Lao PDR can take the initiative in forming subregional grids on the basis of promoting the 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.

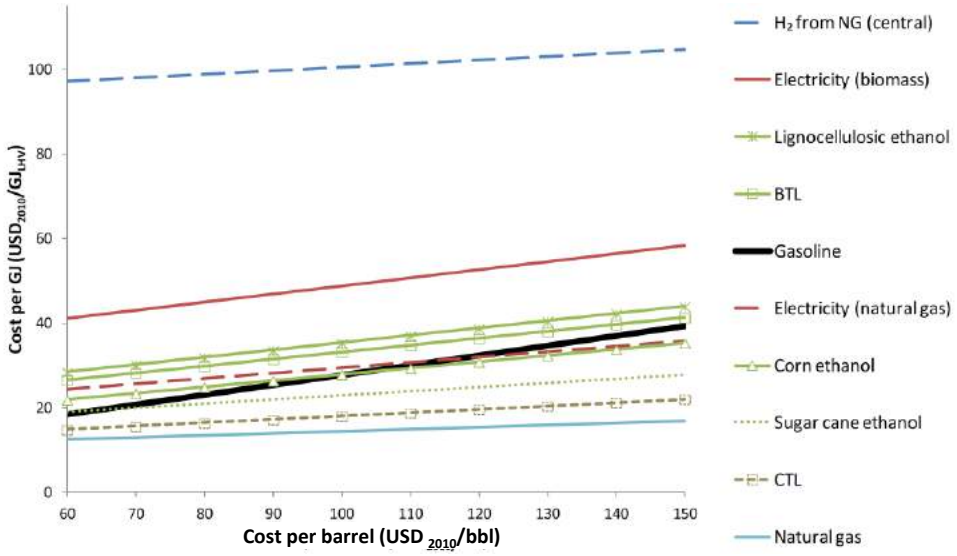
6.2.4.3. Establishing a subsidy system to guarantee the profitability of bioethanol

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.

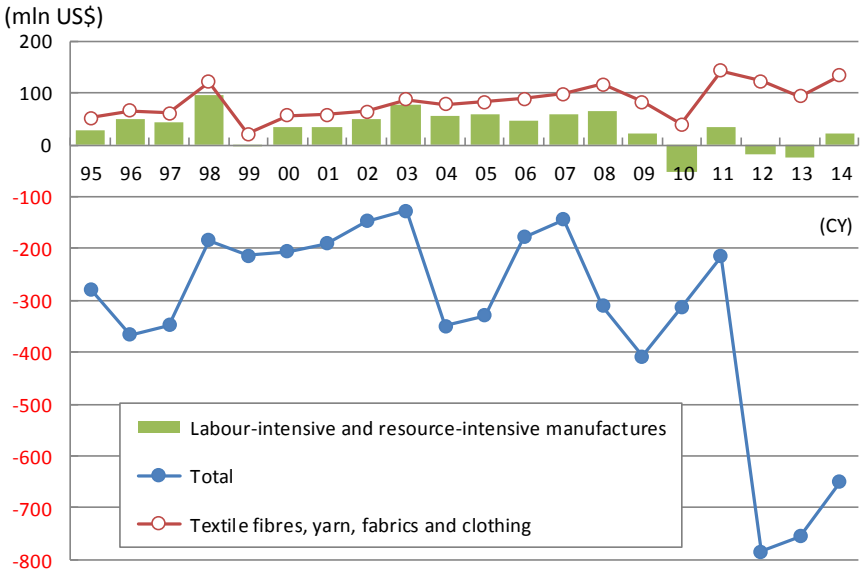
6.3. Garment and Other Labour-Intensive Industries

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

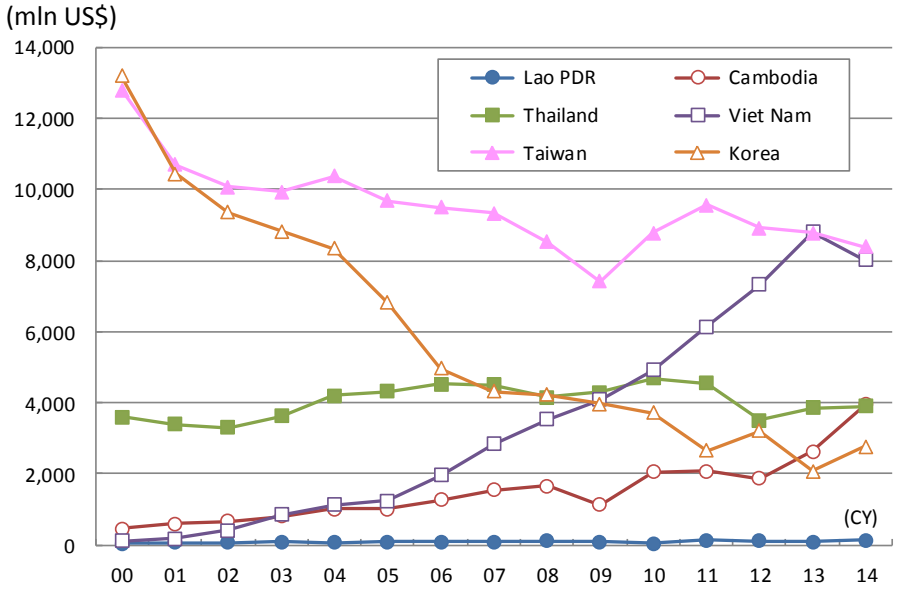
6.3.3.1. Smaller apparel trade surplus compared with Viet Nam and Cambodia

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.

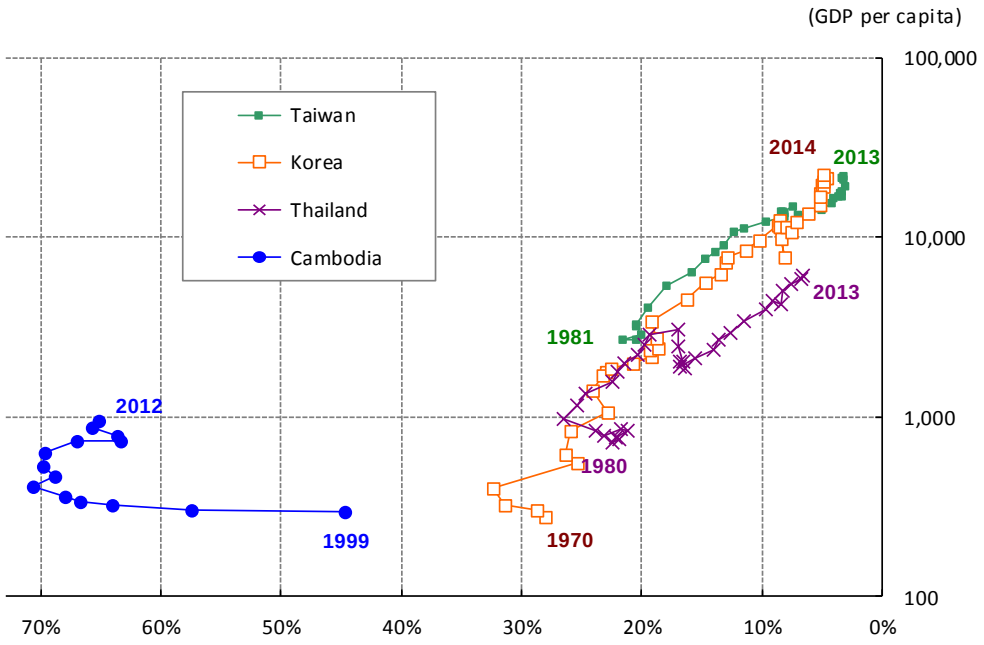
On the other hand, because there is no direct route from Lao PDR to Ho Chi Minh City, the former is not included in the garment industry production network centred on this

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

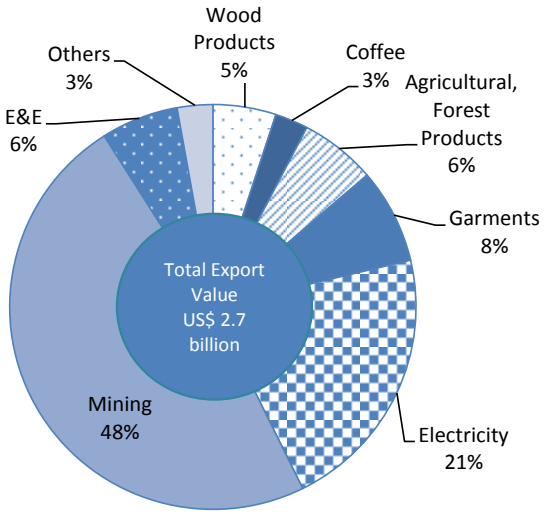
limited number of local staff, particularly for foreign companies, and may need efficient administrative work, including filing notifications with administrative authorities. With such needs, strengthening the functionality of one-stop services would have very positive effects on industrial development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

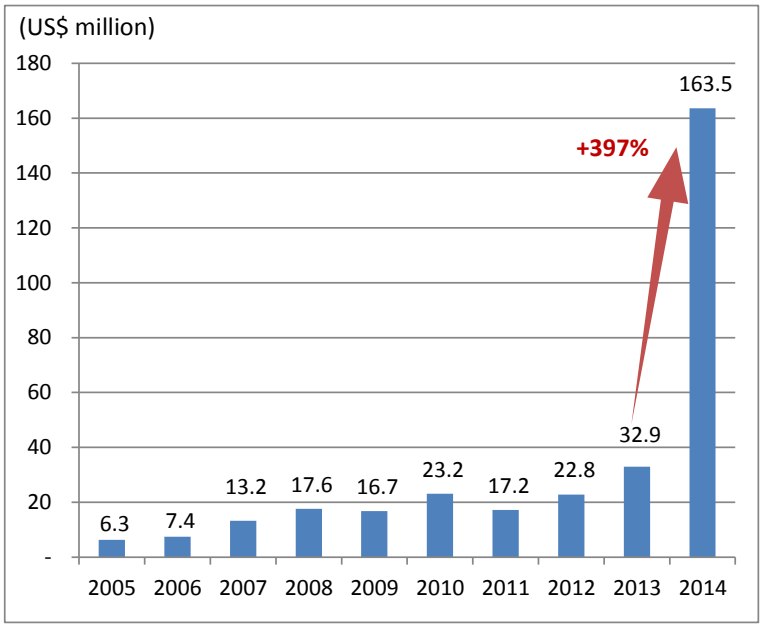
Figure 6.18. Exports from Lao PDR by Item (2014)



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)

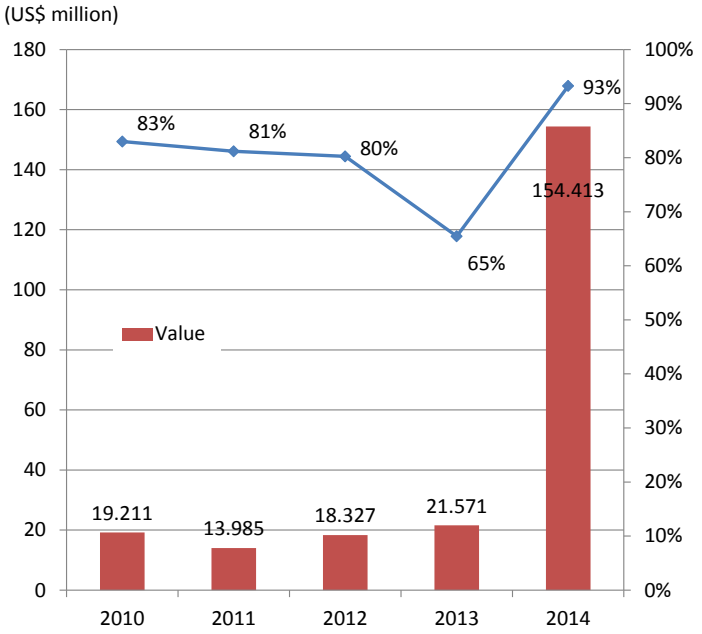


E&E = electrical and electronic components.
Source: International Trade Centre; compiled by DIR.

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.

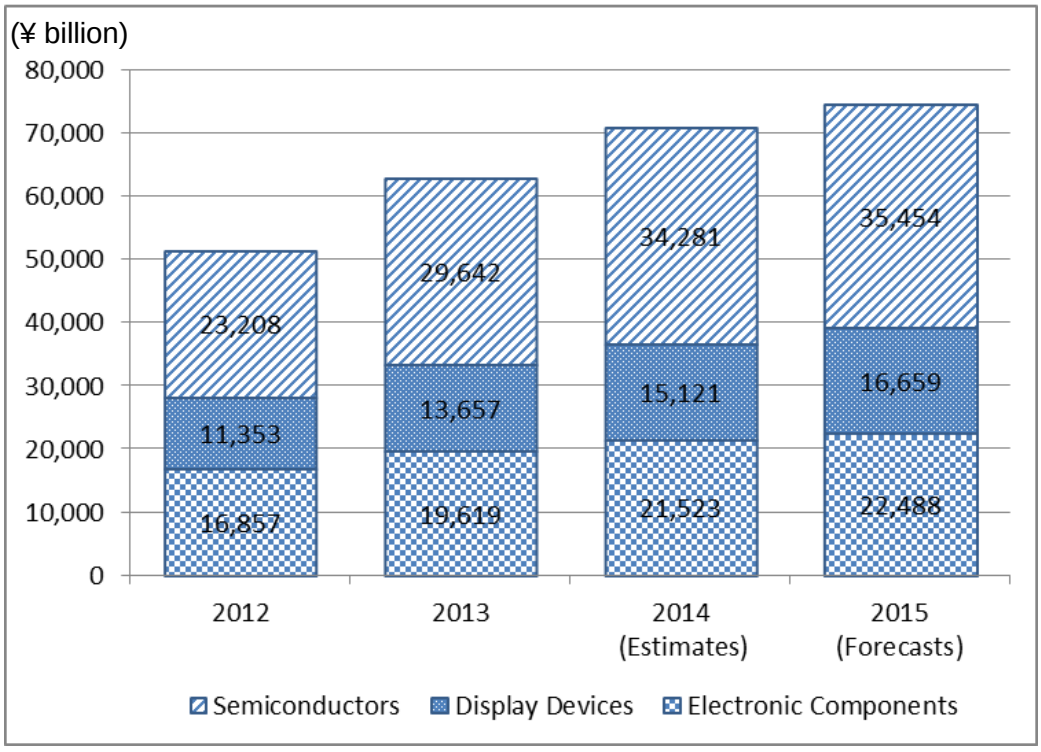
According to Euromonitor,[26] the number of refrigerators and washing machines sold per 1,000 households in Lao PDR in 2014 was 4.8 and 10.5, respectively. Calculating

[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)

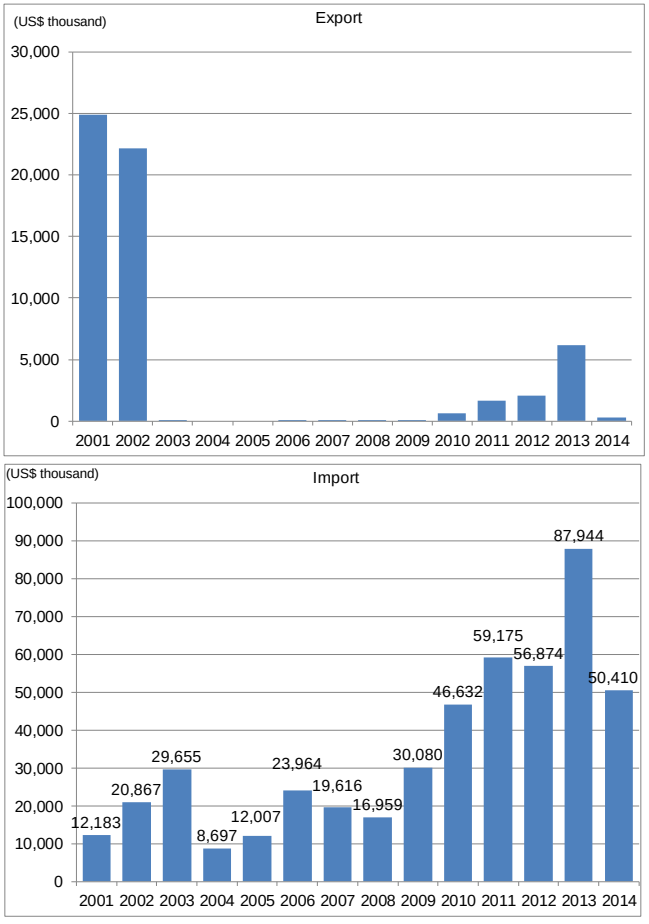
Items	2010	2011	2012	2013	2014
Motorcycle	503,230	818,344	1,005,047	1,111,894	1,218,379
Three wheel	8,825	7,884	8,588	8,601	8,737
Sedan	14,325	21,287	35,514	43,860	51,284
Pick-up	53,712	105,575	147,497	162,586	185,081
Jeep	9,715	23,603	17,153	19,961	22,515
Van	6,310	12,206	37,729	50,035	52,136
Truck	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.

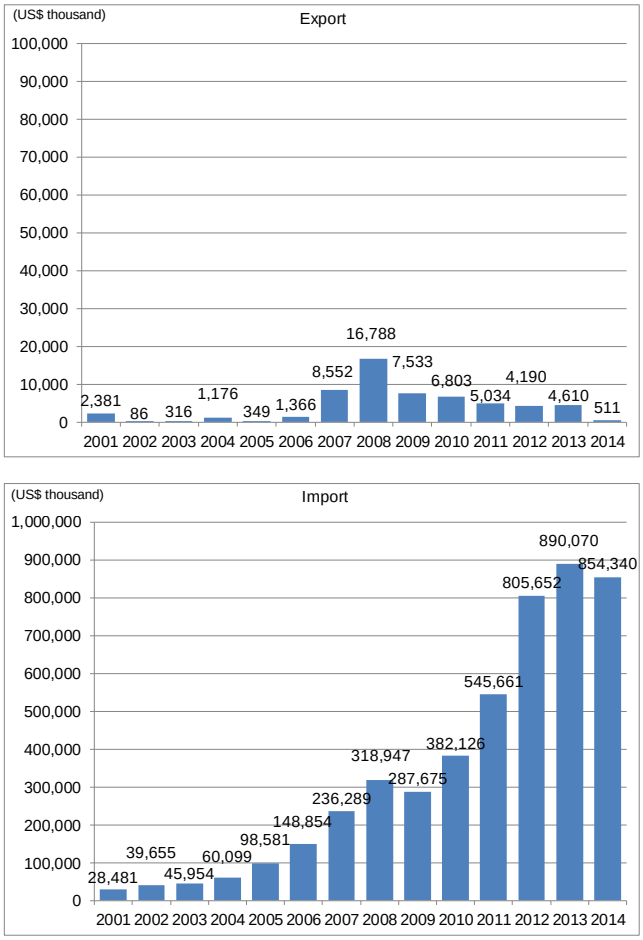
Motorcycle imports to Lao PDR were on an increasing trend until 2013, albeit at a low level (Figure 6.22). Combined domestic production and distribution led to an increase in the number of registered vehicles.

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.

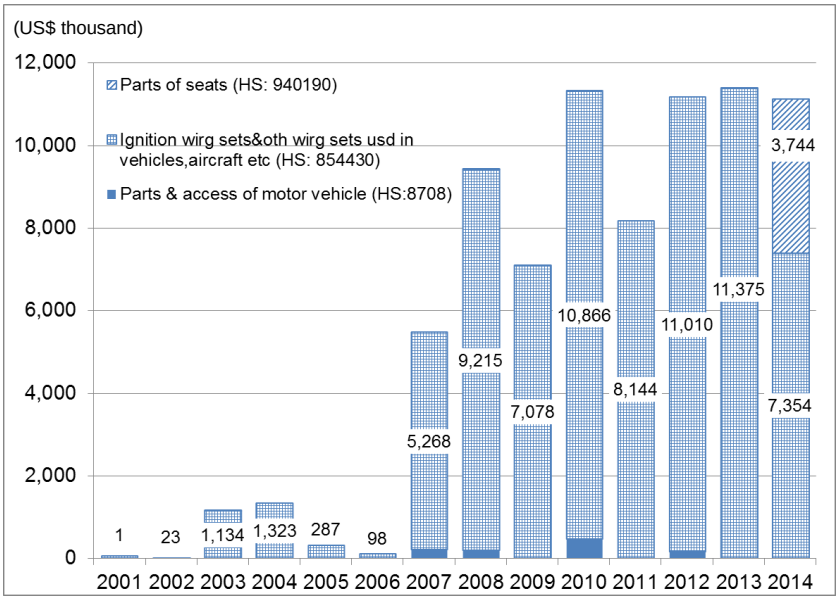
6.5.1.3. Components

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

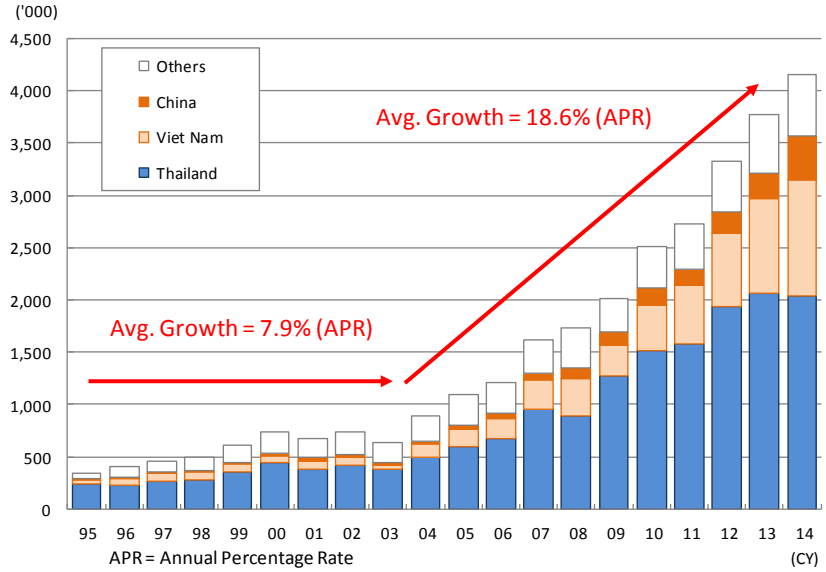
6.6.1. Outline of the tourism industry

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



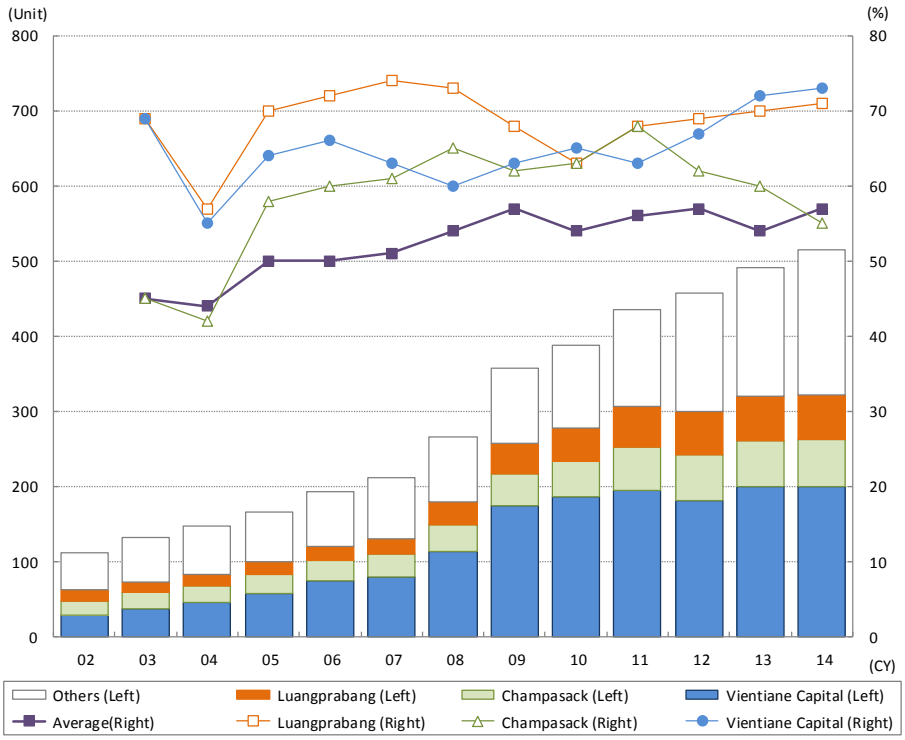
Avg. = average.
Source: Lao Statistics Bureau; compiled by DIR.

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.

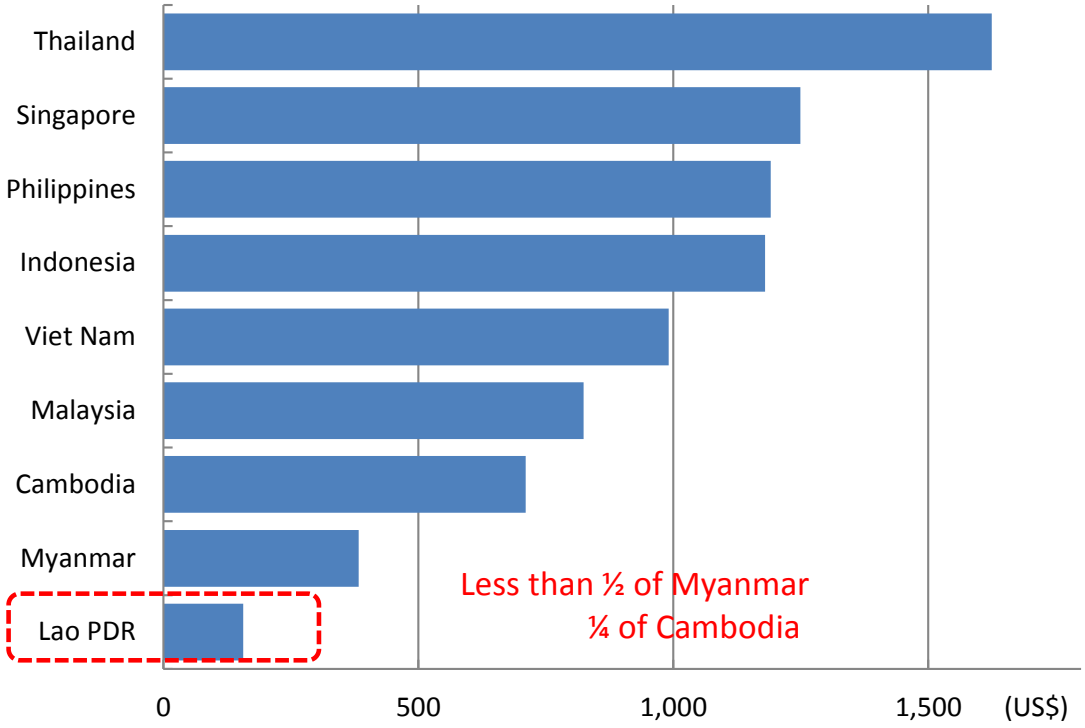
Looking at the average length of stay of foreign visitors, the Cambodian average is 6.5 days versus the Lao average of 4.9, approximately a 1.5-day difference. However, if we exclude day-trip visitors to Lao PDR from our base, the average becomes 6.7 days (DIR estimate), which is not very different from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

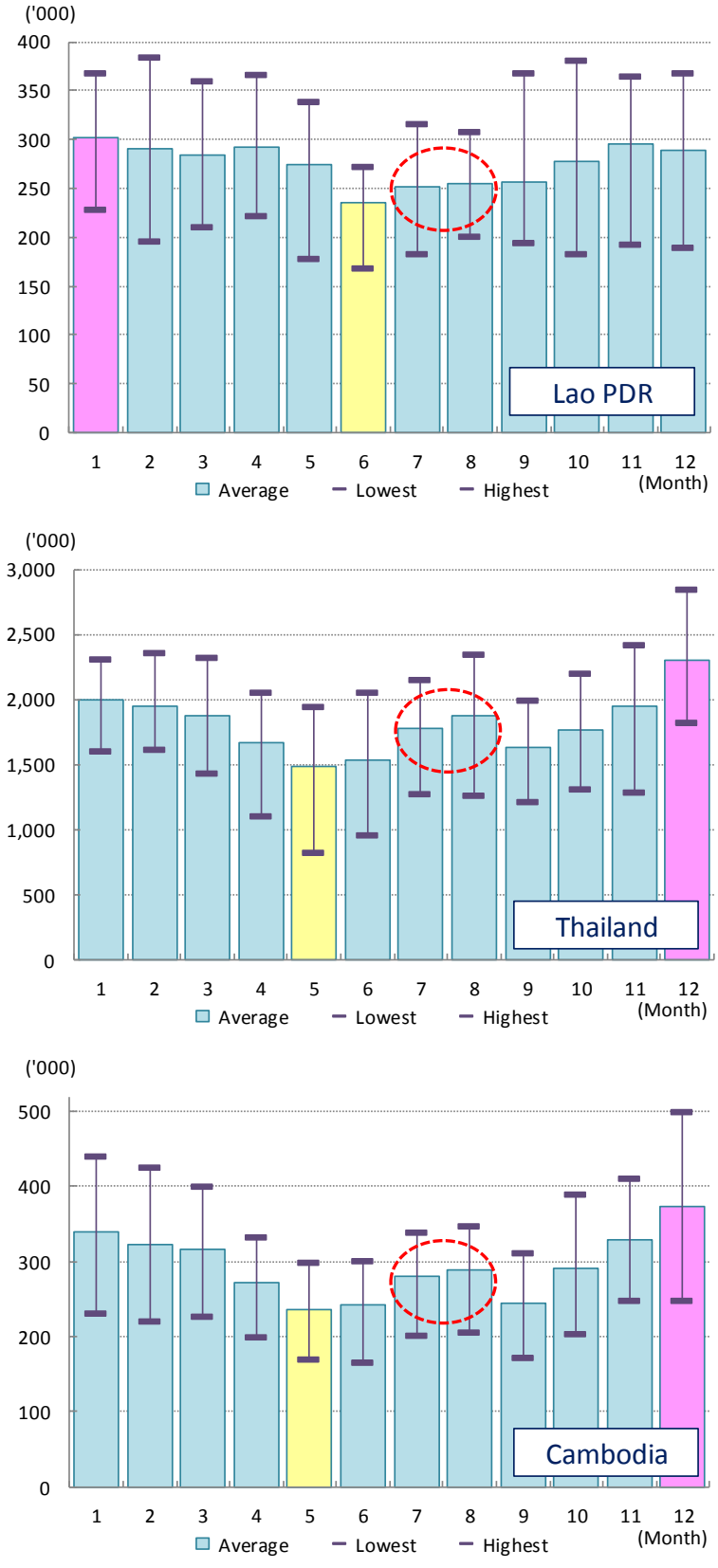
Breaking down the number of visitors by month, Lao PDR has more visitors in the dry season (November–February) and fewer in the wet season (June–October). While the same holds true in neighbouring Thailand and Cambodia, the data indicates that (1) the difference between the peak and trough of Lao PDR's 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

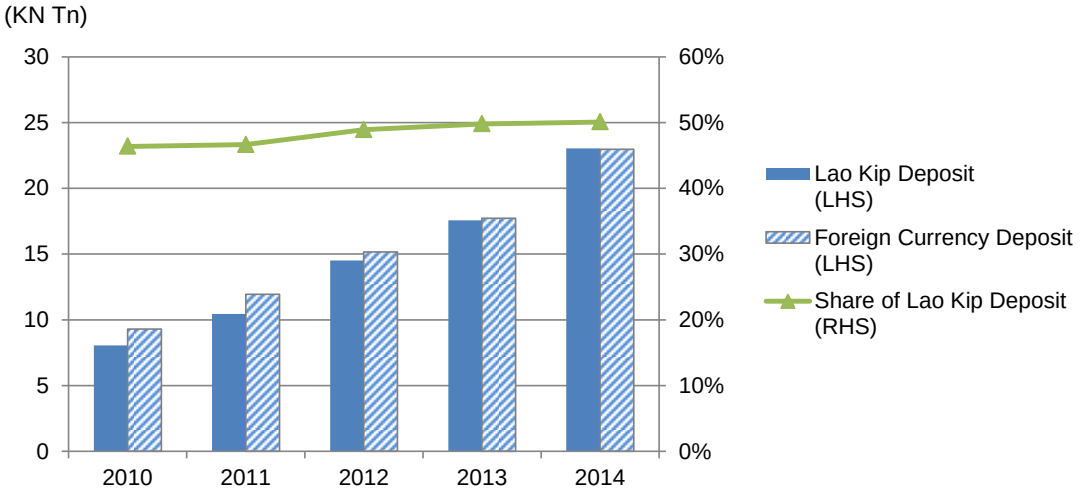
	Deposits		Share	Growth Rate
	2013	2014		2013-14
State-Owned Commercial Banks + Specialised Banks	23,585	30,651	62%	30%
Joint Venture Banks	2,915	4,153	8%	42%
Private Banks	8,443	9,765	20%	16%
Branches of Foreign Banks	3,259	5,235	11%	61%
Commercial Banks (Total)	38,202	49,803	100%	30%

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)

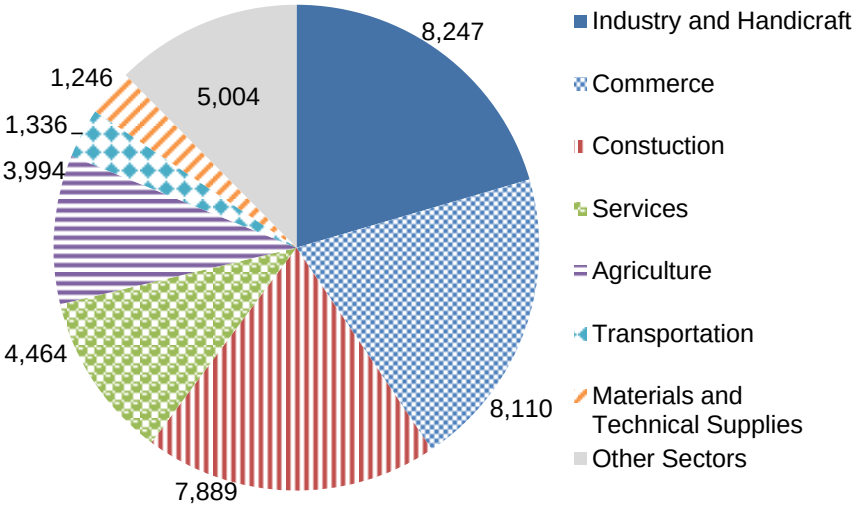
		KN	B	US$
Deposit Rates				
Savings		3.01	1.29	1.39
Fixed:	6 months	6.92	3.02	3.31
	12 months	8.58	3.97	4.17
	24 months	10.91	5.12	5.43
Loan Rates				
Type of Customers: A				
	Short term (1 year)	12.7	9.69	8.8
	Medium term (1−3 years)	12.75	9.7	9.28
	Long term (3−6 years)	13.33	10.52	9.93
Type of Customers: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

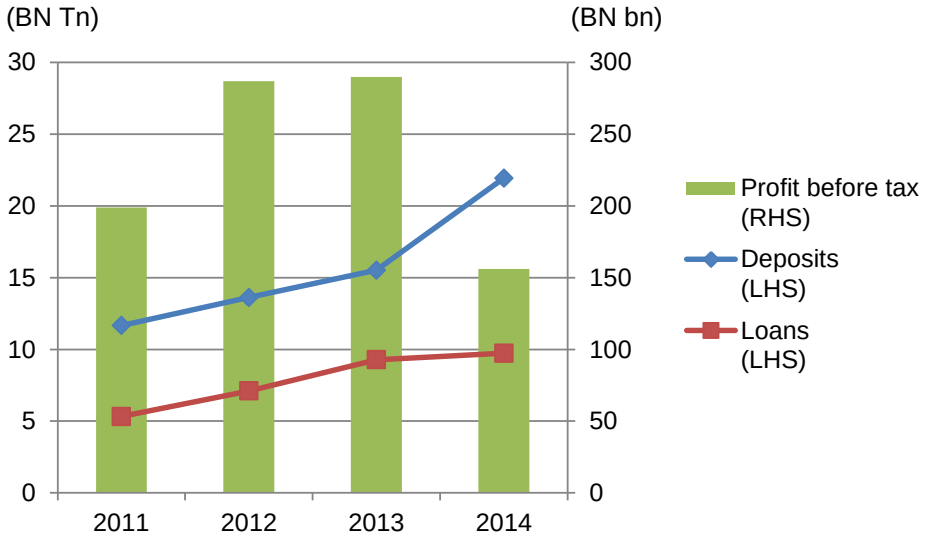
6.7.3. SME finance in Lao PDR

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.

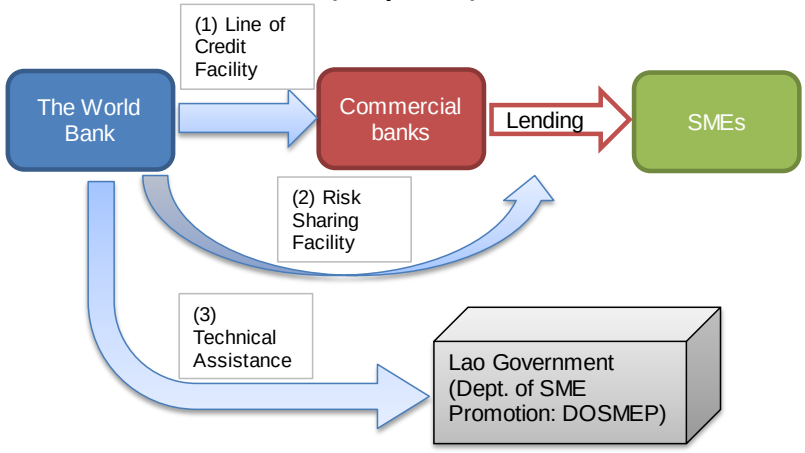
6.7.4. Promising scenarios (SME finance)

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.

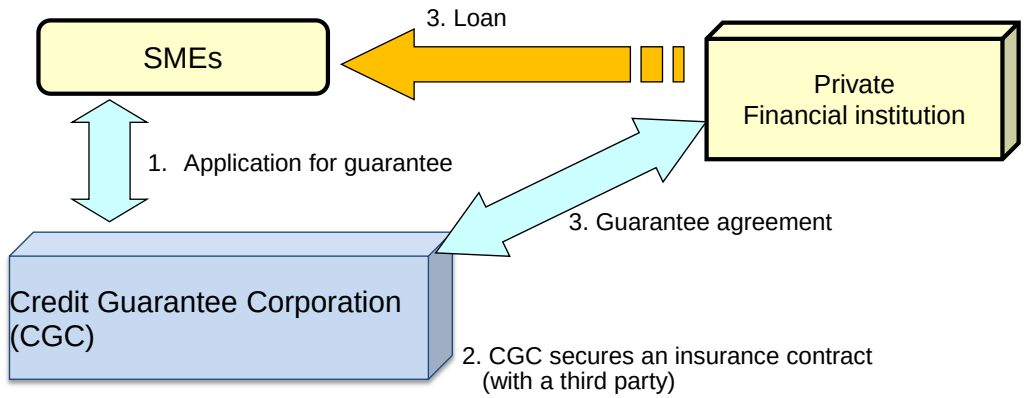
In this regard, the Japanese government (i.e. the Policy Research Institute, Ministry of Finance, Japan: PRI) has engaged in a technical cooperation project on SME finance for Lao Development Bank (LDB) in conjunction with the Japan Finance Corporation, Micro Business and Individual Unit (JFC–Micro). 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

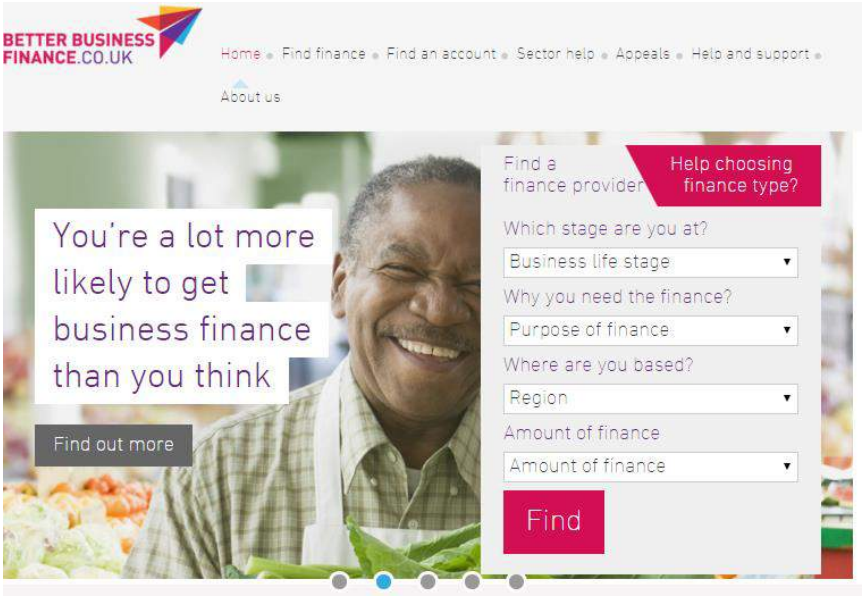
As mentioned above, many SMEs lack the salient knowledge or the documentation that is central to the practice of commercial banking. Given the limitation of human resources, companies fail to prepare credible financial statements and concrete business plans for upcoming years, which are essential in 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

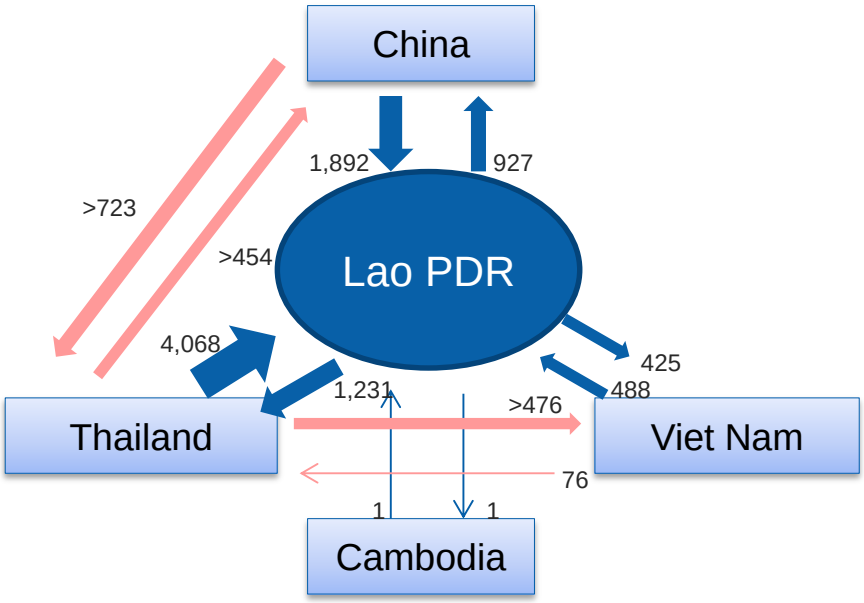
Source: ASEAN Japan Transport Partnership Information Center, May 2015.

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%

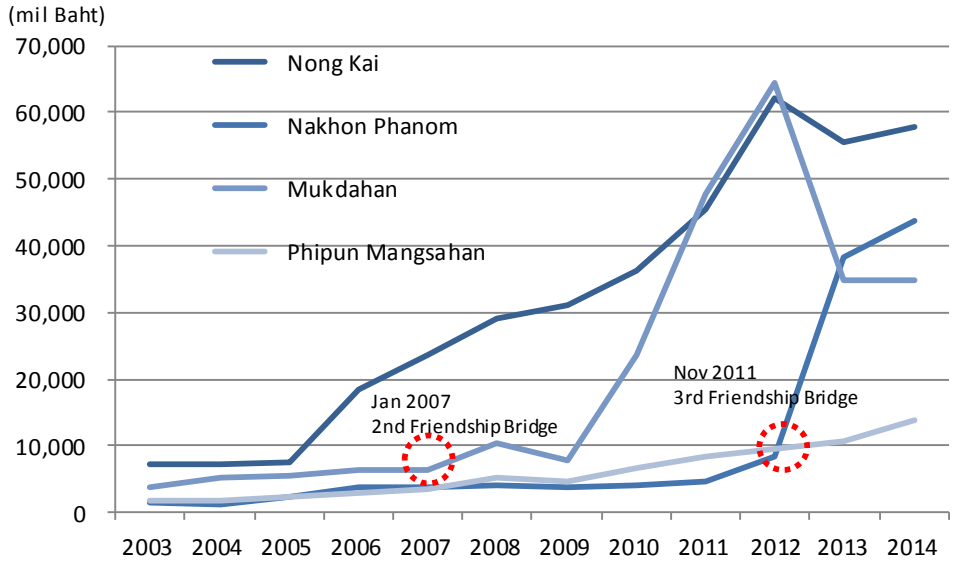
Note: Increase rate is calculated as the value in 2014 divided by the value in 2010 minus one.
Source: International Trade Centre data; compiled by DIR.

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.

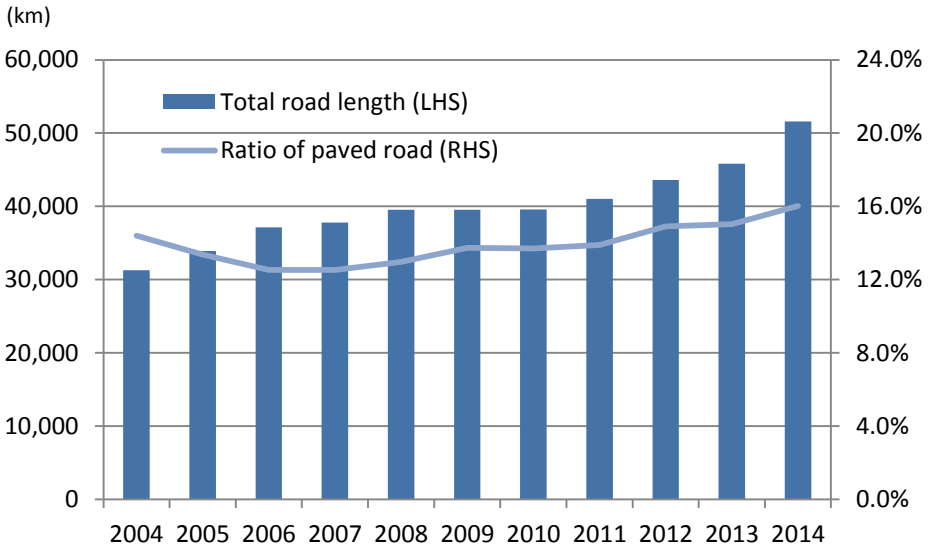
Furthermore, according to interviews with logistics companies in Lao PDR, no consolidation services at all are offered for domestic distribution within Lao PDR or for international distribution to its neighbouring countries. The situation is the same for other logistics companies, as well as the logistics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

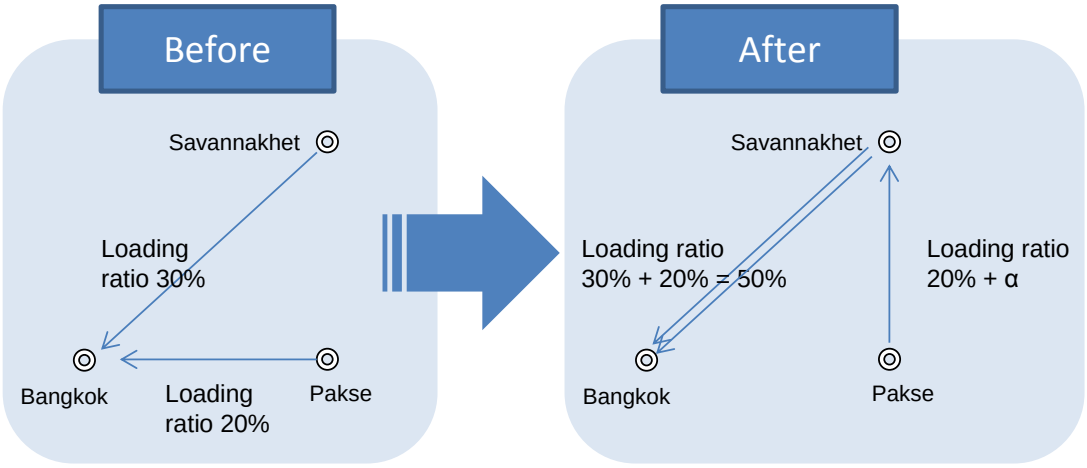
6.8.3.1. Offering consolidation services (Savannakhet Logistics Hub)

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

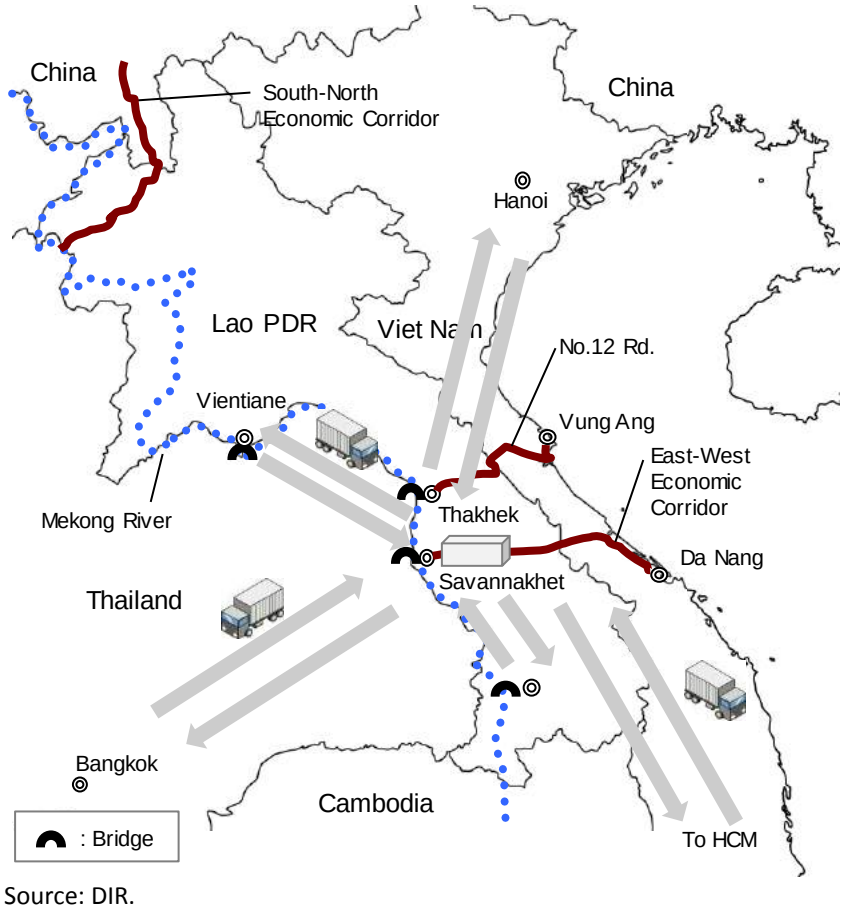


Source: DIR.

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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Chapter 7

Geographical Simulation Analysis

Introduction

Insufficient infrastructure and difficult landscape are major obstacles that have hindered industrialisation in Lao PDR. In many developed and developing countries, industrial estates including special economic zones (SEZs) are effectively used to kick-start industrialisation through the concentration of limited resources (Bredo, 1960; Young, 1992; Catin, 2005). In this chapter it is argued that development of industrial estates (including SEZs) is a potential solution to the lack of industrialisation in Lao PDR.

The aim of this chapter is twofold. First, it attempts to quantify the effects of several official SEZs developed in Lao PDR. (SEZs in Lao PDR refer to both special and specific economic zones.) Currently, there are more than 10 approved special and specific economic zones in the capital city and major provinces, which are at various stages of planning and investment. This chapter takes into account several manufacturing related SEZs in Vientiane Capital, Savannakhet, Champasak, and Thakek province. Although SEZ development has repeatedly proved to be an effective way of generating high growth, its effect is often limited to local areas and entails regional disparity (Krongkaew, 1995; Jones and Cheng, 2003). Hence, additional policy measures to address regional disparity are necessary. Since the 1990s, the facilitation of cross-border economic activities has contributed significantly to economic growth in Lao PDR. Benefits from expanding trade with Thailand have been large mainly because Lao PDR's population is concentrated on major plains along Western border areas of Thailand. On the other hand, trade with Viet Nam and China including transit trade has been picking up rapidly since the beginning of 2000s, but the most rural border areas along the borders with these countries are still mostly the poorest regions in Lao PDR.

The second goal of this chapter is to estimate by simulation the effect of reduced border barriers, especially in the East (Viet Nam) and to the North (China), as well as the effect of the reduction in non-tariff barriers (NTBs) on the whole country.

The rest of this chapter is structured as follows. Section 7.1 summarises historical/theoretical backgrounds, basic structures, the baseline scenario, and the simulation procedure of the Institute of Developing Economies – Geographical Simulation Model (IDE–GSM). Section 7.2 describes simulated scenarios and results. Finally, Section 7.3 concludes with policy recommendations.

7.1. The IDE Geographical Simulation Model (IDE/ERIA–GSM)

7.1.1. What is IDE/ERIA–GSM?

Since 2007, the Institute of Developing Economies–Japan External Trade Organization (IDE-JETRO) has been developing IDE–GSM. The theoretical foundation of the IDE/ERIA–GSM, which is co-developed with ERIA, follows 'New Economic Geography' (NEG), in particular, Puga and Venables (1996) who capture the characteristics of multi-sector and country general equilibrium.

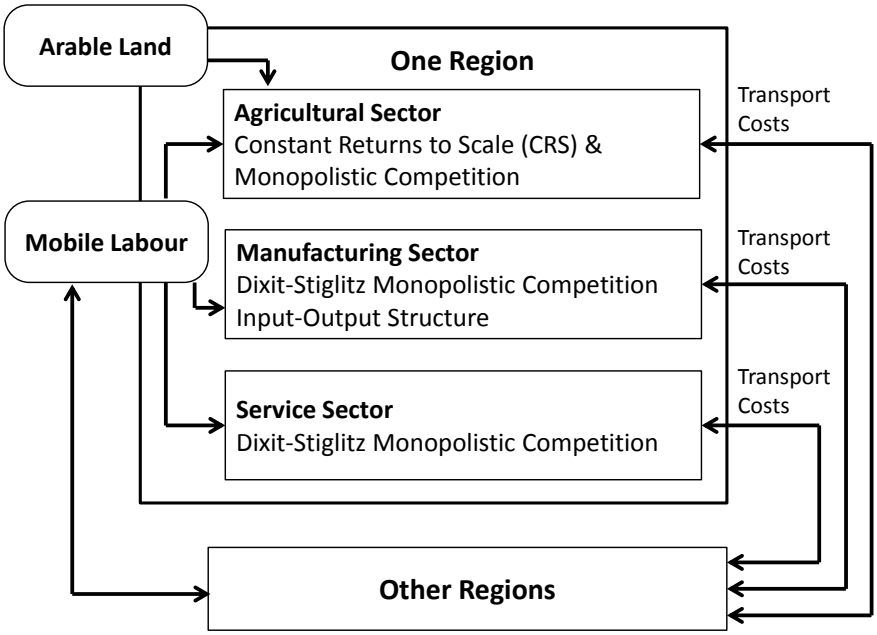
The IDE/ERIA–GSM features agriculture, five manufacturing sectors (automotive, electric and electronics, textile and garment, food processing, and other manufacturing) and the services sector. The model allows workers to move within countries and between sectors. A notable difference of the IDE/ERIA–GSM from that of Puga and Venables (1996) lies in the specification of the agricultural sector. The IDE/ERIA–GSM explicitly incorporates land size in its production and keeps its technology as constant returns to scale.[30] This model incorporates into the simulations the type of physical or institutional integration that will favourably or adversely affect regions of interest at the sub-national level. It also incorporates the

[30] For further details of IDE–ERIA GSM, see Kumagai et al. (2015).

impact of policy measures to facilitate international transactions on the magnitude and location of trade traffic. These enable us to identify potential bottlenecks and the way to reap the full benefits of economic integration. This chapter provides a customised version of the model that divides the country into 139 districts in contrast to the original version that included only 17 provinces. Furthermore, the model expands the basic model of NEG by incorporating numerous realistic features, such as multiple industrial sectors with intermediate inputs, a multimodal transport selection model, and the existence of tariff barriers and NTBs in international trade.

The basic structure of IDE/ERIA–GSM is depicted in Figure 7.1. Each region possesses seven economic sectors (agriculture, five manufacturing sectors, and the services sector). Regions in this particular setting of IDE/ERIA–GSM refer to districts within Lao PDR, but not provinces in neighbouring countries. Labour can move between industries within countries, as well as across national borders.

Figure 7.1. Basic Structure of the IDE/ERIA–GSM Geographical Simulation Model

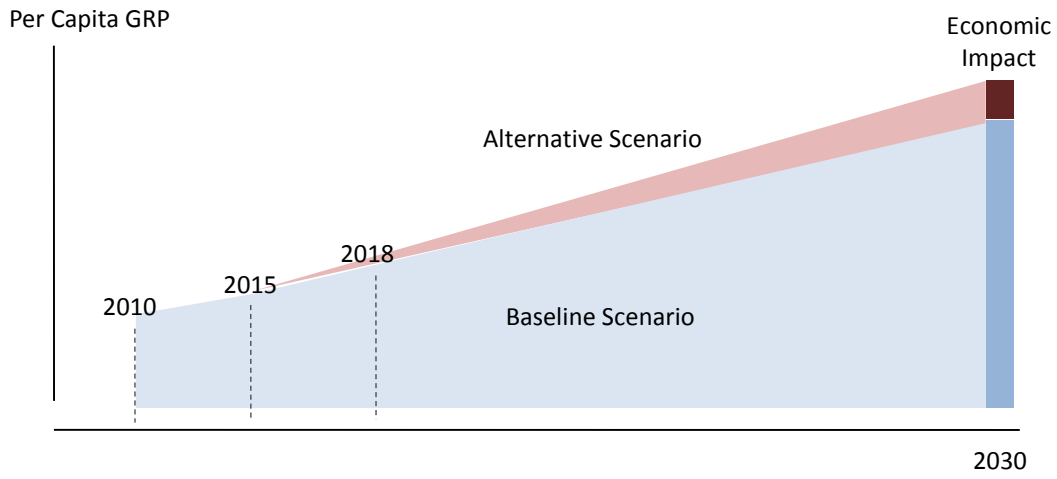


Source: IDE/ERIA–GSM Team.

7.1.2. Base Line Scenario and Alternative Scenarios

We consider the differences of gross regional product (GRP) between the baseline scenario and alternative scenarios (Figure 7.2) to calculate the economic impact of development of various SEZs and border facilitation measures with neighbouring countries. The baseline scenario assumes that minimal SEZ development and border facilitation measures are performed after 2015. The alternative scenario assumes that specific policy measures are taken in 2015 and they will continue beyond 2015. We compare the per capita GRP between these two scenarios in 2030. If the per capita GRP of a region under the scenario with specific scenarios is higher (lower) than that under the baseline scenario, we regard this surplus (deficit) as a positive (negative) economic impact of development of SEZs and border facilitation measures.

Figure 7.2. Image Diagram: Difference between the Baseline and Alternative Scenarios



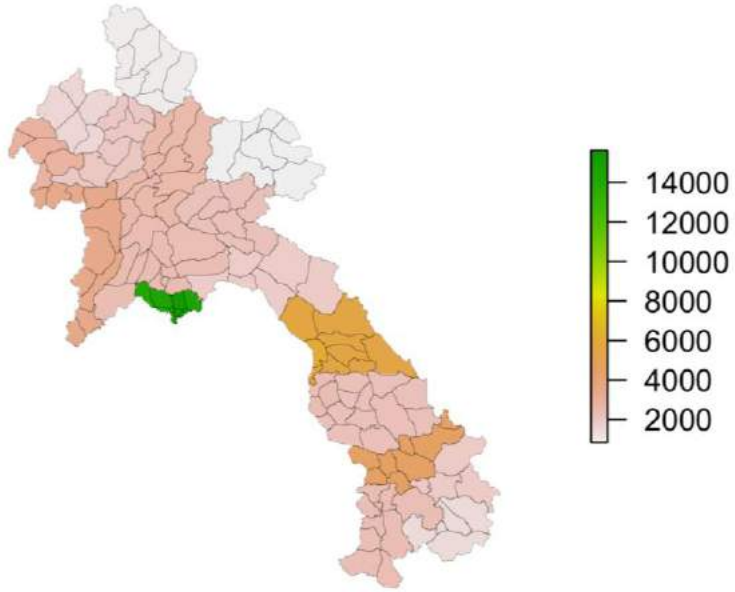
GRP = gross regional product.
Source: IDE/ERIA–GSM Team.

Conventionally, the IDE/ERIA–GSM evaluates alternative scenarios through comparison of gross domestic product (GDP) or GRP, but in this particular study we focus instead on per capita GRP to reflect its importance which official plans stress. The ultimate goal of official development plans in Lao PDR has recently been to increase per capita income and/or value-added at the national level. For example, the

10 Year Development Strategy aims to double per capita GDP between 2015 and 2020. Vision 2030, the longer-term development plan, attempts to quadruple per capita GDP in 2015 by 2030. With this in mind, by using a geographic model with finer regional data, this chapter looks at impacts on per capita GRP by each of Lao PDR's 139 districts.

Our baseline scenario predicts a national per capita GDP of US$4,423.52. However, at a district level, per capita GRP varies from about US$1,000 in most Northern and Southern districts in border areas with Viet Nam and China to more than US$14,000 in Vientiane Capital. This is the baseline case scenario, in which none of the SEZ developments and border facilitations have materialised. It is noteworthy that, in a broader sense, this baseline case includes partially materialised plans, i.e. SEZ development plans that fail to attract investors or border facilitation measures that fail to be properly implemented. It does not take into account major energy and resource development projects, which, if implemented, will almost certainly push up GDP and GRP through capital stock accumulations.

Figure 7.3. Per Capita Income by District in 2030 in the Base Line Scenario



Source: IDE/ERIA–GSM Team.

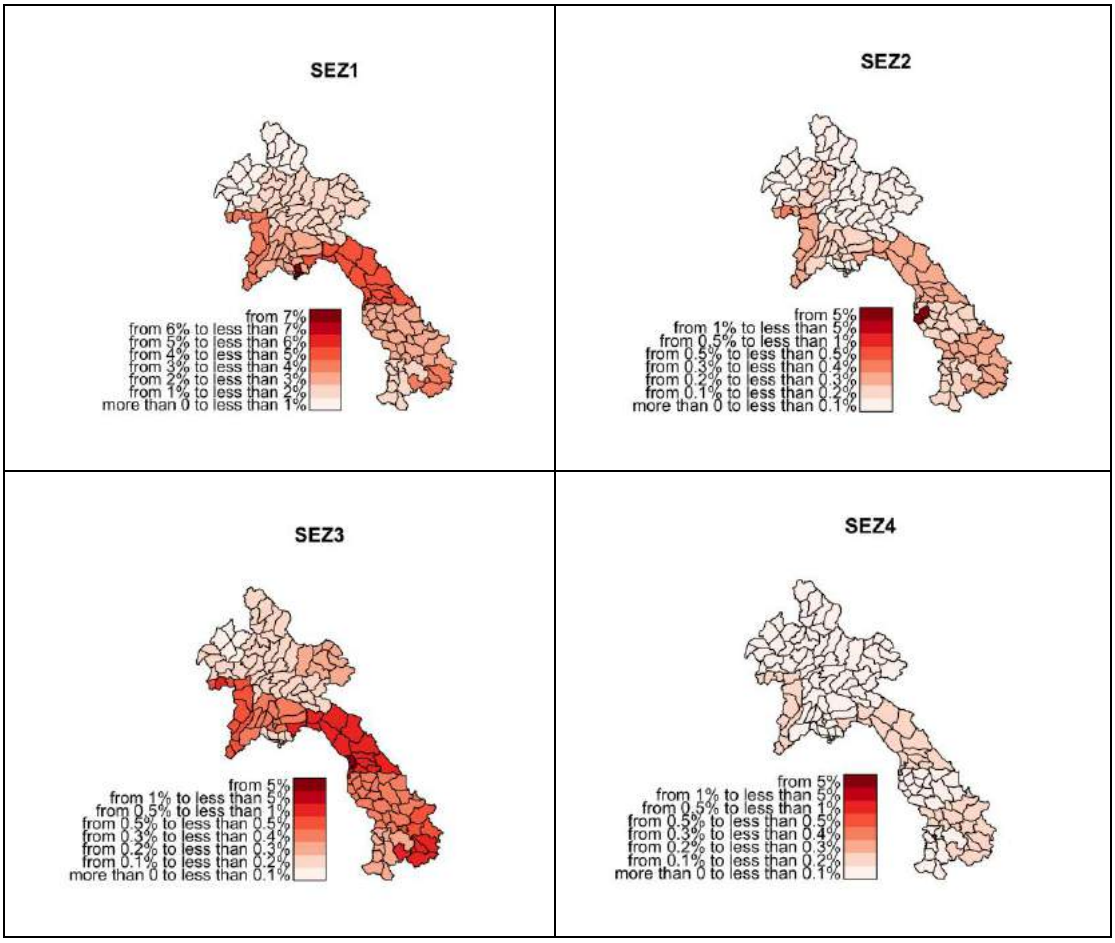
7.2. Scenarios and Results

We conduct a simulation analysis of three major scenarios – (i) development of SEZs, (ii) border facilitation in association with each neighbouring countries, and (iii) reduction of NTBs in the whole country.

7.2.1. Special Economic Zone Developments: Scenario SEZ1 to SEZ5

Scenarios SEZ1 to SEZ5 indicate development of SEZs in (1) Vientiane Capital, (2) Savanakhet, (3) Champasak, (4) Khammouan, and (5) All of (1) to (4), respectively. In all scenarios, we predict a productivity increase for districts that have SEZs. The results of each SEZ1 to SEZ4 are shown in Figure 7.4.

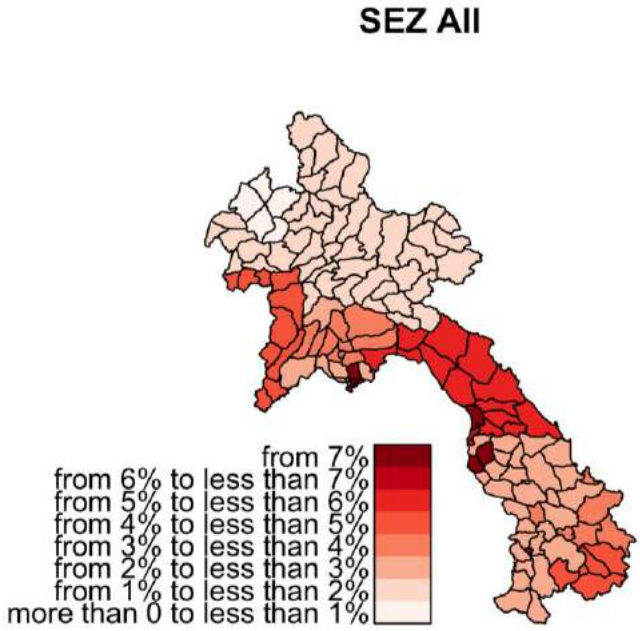
Figure 7.4. Scenarios SEZ1 to SEZ4 (2030)



SEZ = special and specific economic zones.
Source: IDE/ERIA–GSM Team.

Except for (1) Vientiane Capital, SEZ development pushes up per capita GRP in districts, where SEZs are located by about 4 percent in 2030 compared with the baseline scenario. On the other hand, in Vientiane Capital, the impacts increased per capita GRP about by 8 percent, i.e. by twice as much. SEZ development in Vientiane Capital also generates positive impacts on its neighbouring regions; a result that cannot be seen in other cases. This is for two reasons: First, regions surrounding the capital city have a higher manufacturing industry share from the outset, making it easier for them to enjoy positive impacts from SEZ developments in the capital city. Second, the capital city is connected with better roads to surrounding regions compared with SEZs located in other provinces.

Figure 7.5. Scenarios SEZ All (2030)



SEZ = special and specific economic zones; GRP = gross regional product.
Source: IDE/ERIA–GSM Team.

The degree of benefits from the development of all SEZs is presented in Figure 7.5. As expected, if all SEZs are developed, the benefits exceed those of individual cases. Per capita GRP increases of more than 10 percent can be observed in several districts. Moreover, because of the geographical advantage, the SEZ in (4) Khammoun, located

between the Vientiane Capital and Savannakhet, generates larger positive effects than other cases from (1) to (3).

The 10 percent increase of per capita GRP is actually very large when compared with conventional policy measures in official development plans. Traditionally, official development plans in Lao PDR would, first, set the overall growth target of GDP and per capita GDP. Then necessary investment, from all sources, would be computed based on Incremental Capital–Output Ratio (ICOR) in Lao PDR. Given the early stage of economic development, where infrastructure is often underdeveloped or lacking, it is not a surprise that investment plays such an important role. In general, the Government of Lao PDR would expect (i.e. plan) to invest about 30 percent of GDP to achieve about 7 percent growth. As Lao PDR's GDP in 2015 is estimated at US$13 billion, an annual investment of around US$5 billion would be necessary according to a simple calculation. A decent SEZ would generally cost about US$100 million to be built from scratch and, once constructed, can last for decades, producing significant economic impacts, unlike an investment growth model which requires continuous investment. Despite maintenance costs in addition to construction costs, the impacts of SEZs on per capita GRP or GDP by regions are in fact much higher if these simulation results are taken at face value.

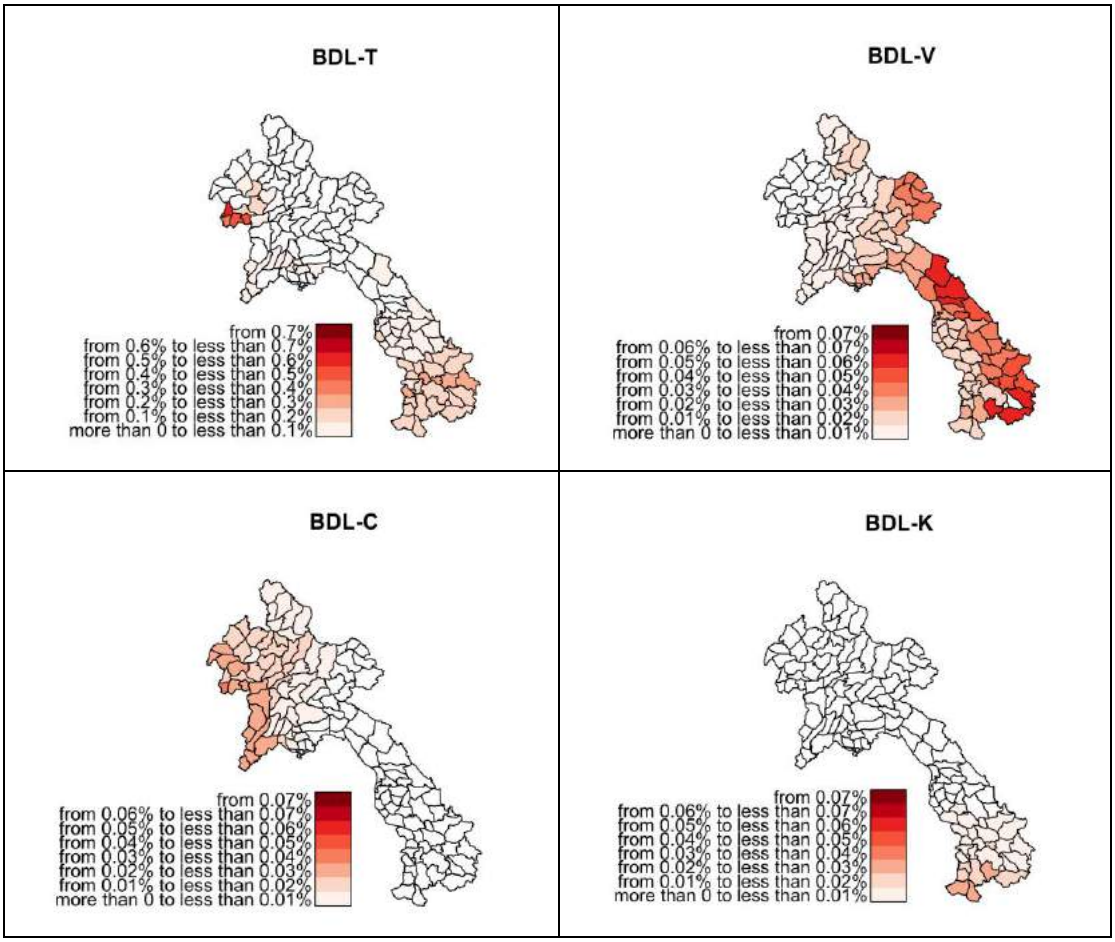
7.2.2. Border facilitations: Scenario BDL–T, BDL–V, BDL–C, and BDL–K

Scenarios of facilitation of borders with neighbouring countries include (1) BDL–T (Thailand), (2) BDL–V (Viet Nam), (3) BDL–C (China), (4) BDL–K (Cambodia)[31], and (5) All of (1) to (4). In all scenarios, we assume a reduction by half in time and money cost for transportation of goods across the borders. The results of (1)–(4) are shown in Figure 7.6. With regard to the magnitude of the impacts, the highest is for the case of (1) facilitation of the border with Thailand. As one may expect, such impacts can be actually observed in rural border areas where border facilitation practices have been

[31] BDL-T, BDL-V, BDL-C, and BDL-K stand for Border of Lao PDR with Thailand, Viet Nam, China, and Cambodia, respectively.

implemented. There is generally a concern that freer borders could result in the economic decline of border areas, but our simulation results show that they can be effective measures to help address development gaps in rural border regions. Concretely, border facilitation with Viet Nam has increased per capita GRP of the rural border areas bordering Viet Nam, whereas border facilitation with China has expanded positive economic impacts southwards through the North–South Economic Corridors.

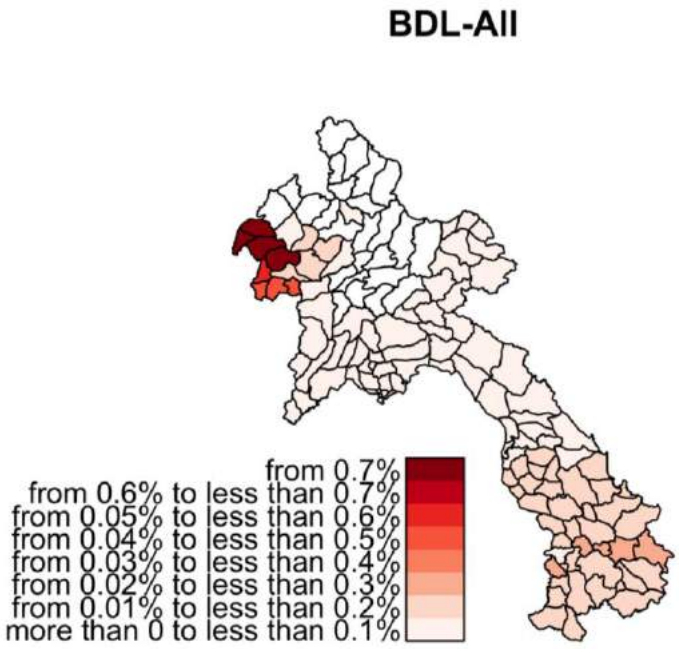
Figure 7.6. Scenarios BDL (2030)



BDL = border of Lao PDR; GRP = gross regional product.
Source: IDE/ERIA–GSM Team.

As is the case with SEZ development, the economic benefits of all border facilitations are greater than the sum of individual cases. One surprising result is that the impact on Bokeo, which borders three countries – Thailand, China, and Myanmar – is the highest. The scenario concerning border facilitation with Myanmar is skipped in this analysis for reasons, such as the lack of regional data in Myanmar, but this scenario could be also expected to have a high impact.

Figure 7.7. Scenarios All Borders (2030)



GRP = gross regional product.
Source: IDE/ERIA–GSM Team.

The magnitude of impact on per capita GRP through border facilitation seems small when compared with SEZ development. However, border facilitation, in this particular simulation, refer to merely reducing the time it takes to cross borders. This can normally be done without additional financial costs. The time it takes to cross the majority of border posts in Lao PDR is in the order of hours. And if one takes into account the times border gates are closed and the cases where goods are required to be stored in bonded warehouses, the waiting time can increase to the order of days and weeks. In reality, border costs are not limited to time costs; they are also money

costs. In short, the room for improvement – therefore, positive economic impacts of border facilitation – remains large.

7.2.3. Reduction of NTBs

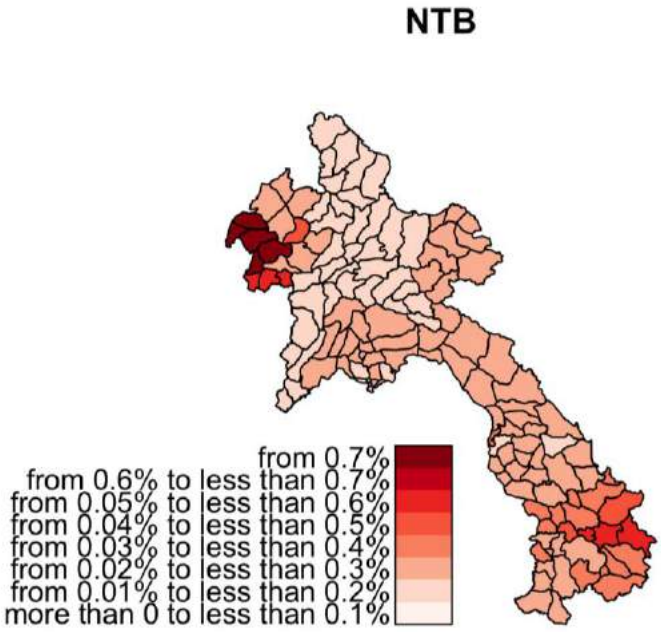
In this scenario, it is assumed that Lao PDR will lower the level of its services barriers from 2016 to 2025 to the level of Cambodia's barriers. NTBs for manufacturing goods will gradually decrease as the efficiency of the services sector increases, and hence a positive impact of reducing NTBs is also expected for manufacturing goods. The level of Cambodia's barriers is 46.0 percent of that of Lao PDR. Thus, we are supposed to reduce Lao PDR's barriers by 54.0 percent in 10 years; that is, from 321.1 to 147.8 in numerical terms.

In addition to the reduction in barriers of the services sector, it is also assumed that we reduce the NTBs for the manufacturing sector, taking into account that services are used as an input for the manufacturing sector. As a proxy, we take the ratio of the domestic service input to the output value for each industry from the input–output (IO) matrix of Thailand included in the ASIA Input–Output Matrix 2005, which is published by IDE–JETRO. The specific values are 0.104 for the automotive industry, 0.107 for the electronics and electrical appliances (E&E) industry, 0.172 for the textile/garment industry, 0.125 for the food processing industry, and 0.131 for the other manufacturing industries. In this simulation analysis, the NTBs for the automotive industry in Lao PDR are reduced by 5.6 percent (=0.104 × 0.54) over 10 years.

The result of a NTBs reduction for the whole country is depicted in Figure 7.8. It has a slightly higher impact than the facilitations of all borders.

The simulated result for all alternative scenarios is presented in Figure 7.9. As can be seen, the highest impacts come from development of SEZs, followed by reduced NTBs (for the whole country), and very closely followed by facilitating all borders.

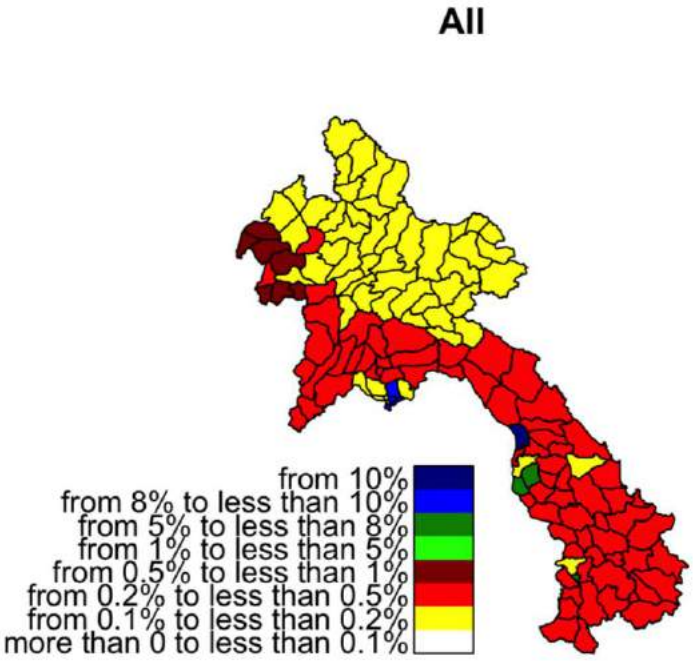
Figure 7.8. Scenarios NTB Reduction (2030)



NTB = non-tariff barrier.
Source: IDE/ERIA–GSM Team.

7.2.4. All Alternative Scenarios

Figure 7.9. All Alternative Scenarios (2030)



GRP = gross regional product.
Source: IDE/ERIA–GSM Team.

7.3. Conclusions and Policy Recommendations

Our simulation analyses revealed that the SEZ developments, NTB reductions, and border facilitations will generate lasting positive economic impacts on Lao PDR, both at the district and national levels. We can derive some policy recommendations from the three different scenarios explored in this study.

First, the development of SEZs generates the highest impact on per capita GRP at the district, provincial, and national levels. Whether these positive impacts spread to neighbouring regions depends on several factors such as industrial structures of surrounding regions and the strength of connectivity to districts where SEZs are developed. To make the most of benefits from SEZ development, we therefore recommend, as discussed in previous chapters, that it should be carried out in conjunction with industrial promotion policies and the improvement of connectivity to surrounding regions.

Second, most urban areas in Lao PDR border with Thailand, and per capita GRP in those areas is usually higher than in other parts of the country. Based on the simulation analysis of the effects of border facilitation, we find that simple measures, such as reducing time costs of goods transported across borders, can increase per capita GRP in rural border areas, especially those bordering Viet Nam, China, and Cambodia. The impacts of border facilitation are lower than those of SEZ development. However, time and money costs incurred for cross-border trade in Lao PDR are still very high at most border crossings, meaning, there is a lot of room for improvement. In other words, greater benefits may be derived from border facilitation measures. We recommend that the government make the greatest use of border facilitation measures to reduce regional disparity, which is also the most important and pressing development issue in Lao PDR.

Third, we found that reduction of NTBs at the national level can also generate higher per capita GRP. Although quantification of NTBs is difficult, there are reasons to believe that the room for improvement is still quite large. Concretely, we recommend services liberalisation in various sectors, such as the wholesale and retail sectors, as it creates higher economic growth. In particular, services related to the manufacturing sector, such as logistics, finance, and professional services, should be designed to reduce the barriers in the manufacturing sector and could achieve higher economic growth.

Finally, the economic impact can be amplified through combinations of many development projects, from SEZ developments, to border facilitation measures, and the reduction of NTBs. We see that synergised effects are always greater than the benefits from individual projects or measures. Careful planning of them is required to achieve higher economic growth, balanced economic growth among its regions, and balanced growth among its industries, to ensure robust economic growth throughout Lao PDR.

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Conclusion and Recommendations

Lao PDR faces two serious challenges: (1) to ensure robust and stable economic growth that is not dependent, as it is at present, on a few sectors such as exhaustible mineral resources; and (2) to narrow the current development gaps between and within regions in the country. Appropriate development strategies and relevant policies to implement them have been in great demand for a long time. *Lao PDR at the Crossroads: Industrial Development Strategies 2016–2030* has attempted to provide inputs for Lao PDR's mid- and long-term comprehensive industrial development strategies, which are expected to contribute to successfully meeting these challenges.

The study includes concrete policy recommendations that, if adopted, are likely to contribute to the further development and growth of Lao PDR. Specifically, the policy measures proposed in this report are expected to ultimately turn Lao PDR's weakness of being a 'landlocked' country into its strength, by turning it into a 'land-linked' country. Most importantly, as the Lao PDR economy develops, the effective implementation of such policies is strongly required for it to stay on a sustainable growth path. The title of this study, 'Lao PDR at the Crossroads,' refers to the country having to make a significant decision regarding its future and its central location as a transport hub in the Mekong region.

Lao PDR's industrial development strategies should pay adequate attention to connectivity and geography, and how they affect industrialisation and economic development. These two concepts are the foundation for industrial policies based on regional and global production networks. Of particular importance is a recognition of the three tiers of the stages of industrial development:

- Tier 1: Forming an industrial cluster within an existing industrial agglomeration, which can be divided into innovative Tier 1a and industrial Tier 1b.

- Tier 2: Participating in production networks along with the second unbundling that enables a jump-starting of industrialisation, mainly with machinery industries.
- Tier 3: Linking up with global value chains on the first unbundling on the basis of resourced or labour-intensive industries.

At present, Tier 1 does not exist in Lao PDR, but Tier 2 does in cities such as Vientiane. Tiers of industrial development can vary according to time and place. It is important to accurately assess, therefore, in what tiers policy target cities and regions find themselves, to be able to make appropriate industrial development policy choices on that basis.

In this context, industrial estates (IEs) are important policy tools to achieve industrialisation and economic growth in Lao PDR, as they can efficiently gather manufacturing firms that are adequate for targeted development tiers in a particular region. Manufacturing industries tend to contribute to the balanced development of developing countries. In neighbouring countries such as Thailand, Viet Nam, and Cambodia, IEs have played a key role in establishing the industrial clusters that have proved to be essential for industrialisation and economic development. Although industrial clusters in Lao PDR have started to emerge, operational IEs have so far been quite limited among Lao PDR's 11 Special Economic Zones (SEZs). IEs in Lao PDR urgently need to be vitalised so they can grow into industrial clusters. To achieve this objective, the report makes the following policy recommendations:

- Population and existing economic activities:
  - ✓ Given Lao PDR's small population and supporting industries, IEs have to be located in relatively big cities of several hundred thousand people.
- Access to larger IEs beyond the borders:
  - ✓ The country has to be integrated with the Bangkok agglomeration, which will constitute Lao PDR's prime industrial core. Lao PDR is highly likely to receive the

largest benefit from developing IEs that are close to the bridges over the Mekong River.

- ✓ To establish a competitive edge against Koh Kong and Poipet SEZs in Cambodia, Lao PDR needs to improve its business environment, in particular shortening the travel time to Bangkok and reducing logistic costs by (1) extending the business hours of customs clearance, (2) simplifying customs procedures, and (3) launching mixed loading services.
- ✓ To benefit from the Hanoi agglomeration in the long term, Lao PDR needs to improve the road infrastructure between Thakhek and Hanoi.

- Start-up funding for infrastructure:
  - ✓ To establish essential hard and soft infrastructure, such as electricity, transportation, and management offices in the initial development of IEs, policymakers need to continue negotiating with donor countries.

This study also analyses individual industries, focusing on eight industrial sectors: (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 (small and medium-sized enterprises [SMEs]), and (8) transportation. It is important to note that these industries can be categorised into three layers. First, the mining and energy, finance (SMEs), and transportation industries are the foundation of economic activities. Second, the agriculture and food processing and tourism industries can be a tool for balanced development. Third, the garment and other labour-intensive industries, the electrical and electronic machinery industry, and the transport equipment industry can be drivers of accelerated export-led economic growth.

This study also shows that fundamental industrial strategies should be based on both drivers: productivity improvement and job creation in other sectors through industrial promotion policies utilising a shift in labour away from the agriculture industry. This

policy direction is expected to greatly benefit the Lao PDR economy because the current productivity gap between the agriculture sector and manufacturing industries means there is a huge potential to improve overall productivity.

What follows summarises promising scenarios and future challenges in individual industries that development strategies should focus on (see Appendix for details).

Moreover, cross-cutting policies, such as those on infrastructure, human capital, and trade and investment policies are significant foundations for industrial development strategies. Because such policies affect other industrial policy fields and their implementation and results can be effective only if addressed integrally, it is important that they are purposely designed from an overall perspective to make industrial development strategies much more powerful and effective.

Finally, although it is beyond the scope of this study, the formulation of concrete action plans for implementing industrial development strategies is also an important task. As it would be difficult to implement all policy recommendations made by the report simultaneously, we need to select, prioritise, and concentrate on some of the more urgent policy issues. Moreover, an effort to secure sufficient funding to implement such policies, for example, through dialogue with donor countries and institutions, would still be required. After all, the Lao PDR government itself should be actively involved in implementing industrial development strategies to achieve its development goals.

Sector	Promising Scenarios	Future Challenges
(1) Agriculture and food processing	● High value addition through 'sixth industrialisation' ● Efficient rice production through a 'best practice' package ● High-quality commercial crop production at local cooperatives ● Establishment of a new value chain (e.g. dairy products)	● Capacity building in farming technology ● Procuring packaging materials ● Improving cold chains
(2) Mining and energy	● Expansion of regional power interchange ● Promotion of bioethanol production	● Establishing a leading position at the ASEAN Power Grid ● Partnering with neighbouring countries ● Establishing a subsidy system to guarantee the profitability of bioethanol
(3) Garment and other labour-intensive industries	Garment industry ● Production of high value-added products with low seasonality ● Participation in the fast fashion supply chain for ASEAN nations Other labour-intensive industries ● Production using a large amount of low-cost labour and electricity, such as copper wire, casting, and moulding ● Production of high value-added light products, such as medical devices	● Ensuring smooth transport to Bangkok ● Ensuring one-stop service at VITA Park
(4) Electrical and electronic machinery	● Production of electronic components with a relatively short commodity cycle and with a flexibly adjusted production volume, such as connectors (LANs, USBs, etc.) and their cables	● Improving distribution
(5) Transport equipment (automobiles and motorcycles)	● Production and exportation to Thailand of labour-intensive components, such as cable harness and automobile seat covers	● Stabilising power supply ● Improving road conditions
(6) Tourism	● Promotion of 'key visuals' for core markets (Thailand, Viet Nam, and China) ● Attraction of visitors from Japan, Korea, and China during the summer vacation season (July–August)	● Investigating the needs of travellers from different countries ● Improving sanitation, etc. ● Relaxing the procedure for applying for a guided tour
(7) Finance	● Utilisation of funds from international organisations ● Capacity building of commercial banks in credit assessment ● Establishment of a domestic and region-wide credit guarantee system ● Capacity building of SMEs	● Managing SME finance risks in the banking sector ● Providing incentives for book-keeping in SMEs
(8) Transportation	● Launch of consolidation services (Savannakhet Logistics Hub) ● Utilisation of railways to reduce transportation costs (Vientiane Logistics Hub)	● Arranging joint operation of the Savannakhet Logistics Hub by several private logistics companies ● Arranging joint operation of the Savannakhet Logistics Hub between the government and the people ● Improving customs

Appendix
Detailed Summary of Industrial Studies

(1) Agriculture and food processing

(1-1) Promising scenarios

- High value added through 'sixth industrialisation'
  - ✓ The key to increased purchasing power in the urban areas of Lao PDR is the active involvement of the agriculture sector in food processing (i.e. secondary industry) and distribution (i.e. tertiary industry).
- Efficient rice production through a 'best practice package'
  - ✓ Investment in irrigation schemes brings the highest return as farmers can grow rice during the dry season.
  - ✓ Rice productivity can be increased by improved seeds and better usage of fertiliser.
- High-quality commercial crop production at local cooperatives
  - ✓ Lao PDR has a comparative advantage for high-quality production rather than low-cost mass production. To this end, the formation of local producers' cooperatives is promising.
- Development of a new value chain
  - ✓ Lao PDR needs to develop a new value chain from agriculture to food processing (e.g. coffee and dairy products).

(1-2) Future challenges

- Capacity building to enhance technology
  - ✓ Lao PDR should encourage increased productivity of existing crops by disseminating best practice to enhance agricultural technologies and workforce skills (e.g. the establishment of agricultural technical colleges and high schools).
- Procurement of packaging
  - ✓ A packaging material industry is necessary for the food processing industry and other manufacturing industries.
- Cold chain
  - ✓ Cold chain logistics should be established for food distribution (e.g. vegetables and daily products) to sell products at high prices in neighbouring countries.
  - ✓ Lao PDR should follow suit and focus on securing domestic facilities with support from other countries that have developed the system (e.g. Thailand).

(2) Mining and energy

(2-1) Promising scenarios

- Mining and energy
  - ✓ Promoting electricity sales to Viet Nam and Cambodia in addition to Thailand in accordance with the initiatives of the ASEAN Power Grid is promising.
- Bioethanol production
  - ✓ Producing bioethanol can be a strategy that overcomes the dependence on imported petroleum products, which is a weakness of Lao PDR.
  - ✓ The government can take the two-step measure: (1) cultivation of energy crop (exported to Thailand and Viet Nam) and (2) construction of bioethanol plants (producers need to be recruited from Thailand).

(2-2) Future challenges

- Establishing a leading position at the ASEAN Power Grid
  - ✓ It is important for Lao PDR to keep communication with other leading countries to establish a leading position at the ASEAN Power Grid. It is necessary to look at the prospect of building sub-regional grids that connect to Viet Nam and Cambodia.
- Partnering with neighbouring countries in bioethanol production
  - ✓ It is desirable to propose a regional initiative regarding bioethanol production by involving Viet Nam (to work gradually on bioethanol introduction) and Cambodia (to produce the energy crop cassava).
- Establishing a subsidy system to guarantee the profitability of bioethanol
  - ✓ Subsidies to ethanol business operators for ensuring profitability and user benefits are essential when prices of gasoline and bioethanol are in close competition.

(3) Garment and other labour-intensive industries

(3-1) Promising scenarios

- Short-term prospects – targeting high value-added products with low seasonality
  - ✓ Compared to Viet Nam and Cambodia, Lao PDR does not have convenient maritime transport for the apparel industry, so that the products take time to reach the US, Japan, and European Union markets.
  - ✓ Work clothes and uniforms with low seasonality and Leavers lace with easy added value through appropriate planning and elaborate design can diminish Lao PDR's location disadvantage.

- Mid-term prospects – participation in the fast fashion supply chain for ASEAN nations
  - ✓ Entering the fast fashion supply chain and targeting middle-income ASEAN nations is a promising mid- to long-term strategy seeking 'mass markets.'
- Other labour-intensive industries
  - ✓ There is sufficient profitability for labour intensive foreign companies with 200–300 workers.
  - ✓ The key is producing manufacturing items whose transportation costs are relatively low, such as medical devices and copper wire processing.

(3-2) Future challenges

- Issues for smooth distribution to Bangkok
  - ✓ The distribution infrastructure connected to Bangkok is considered a problem for smooth business operation.
  - ✓ Actual infrastructure issues are (1) the improvement of Route 13 (which connects Vientiane City with Vientiane Province), (2) the improvement of the process approval flow at customs, and (3) the introduction of mixed loading services that can induce lower logistics costs.
- Ensuring one-stop service at VITA Park
  - ✓ Strengthening the one-stop service at VITA Park will greatly benefit these relevant industries led by foreign private companies.

(4) Electric and electronic machinery

(4-1) Promising scenarios

- Focusing on electric and electronic devices
  - ✓ Taking into account its small workforce, it is beneficial for Lao PDR to produce electric and electronic devices that have a relatively short commodity cycle and a flexibly adjusted production volume (e.g. connecters such as LANs and USBs).

(4-2) Future challenges

- Improvement in distribution
  - ✓ Delivery of Lao-produced electronic components is costly because these products do not fill up an entire truckload and there is no regular delivery truck available that mixes these with other loads. Developing a regular distribution system is necessary.

(5) Transport equipment (automobiles and motorcycles)

(5-1) Promising scenarios

- Producing labour-intensive components
  - ✓ It is desirable that the automobile industry further incorporate labour-intensive products, such as cable harness and automobile seat covers.
  - ✓ Considering that the domestic motorcycle market is expected to expand, the motorcycle industry needs to incorporate labour-intensive products, such as motorcycle components (e.g. seats and instrument panel assemblies), aiming at exports and domestic markets.

(5-2) Future challenges

- A stable power supply
  - ✓ A stable power supply is necessary because momentary power outages and changes in voltage affect the quality of automobile components and lead to mechanical malfunction.
- Improved road conditions
  - ✓ Problems in repair and maintenance methods cause road conditions to deteriorate after the annual rainy season; bad roads may also damage automobile products.

(6) Tourism

(6-1) Promising scenarios

- Appealing 'key visuals' for core markets (Thailand, Viet Nam, and China)
  - ✓ In order to create regular repeat visitors and win new visitors, the tourism sector needs to clearly demonstrate the experiences, concepts, and tourist attractions in Lao PDR through 'key visuals.'
  - ✓ Lao PDR's key visuals could be 'a country where you can easily experience Buddhist ruins (regions), caverns and waterfalls (nature), and trekking (activity).'
- Attracting visitors from Japan, Korea, and China during the summer vacation season (July–August)
  - ✓ During the off season (April–October), to generate additional demand, the tourism sector should focus on July and August, when visitors to Thailand and Cambodia temporarily tend to increase.

(6-2) Future challenges

- Investigating the needs of travellers from different countries
  - ✓ The survey analysis of the needs of travellers periodically conducted in Lao PDR helps the tourism sector gauge customer needs by countries.

- Improving sanitation, etc.
  - ✓ Many toilets at tourist facilities are not sanitary, which gives travellers a bad impression.
- Relaxing the procedure to apply for a guided tour
  - ✓ Travellers are required to apply for a sightseeing permit in advance to tour Lao PDR with a guide. If this process is simplified or made more convenient, travel agencies can plan and offer more package tours.
- Developing the airline industry
  - ✓ The airline service should be upgraded to international standards (e.g. ensuring that airlines are certified of international standards and upgrading of airports).

(7) Finance (small and medium enterprises [SMEs])

(7-1) Promising scenarios

- Securing funds from international organisations
  - ✓ International donors and/or organisations seek to contribute to SME financing in Lao PDR, which is a critical element in developing a balanced economy.
  - ✓ Since 2014 the World Bank has enacted the SME Access to Finance Project, where local banks provide long-term credit to SMEs by utilising the primary funding sources that are made available by the World Bank (‘two-step loan’).
- Building the credit assessment capacity of commercial banks
  - ✓ It is crucial that commercial banks have an effective assessment capacity to promote SME financing.
  - ✓ One promising avenue is to receive technical assistance through intergovernmental relations. For example, the Government of Japan, in cooperation with the Japan Finance Corporation, has engaged in a technical cooperation for the Lao Development Bank.)
- 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 capital adequacy ratio and reduce lending to SMEs.
  - ✓ Although it should be established with mid- and long-term vision, a domestic credit guarantee system in Lao PDR can potentially supplement fragile credit capability of SMEs and promote lending of private banks to SMEs.
  - ✓ A region-wide credit guarantee system enables SMEs with cross-border activity to have easier access to finance through a cross-border guarantee.
- SME capacity building
  - ✓ Since it is impossible for small enterprises to build their capacities individually, the Lao National Chamber of Commerce and Industry and provincial chambers of commerce and industry can provide capacity building programmes for SMEs.

- ✓ Concerning financial literacy, introductory brochures and websites are useful sources of knowledge for many SME managers and employees.

(7-2) Future challenges

- Managing SME finance risks in the banking sector
  - ✓ The expansion of SMEs could introduce risks and damage the capacity of Lao banks to compete with their foreign counterparts. It is a must to balance the stability of the Lao banking sector and promote SME financing.
- Providing incentives for bookkeeping in SMEs
  - ✓ Unless SMEs have the incentive to compile the documents properly, SME finance will not develop as a formal business activity.

(8) Transportation

(8-1) Promising scenarios

- Offering consolidation services (Savannakhet Logistics Hub)
  - ✓ Savannakhet is considered a suitable hub for aggregation of transportation services.
  - ✓ Savannakhet can be the target of aggregating, reshipping, and sending out all cargo from Lao PDR and neighbouring countries (i.e. hub-and-spoke method).
  - ✓ Shippers can reduce transportation costs by consolidating their cargo with the goods of other shippers based in Savannakhet rather than renting one container for each company.
- Using railways to reduce transportation costs (Vientiane Logistics Hub)
  - ✓ It is important to cut transportation costs for the Vientiane–Bangkok route. Reduced costs through railway transport will benefit shippers of both small and large cargoes.
  - ✓ Improvement of the Vientiane–Bangkok railway route is necessary.

(8-2) Future challenges

- Joint operation of the Savannakhet Logistics Hub by several private logistics companies
  - ✓ Joint operations of Savannakhet Logistics Hub by private companies are recommended to reduce the effects of the pressure on existing distribution services.
  - ✓ Strong leadership from Lao PDR's government is needed to reorganise the transportation industry.

- Joint operation of the Savannakhet Logistics Hub between the government and the people
  - ✓ The public and the private sectors should cooperate to realise consolidation services (like public infrastructure).
  - ✓ Hub operation and consolidation services can be operated through public–private partnership, and a structure for revenue compensation such as viability gap funding would be needed until the business gets on track.
- Improving customs
  - ✓ Savannakhet and Thanaleng are particularly important customs sites. Cooperation with the Thai government should be encouraged to broaden the Lao Bao–Densavan initiatives in these two customs sites.