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Development Strategy of Five Selected Sectors in the Lao People's Democratic Republic (2020-2025)

Edited by

Masahito Ambashi

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Ministry of Industry and Commerce

Development Strategy of Five Selected Sectors in the
Lao People's Democratic Republic (2020-2025)

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At the bilateral meeting held in September 2016, we agreed to form the follow-up mechanism of the report *Lao PDR at the Crossroads: Industrial Development Strategies 2016–2030* that was published and submitted to the Ministry of Industry and Commerce (MOIC) in June 2016. With the support of the Japan International Cooperation Agency (JICA), the Japan External Trade Organization (JETRO), and other relevant agencies, such as the Embassy of Japan in the Lao PDR, this follow-up mechanism aims to discuss how the MOIC is implementing the policy recommendations presented in *Lao PDR at the Crossroads* to realise the Eighth Five-Year National Socio-Economic Development Plan (2016–2020).

So far, ERIA and the MOIC have held five workshops attended by the organisations mentioned above, and have conducted follow-up activities to establish four working groups in the following areas: (i) agriculture and food processing, (ii) labour-intensive industries, (iii) small and medium-sized enterprises, and (iv) industrial estates. This project report, which is one of the most important deliverables produced by the ERIA and MOIC team, focuses strongly on the Lao PDR's advantages, bottlenecks, and plausible policies in each industrial sector based on solid analyses and observations. It provides ideas to help policy makers implement measures and programmes, as well as useful guidance for aid agencies that are cooperating to work with the Government of the Lao PDR.

We are deeply indebted to many officials, researchers, and practitioners. First and foremost, I would like to extend our special thanks to Masahito Ambashi, Souknilanh Keola, Ichiro Ota, and Yasuhiro Yamada, who intensively work on completing this report as members of the ERIA project team. We would also like to give special thanks to MOIC officials, in particular, Sirisamphanh Vorachith, Xaysomphet Norasingh, Samly Boutsady, Sengphanomchone Inthasane, Kiengkham Rasachack, Kavin Saiyavong, and Somvixay Vongthirath. They are dedicated to work with the ERIA project team toward completion of the report while they are busy in daily tasks.

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Chapter 1

Agriculture and Food Processing

1. Current State

1.1. Recognition of the Current State

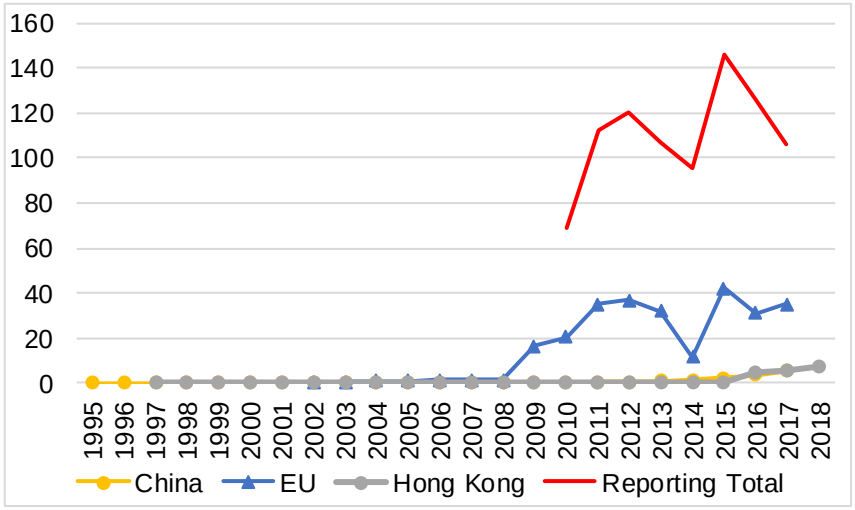
Agriculture in the Lao People's Democratic Republic (PDR) is characterised by food self-sufficiency and dominated by small, family-owned operations. Farmers sell surplus agricultural products left over after their own consumption to local markets to earn money, while agricultural exports other than the staple food of rice are produced mainly on plantations funded by investment from other countries. Thanks to diverse temperature zones and abundant precipitation, the Lao PDR is rich in land suitable for stable agricultural production. However, the current division of farmland into small plots makes it difficult to improve farming efficiency through mechanisation. Large-scale farming is also difficult under the current scenario of farmland development.

In the food processing sector, Lao companies produce items such as canned corn and processed coffee products. However, other products fail to reach the safety or quality standards required for export to developed countries. Since, in principle, products intended for consumption in developed countries must be produced at plants certified by the International Organization for Standardization (ISO) or the like, export opportunities in the Lao PDR are presently very limited. Although various agricultural products that could be used as materials for processed food products are grown, it is difficult to secure a massive stable supply of these in the absence of market functions for collecting products. Further, the presence of intermediaries and consignees in the supply chain has raised the cost of available products for a massive supply. These problems have become a bottleneck for the food processing sector in the Lao PDR.

1.2. Major Agricultural Product Data

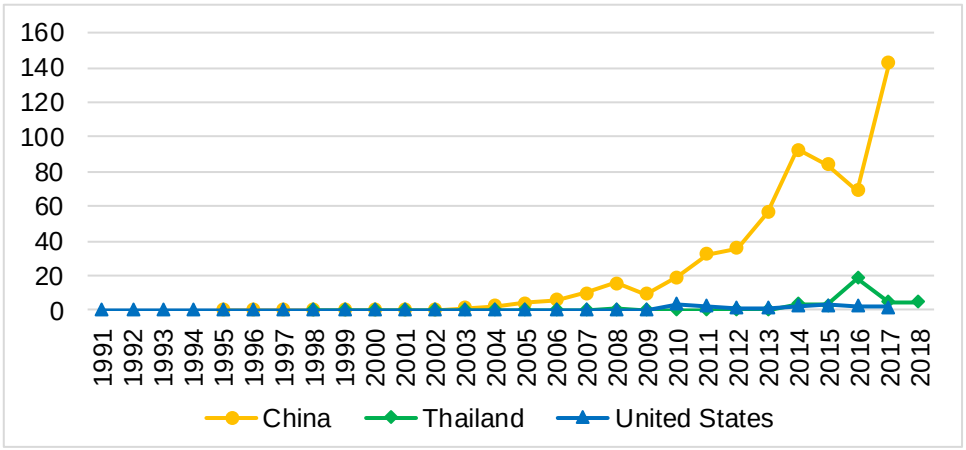
Figures 1.1–1.4 depict export trends of agricultural products (food, rubber, maize, and coffee) to major destinations.

Figure 1.1: Trend of Food Export Value and Major Destinations ($ million)



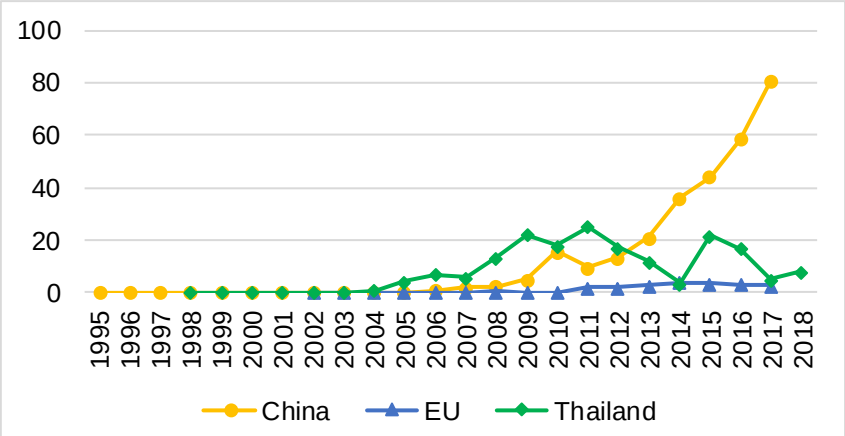
EU = European Union.
Note: Data are derived from Global Trade Atlas, a fee-based service provided by Global Trade Information Services, Inc.
Source: Global Trade Atlas. https://www.gtis.com/English/gtis_about.html (accessed 13 April 2019).

Figure 1.2: Trend of Rubber Export Value and Major Destinations ($ million)



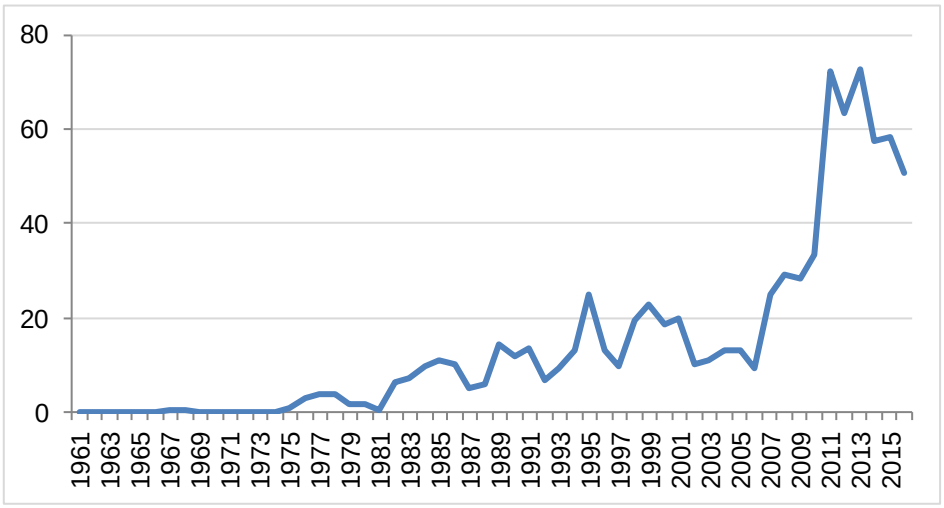
Note: Data are derived from Global Trade Atlas, a fee-based service provided by Global Trade Information Services, Inc.
Source: Global Trade Atlas. https://www.gtis.com/English/gtis_about.html (accessed 13 April 2019).

Figure 1.3: Trend of Maize Export Value and Major Destinations ($ million)



EU = European Union.
Note: Data are derived from Global Trade Atlas, a fee-based service provided by Global Trade Information Services, Inc.
Source: Global Trade Atlas. https://www.gtis.com/English/gtis_about.html (accessed 13 April 2019).

Figure 1.4: Trend of Coffee Export Value ($ million)



Source: Food and Agriculture Organization. Food and Agriculture Data. http://www.fao.org/faostat/en/#home (accessed 13 April 2019).

Tables 1.1–1.2 show the present status of processed agricultural and food products exported from and imported to the Lao PDR.

Table 1.1: Processed Agricultural Products, 2016 ($)

Export		
Product	Value	Export destinations
Other pure vegetable oils	361,000	Malaysia 34%, France 29%, Thailand 26%
Waxes	53,400	France 100%
Palm oil	16,800	United Arab Emirates 100%
Inedible fats and oils	14,900	Thailand 100%
Seed oils	12,100	Thailand 100%
Total	458,000	
Import		
Other vegetable oils	6,500,000	Thailand 74%, Viet Nam 25%, China 0.59%
Palm oil	2,800,000	Thailand 79%, Malaysia 21%
Soybean oil	1,360,000	Thailand 88%, Viet Nam 12%
Margarine	500,000	Thailand 75%, United States 20%, Viet Nam 4.7%
Seed oils	401,000	Thailand 99.5%, Italy 0.5%
Total	12,300,000	

Note: Only the countries with the largest export shares are noted here.
Source: Food and Agriculture Organization. Food and Agriculture Data. http://www.fao.org/faostat/en/#home (accessed 13 April 2019).

Table 1.2: Processed Agricultural Products, 2016($)

Export		
Product	Value	Export destinations
Flavoured water	157,000,000	Viet Nam 96%, Thailand 3.7%
Raw sugar	80,900,000	Viet Nam 39%, Thailand 19%, United Kingdom 15%,
Rolled tobacco	69.500,000	Viet Nam 82%, New Zealand 7.9%, Singapore 4.8%
Beer	26,800,000	Viet Nam 32%, Sri Lanka 26%, Slovakia 16%
Coffee and tea extracts	10,600,000	Thailand 60%, Japan 13%, Saudi Arabia 9.1%
Total	382,000,000	
Import		
Flavoured water	73,100,000	Thailand 99.4%
Raw sugar	58,200,000	Thailand 99.5%
Animal food	41,600,000	Thailand 94%, India 3.0%, Viet Nam 1.5%
Coffee and tea extracts	33,300,000	Thailand 99.3%
Baked goods	31,500,000	Thailand 97%, China 2.1%, Republic of Korea 0.4%
Total	496,000,000	

Note: Only the countries with the largest export shares are noted here.
Source: Food and Agriculture Organization. Food and Agriculture Data. http://www.fao.org/faostat/en/#home (accessed 13 April 2019).

1.3. Orientation of the Five-Year National Socio-Economic Development Plan and its Assessment

The following outlines the position of the agriculture and food processing industry in the Five-Year National Socio-Economic Development Plan of the Lao PDR and briefly comments on problems within the industry. The vision of the plan is as follows: (i) agriculture will maintain job creation, income growth, environmental protection, and the ecological balance; and (ii) agricultural production will secure 2,600–2,700 kilocalories of nutrition per capita.

The goals of the plan are outlined below:

(i) Agricultural production will respond to climate change.

(ii) Rice for export that meets good agricultural practice will be increased to 30% of total production.

(iii) Under a plan to expand food production for export, production will be increased to 20,000 tonnes of potatoes, 120,000 tonnes of sugar, 13,000 tonnes of coffee, 50,000 tonnes of feed maize, 1.5 million tonnes of soybeans, and 10,000–15,000 tonnes of meat.

(iv) A national rice reserve plan will be effectively implemented to stabilise grain prices.

(v) Effective management to improve irrigation systems will be implemented permanently and firmly.

(vi) Existing agriculture diffusion and development centres will be upgraded to comprehensive facilities to demonstrate agricultural production technologies and provide grain seeds.

(vii) A fund will be created to ensure food security, commercialise agricultural products and processed food products, and reduce agricultural production risks.

(viii) Agricultural and financial sectors will cooperate in improving farmers' access to financial services.

(ix) The industrialisation of agriculture will consider sustainability and the environment; enhance the entire production group covering production, harvesting, processing, and marketing; and introduce machines and technologies for products meeting market needs and international safety standards.

(x) Preparations for carbon credit trading will be completed by 2020 to ensure an emission reduction mission by reducing emissions from deforestation and forest degradation (REDD+).[1]

Although agricultural policy is currently going in an appropriate direction, the population growth trend indicates that it is fundamentally difficult for the Lao PDR to increase domestic consumption rapidly. However, consumption of new types of agricultural products, such as milk, processed meat, and health food products that have so far been little consumed, is expected to expand steadily.

To increase agricultural income under the present situation, the Lao PDR should prioritise exporting agricultural products in particular. Traditional products, such as rice, vegetables, and coffee are available for stable, massive export. However, the prices of these products are frequently low, making it difficult to earn high profits. Furthermore, their prices depend on global market prices, which are often unstable. Low-cost maritime transportation from the Lao PDR faces geopolitical difficulties, and high transportation costs are driving down the price of goods purchased from farmers. To produce high-priced agricultural goods, the Lao PDR may need to consider branding all of its agricultural products as organic (a move that would be globally unprecedented), as well as developing, producing, and processing agricultural products in globally rare 'niche' areas to shift to higher value-added agricultural production and increase farmers' income.

2. The Lao People's Democratic Republic's Advantages in Agriculture and Food Processing

2.1. Advantage in Agriculture

The Lao PDR is leading a trend in global organic agriculture (described in more detail below), by embracing chemical-free agriculture in a manner similar to old-fashioned, natural forms of agriculture, following farmers' rejection of agrochemicals for products intended for

[1] Reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries are referred to as 'REDD+.'

personal consumption. Organic vegetable consumers in export destination countries earn relatively higher incomes and display relatively lower price elasticity in their consumption behaviour, indicating that export prices could absorb the cost of transportation from inland regions.

2.2. Advantages in the Food Processing Sector

Since the food processing sector features numerous simple production steps that rely on intensive human labour, it is very advantageous to open food processing plants in the Lao PDR, where the cost of labour is relatively low. Another advantage is that electricity and water prices are also low; this benefits the food processing sector, which heavily consumes electricity and water. Furthermore, the Lao PDR faces less water pollution than neighbouring countries.

3. Major Bottlenecks for Developing Agriculture and Food Processing Industries

3.1. Major Bottlenecks for Agriculture

Agricultural production in the Lao PDR depends on old-fashioned, traditional farming, which entails very low productivity. Although this factor is an advantage from the viewpoint of organic agriculture, it also indicates the absence of education on new farming methods. Another problem is that farmland is divided into small partitions of various sizes, creating a major obstacle to mechanised farming.

3.2. Major Bottlenecks for Food Processing

One bottleneck for food processing is that, although the Lao PDR produces key food materials for processing, it depends on imports of seasoning and packaging. There is also a structural problem in that, even if the domestic market is viewed as a target for the food processing sector, the small market size allows processed food imports to be provided to consumers at lower prices than food produced at domestic plants, subject to new investment.

4. Global Market Trends, Outlook, and Potential Branding of Lao Agriculture

Based on current trends, agricultural demand in the global market is expected to increase due to expanding imports, mainly due to rising domestic consumption in China, as well as an increasing global population. Although production zones are expanding for soybeans, maize, wheat, and other mass-consumed crops, for which global markets have matured, their market trading volume is unlikely to increase rapidly due to rising consumption in the countries producing them.

From the viewpoint of food and nutrition, the following agricultural product trends are expected to see remarkable growth in the future: (i) organic products; (ii) vegetable protein; and (iii) diet food low in 'FODMAP' (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols). It is predicted that various factors within three categories, namely, production method, nutrition, and diet therapy, will interact with each other to form a global food trend. At the 2017 Food and Nutrition Conference and Expo,[2] this trend attracted attention from numerous experts as well as relevant companies and groups, leading to the development of several new products.

4.1. Organic Products

The world is facing several specific challenges related to food. The first of these is food security, poverty, and malnutrition. Of the global population of 7.2 billion, 1.2 billion live on $1.25 or less per day (United Nations Population Fund, 2014). Thus, it is evident that eradicating poverty by 2030 will be a high hurdle to clear. Globally, about 800 million people suffer from inadequate energy intake, and about 2 billion people suffer from malnutrition due to a lack of micronutrients, such as vitamins and minerals.

A second challenge is the rising demand for food, which is increasing in step with global population growth. The United Nations predicts that from 2015 to 2050, the global population will increase from 7.3 billion to 9.7 billion people, all of whom must be provided

[2] The Food and Nutrition Conference and Expo, sponsored by the Academy of Nutrition and Dietetics, is the world's largest annual meeting of food and nutrition experts, attended by more than 10,000 dietitian nutritionists, nutrition science researchers, policymakers, health-care providers and industry leaders. It is intended to provide nutrition and food experts around the world with the opportunity to present initiatives based on scientific research and evidence, and for companies and groups to exchange and collect information on new products (Food and Nutrition Conference and Expo).

with sufficient, safe, and nutritious food. As the middle-income population increases together with global economic development, consumption of products such as meat, milk and other dairy products, edible oils, vegetables, and fruits will grow.

The world is also facing water and land resource constraints. Massive amounts of clean water and land are required to meet the growing demand for food. The utilisation of limited water and land resources will greatly influence the sustainability of the global environment.

Another area of concern is food system productivity. One-third of food produced for eating is lost or discarded. Thus, initiatives that target a sustainable food system are required to utilise land effectively, develop genetically modified crops, and reduce food losses attributable to post-harvest agrochemical disposal. Further, agricultural innovation, including the production of enhanced-nutrition crops using biotechnology and the reform of agricultural production technologies in increasing output per unit area and improving agricultural product quality, is necessary to achieve global food security.

To resolve poverty, malnutrition, and food insecurity, it is necessary to pursue sustainable agriculture and food systems, health education, and other measures. Sustainable agriculture requires organic agricultural practices. The organic trend is significant in that not only are fertilisers, agrochemicals, herbicides, and insecticides not used, but also crops are grown in a biodiverse environment inhabited by many different plants and animals.

In fact, the organic market has been expanding year on year. According to the Swiss Research Institute of Organic Agriculture and International Federation of Organic Agriculture Movements (2019), the organic market has remained robust over the past several years. This means that consumers' demand for organic products has increased along with the growth in the number of organic farmers and certified organic farms. Organic agriculture is seen in a total of 178 countries, according to a survey supported by the Swiss State Secretariat for Economic Affairs, the International Trade Center, and Nurnberg Messe (sponsor of the BIOFACH organic trade fair). In 2016, the global organic food market was estimated to be worth $87 billion, of which the United States (US) accounted for €38.9 billion (the largest share), Germany €9.5 billion, France €6.7 billion, and China €5.9 billion. These countries' organic markets mostly continued to post double-digit growth rates (as high as 22%) as of 2016. Switzerland posted the highest per capita organic food consumption (€274), while Denmark recorded the highest organic share (9.7%) of the total

food market (United Nations, Food and Agriculture Organization, 2016). In Western countries, organic versions of vegetables, fruit, milk and other dairy products, fruit juice, snacks, and eggs are seen very frequently on supermarket shelves, selling at prices similar to those of non-organic products.

However, since the word 'organic' is often used and confused with other words such as 'agrochemical-free' or 'low-agrochemical,' producers and consumers have not been made thoroughly aware of what the term means. The Codex Alimentarius Commission, a joint food standard commission of the Food and Agriculture Organization and World Health Organization, has provided an organic food guideline, which the US, the European Union (EU), Australia, and some others abide by in describing organic food.

Box 1.1: The Japan International Cooperation Agency's Organic Agriculture Promotion Project

The Japan International Cooperation Agency (JICA) implemented an organic agriculture promotion project in the Lao People's Democratic Republic (PDR) from 2013 to 2016. The project included the preparation of a national strategy for organic agriculture development, capacity building for the Clean Agriculture Development Center, and improving screening capacity for Lao organic agriculture certification. The project was conducted effectively, and increased citizens' awareness of organic agriculture. The project, which was carried out by JICA along with the Ministry of Agriculture and Forestry, successfully produced and certified organic agricultural products for domestic consumption. It included Organic Home and other sales initiatives, and helped reduce the distance between producers and consumers. However, since the project was limited to the capital of Vientiane, it fell short of covering agricultural products for export, because JICA focused on operating and enhancing arrangements for promoting organic agriculture. In its assessment of the project's results, JICA recommended that the Lao PDR's organic certification standard be treated as equivalent to international standards, and that Lao officials continue to be trained to be recognised as inspectors for organic certification in other countries. In the future, therefore, JICA could cooperate with the Lao PDR in leading the export of organic agricultural products.

Additionally, progress is being made on a feasibility study for a project to process organic sesame seeds into oil and organic onions into cut onions. Similar studies are being considered for other agriculture products available for stable production, and organic food processing is regarded as one of the most promising industries in the Lao PDR.

4.2. Vegetable Protein

Vegetable protein taken mainly from beans presents two remarkable opportunities. First, reducing the number of animals for breeding will make it possible to expand cultivated areas and thus grow more grain. Second, reducing the number of animals used for breeding and meat production may cut methane gas emissions from belching cows, thus helping to mitigate global warming. For these reasons, it is believed that a transition from animal protein to vegetable protein will contribute to protecting the environment and solving the food problem. Thus, vegetable protein is attracting attention.

4.3. Low 'FODMAP' Diet

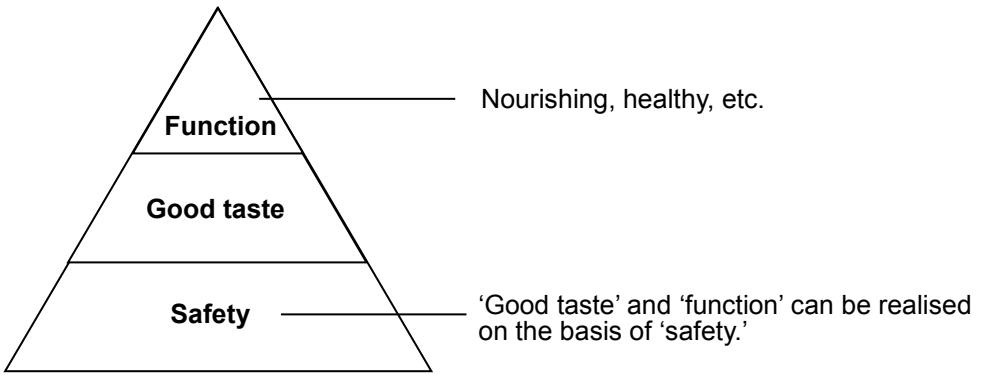
FODMAP stands for 'fermentable oligosaccharides, disaccharides, monosaccharides, and polyols', which are made from sugar beets, maize, and soybeans. As international research continues to make progress to determine the relationship between intestinal flora and human health and diseases, the American Dietic Association has recommended a low-FODMAP diet to treat irritable bowel syndrome (IBS), a disease that produces continuous constipation, diarrhoea, bloating, and/or pain. This disease can present with no irregularities detectable by blood tests, and has been attributed to an unbalanced diet and stress. Although no cure for IBS has been found, robust research conducted in Australia, the United Kingdom, Northern Europe, and the US has demonstrated that refraining from eating FODMAP-heavy food can ease IBS symptoms. Hence, a low-FODMAP diet has attracted attention following the current gluten-free food trend, as demonstrated by the high level of interest from food professionals at the Food and Nutrition Conference and Expo.

5. Policy Recommendations

5.1. Policy Recommendations on Agriculture

Figure 1.5 summarises three key features for agricultural products of the Lao PDR. It is important for the Lao PDR agricultural industry to enhance these features to stand out in global markets.

Figure 1.5: Three Key Features of Agricultural Products

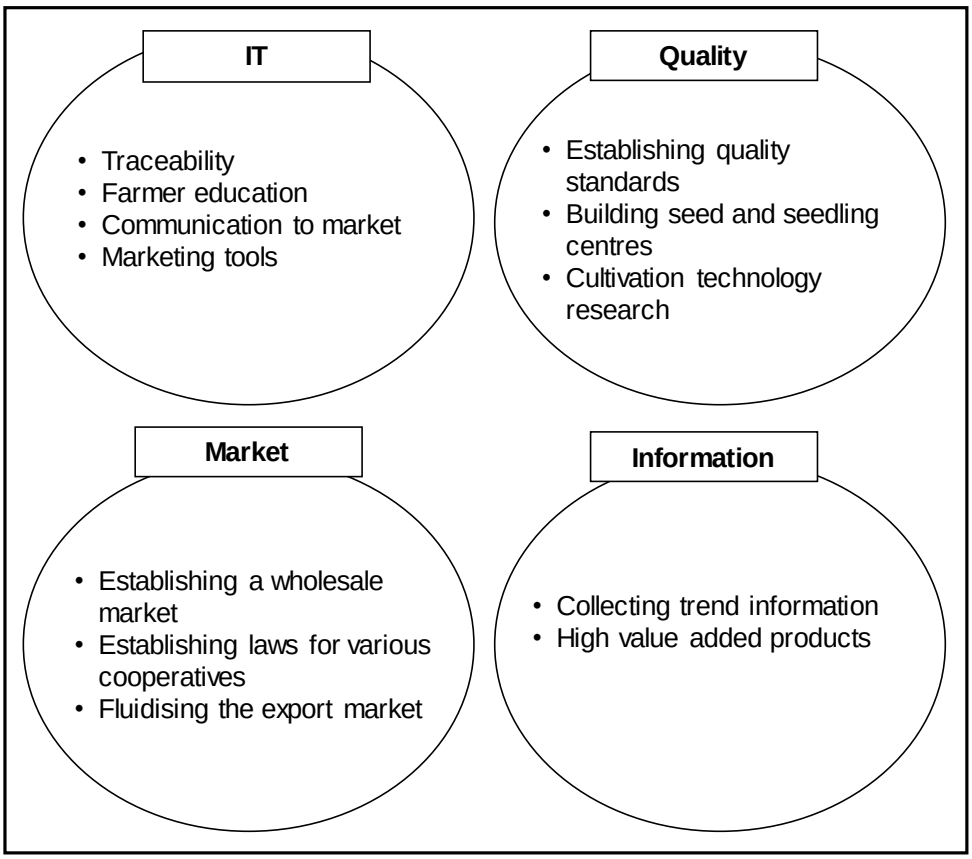


- Functional agricultural products can be grown as long as they are suited to the climate conditions in the Lao People's Democratic Republic.
- Tasty agricultural products can be grown with clean water, sunlight, and careful cultivation.
- Safe agricultural products can be realised if producers use no or minimum necessary agrochemicals, refrain from using unnecessary materials such as fertilisers, and achieve a level of safety acceptable for their own consumption.

Source: Authors.

Next, before setting out our policy recommendations in detail, we examine the fundamental pillars that are required for Lao organic agricultural products (see Figures 1.1–1.6).

Figure 1.6: Pillars of Policy Recommendations on Lao Organic Agricultural Products



IT = information technology.
Source: Authors.

Establishing Brands for Lao Agricultural Products

Given these recent trends and the move toward export-oriented agriculture, the Lao PDR should actively develop organic products as the basic framework of its agriculture for branding purposes, while making other countries aware of Lao agriculture products as organic products. At the same time, the Ministry of Agriculture and Forestry (MOAF) should be closely involved in peripheral actions such as the selection of agrochemicals, fertilisers, and plants for production; the training of agricultural certification inspectors in each country; operations of geographical indications and good agricultural practices (GAP); compatible organic certification; the mechanisation of agriculture; and industrial development.

Implementing a 'Lao organic agricultural products' campaign as a globally unique initiative would be an approach easily understood by foreign consumers and that satisfies future

trends; however, it would also take much time. Moreover, when developing organic agricultural products disease and insect damage control should be considered carefully. Thus, it is important to establish a plan to move forward in the right direction at the present moment. Since foreign countries do not clearly understand the brand of Lao agricultural products currently, the Lao PDR should cooperate with overseas organic certification associations to realise the mutual recognition of its organic certification systems on par with those of other countries, and to develop compatible organic certifications that will be accepted in any country.

Organic branding should not be limited to agriculture but should cover the entire country. For example, the numerous tourists that visit the Lao PDR in pursuit of a rich natural environment find the country's rubbish-free streets striking. To maintain its organic image for the entire country, the Lao PDR should promote a national environment in which citizens feel secure by restricting waste dumping and open burning, and by developing the sewage system.

Exporting Organic Agricultural Products and Innovation

Organic certification in other Association of Southeast Asian Nations (ASEAN) countries differs from that used in the EU, North America, and Japan. Thus, it is desirable for the Lao PDR to develop an organic agriculture certification that will be acceptable in all countries. However, developing such a certification will involve high costs and a considerable length of time. In the initial stage, therefore, Lao PDR should develop organic certification and inspection standards acceptable in its major export products and destinations.

By taking advantage of the fact that the soil used for cultivation in the country is almost free from agrochemicals, the Lao PDR may establish a national agrochemical-free agriculture policy to brand its agricultural products and thus expand their export.[3] Therefore, the Lao PDR must prepare national regulations on agrochemicals and fertilisers, and educate farmers about such regulations.

To save on transportation costs, the Lao PDR may wish to obtain the support of food processing companies to export organic agricultural products that have been processed. Specifically, the Lao PDR may collaborate with Japanese food processing companies that

[3] In some exceptional or emergency circumstances, agrochemicals may be used in a carefully controlled manner to tackle serious disease or insect damage.

have expanded into ASEAN countries. Relevant government ministries should consider a policy support package or programme to facilitate this.

Finally, the government should make efforts to reform and support trade diplomacy, including issuing certificates of origin more quickly, simplifying domestic transportation procedures, and repealing barriers on exports to other ASEAN countries.

Functionalising Wholesale Markets

By establishing a local wholesale market in each province and a central wholesale market in each major city to respond to export demand, the Lao PDR can stabilise farmers' income from the sale of their products and improve the distribution of those products. The Lao PDR will also be able to stabilise and expand product collection volume to enhance its price bargaining power, eliminating opportunity losses for products that are distributed in a small volume. For example, the Lao PDR could establish rice towers, which allow farmers to control the quality of rice properly at low temperatures and enable them to sell high-quality polished rice regularly, thus improving value added on rice as well as farmers' income.

Selecting High Value-Added Agricultural Products

As domestic demand cannot be expected to increase rapidly, the Lao PDR should expand agricultural products for export and promote investment in the development of large-scale farms to ensure efficient and stable production in response to global market trends in a bid to improve farmers' income. It is especially important to select agricultural products that are subject to higher value added, while watching global trends. This means that the Lao PDR should market agricultural products for potential cultivation while keeping an eye on global food trends that can easily change. The Ministry of Industry and Commerce (MOIC) and MOAF should conduct a joint survey in which they can make effective use of their respective knowledge and human resources for the production and sale of select products.

As discussed above, over the next several years vegetable protein is predicted to replace meat in a food trend mainly seen in the EU and the US. Promising products include (i) snacks in which green peas are used and mixed with bean paste or other doughs to make a substitute food; (ii) blended-mushroom 'hamburger' patties; and (iii) protein-rich nuts and seeds, such as peanuts and pumpkin seeds. Promising gluten-free food products are pasta and cookie materials made from maize, potatoes, sugar cane, quinoa, and rice flour. Other

promising products are linseeds, walnuts, and other nuts oil-rich with omega 3 and 6 fatty acids. When traditional production areas for rare agricultural products such as cacao and vanilla are hit by a poor harvest due to abnormal weather, the Lao PDR may be useful as a substitute production area for these high value-added agricultural products. Materials targeted for production in the Lao PDR include beans for paste or flour, fungi for salt-cured products and flour, grains for flour, oil plants for oil and paste, and rare agricultural products for final processing. Relevant government ministries should consider a policy package and programme supporting the export of these products.

Improving Farming Families' Cultivation and Harvest Techniques

Product options regarding (i) products for domestic ordinary consumers and users, (ii) ordinary products for export, and (iii) high value-added products for export are outlined below:

(i) Products for domestic ordinary consumers and users: Domestic demand for traditional products is extensive. Production per unit area must be improved along with techniques to protect against weather and insects.

(ii) Ordinary products for export: Production must meet foreign quarantine regulations. Farmers as producers must acquire certain production knowledge to improve product quality.

(iii) High value-added products for export: The Lao PDR's soil and climate is suitable for growing crops to produce high value-added products (e.g. special nutritive products, organic products, and agrochemical-free products) as well as higher priced products (e.g. vanilla and cacao). Where and how to produce these products appropriately in the Lao PDR must be studied and demonstrated.

Promoting the Activities of Agricultural and Dairy Cooperatives

At present, farmers are only looking to their own interests, indicating that a way has not yet been paved for them to undertake joint activities through agricultural or dairy cooperatives. While the MOAF and its branches should take the lead in providing agricultural information and arranging joint purchases of agricultural materials, cooperatives should control the diffusion of high-quality plants and recommendable crops, as well as the use of safe agricultural materials.

Agricultural and dairy cooperatives may efficiently and effectively realise stable production and supply, maintain high product quality, improve price competitiveness against other countries, and stabilise trading. They may also anticipate market conditions and directly provide seed supplies and cultivation guidance for varieties meeting seasonal conditions, thus contributing to improving farmers' income. These cooperatives may implement these measures in cooperation with the technology research institutes of the MOAF, and utilise the resources of the MOAF and MOIC to conduct a wide range of activities.

Establishing Seed and Seedling Centres

Investors considering investing in globally required agricultural products and large-scale farming need basic information about the varieties of crops available for production under the climate and soil conditions in the Lao PDR. To meet this need, each Lao province should establish a seed and seedling centre to study how best to produce agricultural products in the Lao PDR, and conduct research on agricultural products suitable for double-cropping in order to boost production per unit area along with farmers' incomes.

Provincial seed and seedling centres may collaborate with seed and seedling, agrochemical, and fertiliser companies to operate more effectively. They may select and cooperate with companies interested in the Lao PDR's low-agrochemical or organic cultivation of agricultural products, and establish agricultural product branding strategies emphasising low-agrochemical, agrochemical-free, or organic agriculture to support agricultural and processed food product exports.

Promoting Bridge Loans to Farmers (Reforming the Agriculture Promotion Bank)

Under the present financing scenario, loans are provided to farmers on the condition that lenders purchase agricultural products at low prices after harvesting, resulting in a considerable effective interest payment burden on borrowers. Unless unsecured loans and the like are introduced, farmers will be discouraged from cultivating crops and will fail to expand cultivation.

In Japan, agricultural cooperatives serve a financial function in that they provide loans to farmers after determining their production conditions and capacity. In the Lao PDR, the Agriculture Promotion Bank provides farmers with individual and group loans, which carry slightly lower interest rates than ordinary loans. However, as interest rates on short-term

loans stand as high as 10%, it is very difficult for farmers to borrow money from the bank. Thus, the government may have to adjust interest rates or provide interest subsidies.

5.2. Policy Recommendations on Food Processing

Developing and Promoting Quality Standards and Distribution Systems for Agricultural Products and Processed Agricultural Products

The government should require plants and exporting companies above a certain size to obtain good manufacturing practice, hazard analysis and critical control points (HACCP), and ISO22000 certifications, among others,[4] thus enabling them to assure foreign countries that they are providing the market with security and safety.

The government should also develop regulations on processed agricultural product information (e.g. product name, country of production, producer, contact, raw materials, volume, expiration date, preservation method, nutritional content, and usage instructions); design a product liability system (including the scope of liability, compensation, and insurance); and implement policies and programmes to increase the effectiveness of such institutions.

Prioritised Support for the Coffee Sector

Coffee is susceptible to global market changes, and frequently sees substantial price fluctuations. A policy establishing a fund to stabilise prices for purchases from farmers must be implemented. Moreover, a specialty brand like Blue Mountain or Moca should be established for Lao coffee. The Lao PDR could take advantage of tie-up marketing with coffee trading companies to approach market-wanted products and provide market feedback to producers, leading to stable exports. One of the major Lao coffee production areas, the Bolaven Plateau, shows high climatic suitability, productivity, and quality for

[4] Good manufacturing practice encompasses the minimum requirements that must be met to produce food appropriate for human consumption by managing the readiness of the production environment. This involves monitoring such factors as personal hygiene; insect and animal control; cleaning of production facilities, machinery, and production equipment; factory water control; chemical control; identification; and traceability of the product. HACCP is a quality-control approach that analyses hazards in food manufacturing steps and continuously controls critical control points, which can be controlled most efficiently, to ensure product safety and protect consumers. ISO 22000 is a standard developed by the International Organization for Standardization dealing with food safety management systems.

coffee; however, it can be difficult to produce specialty coffee with distinctive features and familiarity that differs from standard, globally distributed coffee. Therefore, the government must provide policy support for initiatives that contribute to raising value added on coffee, including the selection of new coffee production areas (such as Xiangkhouang and Luang Phabang) that have climatic conditions similar to those of other famed coffee production areas.

Nurturing the Biofuel and Edible Oil Production Sectors (to Reduce Trade Deficits)

Biofuel is destined to account for some share of aviation fuel in the future. Aviation and diesel fuel production using algae, which is now gaining attention, avoids any use of food plants and can be implemented anywhere using only water and sunlight. The Lao PDR should establish incentives for biofuel production to attract investment and should proceed with relevant education and research.

As the Lao PDR's imports include massive amounts of edible oil, the country should promote the production of edible oil and processed edible oil products to help reduce trade deficits. This will make it possible to provide safe edible oil to citizens at lower prices. Candidate raw materials for edible oil include rapeseeds, sunflower seeds, sesame seeds, and other fatty crops. Accordingly, the Lao PDR should establish incentives for edible oil production to promote investment, and should proceed with relevant education and research.

Processed Food Products Meeting Changes in Dietary Habits

Meat and milk product consumption has so far been limited in the Lao PDR, but this demand is expected to expand. As income growth and transportation network improvements allow dietary habits to be diversified, the consumption of milk and yoghurt as sources of calcium will increase, along with the consumption of hams, sausages, and other processed meat products as protein sources. Therefore, the government should consider incentives for milk and meat processing plants to make products for domestic consumption, as well as milk products like butter and skim milk, and processed meat products like gelatine and collagen as secondary products for export.

Food Processing Industry Promotion Measures

The role of foreign direct investment (FDI) in developing the food processing industry is more important than ever, as seen in the remarkable extension of the food value chain in this region in recent years, mainly driven by Japanese FDI in Thailand. In line with this, it is recommended that the Lao PDR accelerate the improvement of the investment environment (including cross-border transportation), and provide opportunities for business matching between FDI and local Lao firms with the support of foreign agencies like the Japan External Trade Organization (JETRO). From this point of view, as well as with respect to good regulatory practice, the related laws and regulations should be reviewed.

Table 1.3: Target of Food Processing Industry in the Lao People's Democratic Republic

Processing stage	Processing method	Raw material product	Harvest area
Primary processing	Milling	Rice	All areas
	Raw sugar	Sugar cane	Central and south areas
	Juice extraction	Pineapples	Central and south areas
		Bananas	All areas
		Mandarin oranges	Central and north areas
		Mangoes	Central and south areas
	Fermentation	Alcohol	All areas
		Vinegar	All areas
		Milk	Central and north areas
	Oil expression	Sesame	All areas
		Sunflower	All areas
		Rapeseed	All areas
	Cutting	Various vegetables	All areas
	Freezing	Various vegetables	All areas
		Various meats	All areas
	Drying	Japanese leeks	Central and south areas
		Mushrooms	Central and north areas
		Tomatoes	Central and south areas
		Chinese cabbage	Central and south areas
		Spinach	Central and south areas
		Cabbage	Central and south areas
		Carrots	All areas
		Bananas	All areas
	Flour milling	Rice	All areas
		Wheat	All areas
	Salting	Mushrooms	Central and north areas
		Bamboo shoots	All areas
		Cucumbers	Central and south areas
		Ginger	All areas
Secondary processing	Breadmaking	Wheat and dairy products	Vientiane, Savannakhet Prefecture, Champasak Prefecture

	Sugar production	Sugar cane and raw sugar	Central and south areas
	Noodle production	Wheat and rice	Vientiane, Savannakhet Prefecture, Champasak Prefecture
	Oil and fat processing	Butter and margarine	Central and north areas
Product manufacturing	Confectionery	Flour, corn powder, starch, sugar, salt, oil, etc.	Vientiane, Savannakhet Prefecture, Champasak Prefecture
	Frozen food	Various vegetables and meats	Vientiane, Savannakhet Prefecture, Champasak Prefecture
	Retort food	Various vegetables and meats, sugar, salt, oil, etc.	Vientiane, Savannakhet Prefecture, Champasak Prefecture
	Instant food	Dried vegetables and meats, noodles, sugar, salt, oil, etc.	Vientiane, Savannakhet Prefecture, Champasak Prefecture
	Canned pickled vegetables	Cabbage	Vientiane, Champasak Province
	Canned sweet corn	Corn	Xaiyabuly, Vientiane, Borikhamxay, Khammoune Province
	Milk, corn, and soybeans	Corn and soybeans	Central and south areas
	Traditional medicine production	Herbs	All areas, especially south areas
	Candy	Corn, bananas, and pineapples	North, central, and south areas

Notes: Primary processing is the direct use of agricultural products and livestock products as raw materials, while minimising changes in food quality; it also refers to physical or microbial processing (e.g. milled rice, barley, raw sugar, canned food, fruit juice, fermented products, alcoholic beverages, oil extracts, and salted, dried, or frozen products). Secondary processing refers to a combination of products manufactured by primary processing (e.g. baked goods, sugar, noodles, and processed oil). Product manufacturing is the combination of several types of primary and secondary processed goods (e.g. confectionery, frozen food, and retort food).
Source: Authors.

5.3. Relevant Government Ministries' Cooperation in Agriculture and Food Processing

Although the MOAF is in charge of agriculture, it must cooperate with the MOIC to achieve agricultural and food product processing targets. Instead of leaving production up to the MOAF, and sales and food processing up to the MOIC, the two ministries should set up marketing divisions or projects to serve as promoters of Lao agricultural products. Furthermore, when it comes to the advertisement and promotion of products, it is necessary to consider cooperation with the Ministry of Information, Culture and Tourism.

6. 'One District One Product' Campaign for Agriculture and Food Processing

Agricultural products (including tea, coffee, processed fruits, and rice noodles) are earmarked for 'One District One Product' (ODOP) projects in agriculture and food processing. However, the manufacturing and management methods for ODOP products differ by region. The labelling of raw materials, best-before dates, and food additives for these products has not been unified. Since safety is the top priority for food products, product labelling regulations must be unified and distributed widely to ensure food safety.

For products subject to ODOP certification, product liability insurance initiatives should be considered to secure safety. Such initiatives cover compensation liabilities for damage to consumers caused by tampering, excessive agrochemical contents, and other irregularities. They could also contribute to improving quality and safety, and producers' safety awareness. Global good agricultural practices (GGAP), HACCP, ISO, and other relevant international certifications should be acquired for export expansion. Safety checks carried out upon ODOP certification and its renewal should be combined with those carried out by insurance companies to improve food safety. ODOP certification and insurance initiatives can convey the message that ODOP projects prioritise safety, thus attracting foreign tourists and countries in particular to boost purchases of ODOP products.

Furthermore, a system to ensure the traceability of products is recommended to ensure product safety by allowing consumers to check products' raw materials, producers, and the presence or absence of insurance on their own. This will encourage consumers to expand their purchases.

Box 1.2: Japan's One District One Product Campaign

Japan's One District One Product (ODOP) campaign began with calls for each municipality to choose one local product, or anything associated with a historic site or old folk song, that can pass a nationwide assessment and be publicised across the country. As suggested by its name, the ODOP campaign was the process by which each municipality found a valuable local resource about which it could boast to the rest of the country and thus raise the value of the resource through processing, sales, marketing and other activities. The campaign was neither a 'business' nor a 'project,' but a local vitalisation 'movement.' It was not a campaign led by the government through such measures as the provision of subsidies but involved local people's

ideas and self-help efforts, supported by the government from the beginning. While public budgetary appropriations were used to provide publicity for the campaign and support human exchanges, each municipality took the initiative in implementing specific promotion measures. This approach is credited with the success of the campaign, which is ongoing.

Encouraged by the successful ODOP campaign, more than 30 countries have introduced projects modelled after it. However, most of these mainly aim to produce local specialties, and few are based on the ODOP campaign's original purpose of developing human resources and focusing on activities led by local people. The activities of most of the international examples differed from those undertaken in Japan, where they were based on the ideas of the people directly involved. To ensure that the activities remain sustainable, it is essential to cultivate leaders and new facilitators from local people or organisations who can meet participants' demands while maintaining ties with outside concerns.

Box 1.3: Global Good Agricultural Practices

The global good agricultural practices (GGAP) programme provides farmers with a guideline for implementing safe, sustainable farming to contribute to regional economies, and a means of ensuring products' traceability, reliability, and transparency for customers and consumers. Japanese retailers as well as large European and American retailers prioritise purchasing from producers that have acquired the GGAP and other international certifications. The GGAP certification represents a common global brand given to the practitioners of sustainable production in terms of food safety, working environments, and environmental conservation; and contributes to improving the reliability and added value of products.

7. References

In the process of preparing this strategic paper, we interviewed representatives from companies operating in the Lao PDR on their views about present and future business operations. They provided us with important information including insights into present business operations, the Lao PDR's advantages, current bottlenecks, requests to the government, policies and improvements required for future business expansion, and measures required for the Lao PDR's future development.

7.1. Company A (Cultivating and Processing Root Crops for Export)

Present Business Operations

Natural farming tests are being conducted on a 100-hectare plot to improve soil. Pre-test research confirmed that improving the soil with green fertiliser and farmyard manure would result in globally competitive farmland. We practice low-cost sustainable farming by limiting external materials as much as possible. In the 2018 dry season, we began cultivating several vegetable varieties for the primary processes of washing, cutting, and packing in the Lao PDR before they were shipped directly to restaurants, mainly in Japan.

The Advantages of the Lao People's Democratic Republic

Labour costs are low. Workers, including many farmers, have basic knowledge about agricultural products, and farmland is less polluted than in the surrounding countries. Small improvement measures can transform areas into excellent farmland, and rivers and wells can be used for irrigation throughout the year.

Present Bottlenecks

Ordinary family farms are small, making mechanised farming difficult. Farmers use traditional farming methods and have little knowledge of the latest farming techniques. In the absence of any market for agricultural products, prices and standards are not unified, making products less competitive than in other countries. No income growth can be expected if the situation remains as it is now. The cost of transportation is a problem for both primary and secondary agricultural products.

Policies and Improvements Required for Future Business Expansion

We have confirmed that the Lao PDR's domestic market for agricultural products is almost saturated, as farmers account for 70% of Lao citizens. To raise agricultural income, it is important to increase the efficiency and value added of exported goods. Since agrochemical consumption has traditionally been limited, the Lao PDR can establish a national brand for its agricultural products for overseas markets by promoting its policy of limiting agrochemical use. The Lao PDR can offset the disadvantage of high transportation costs as a landlocked country to some extent by branding its agricultural products as organic, a designation destined to become mainstream in developed countries in the EU and North America.

Measures Required for the Future Development of the Lao People's Democratic Republic

Legislative actions are required to develop farmland for efficient production and consolidate farmland compartments for large-scale investment. Since it takes considerable time to recover any investment in land development and improvement, relevant accounting standards must also be developed. Agricultural products depend heavily on land and environmental conditions, making it difficult to produce them in a given designated area. Thus, investment incentive policies similar to a special economic zone initiative should be implemented for large-scale farmland development.

7.2. Company B (Producing Sesame and Chinese Medicine and Perfume Materials)

Present Business Operations

We export agricultural products and perfume materials, mainly to Japan. Farmers produce products under contract for primary processing.

The Advantages of the Lao People's Democratic Republic

Workers have basic agricultural knowledge and can produce various agricultural products after receiving a certain level of education. Farmland is mostly free from agrochemicals, allowing value added products to be produced.

Present Bottlenecks

The efficiency of production under contract depends on farmers' morale, making it difficult to achieve a stable production volume. Given high transportation costs and the absence of container yards in the Lao PDR, primary processing such as fumigation cannot be implemented. Detailed residual agrochemical inspection cannot be conducted in the Lao PDR.

Requests to the Government of the Lao People's Democratic Republic

The Lao PDR must establish agricultural markets, agricultural cooperatives, or other unified organisations to improve agricultural knowledge, reduce costs through joint purchases of agricultural equipment and materials, solve financing problems, and unify counters for production under contract.

Policies and Improvements Required for Future Business Expansion

As production under contract cannot improve productivity, we would like to undertake large-scale farming on our own. However, land and incentives available for such farming have not been clarified. This problem should be resolved.

Measures Required for the Future Development of the Lao People's Democratic Republic

Vast amounts of farmland and a limited population are very favourable for efficient mechanised farming. However, since farmland is currently divided into small compartments, making mechanisation difficult, a farmland reform project with a long-term perspective should be implemented. Taking advantage of farmers' rejection or limited use of agrochemicals, the Lao PDR should establish a brand as the world's first agrochemical-free country (although this does not necessarily mean that agrochemicals cannot be used for emergency purposes).

Despite producing various agricultural products domestically, the Lao PDR imports numerous processed agricultural products, leading to trade deficits. The Lao PDR should provide investment incentives to allow processed agricultural products (including rapeseed oil, milk products, and wheat-based confectionery) to be produced domestically, and should spread information about such incentives widely to attract business operators. This would help protect citizens from agrochemical pollution and illegal products, and achieve safety.

Chapter 2

Garments

1. Current State

1.1. Current State of the Garment Industry

According to an announcement by the Association of the Lao Garment Industry (ALGI), the Lao PDR's export of sewn products in 2017 amounted to $175 million, an 8.8% increase from 2016. The ALGI reported that worker shortage is a chronic issue within the Lao sewing industry, leading to a decline in export values in the past several years.

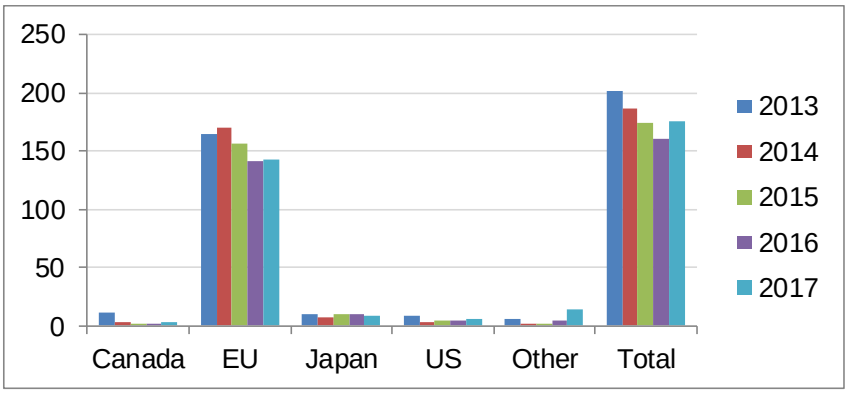
As of 2018, there are 78 sewing factories in the Lao PDR, located mainly in the capital of Vientiane and its environs. Of these, seven factories are owned by Lao capital. Japanese companies have made large investments in the sewing industry, followed by Thai companies. Of the 78 factories, 50 manufacture export-bound clothing while 28 handle both export-bound and domestic clothing. In addition, 28 factories manufacture clothing parts. These factories employ a total of 26,000 people, 90% of whom are women.

In 2017, exports from the Lao PDR to its major export counterparts increased and decreased year-on-year as follows (Figure 2.1): (i) the EU imported 31.04 million items valued at $143.3 million (a 1.7% increase); (ii) Japan imported 1.78 million items at $8.71 million (a 9.8% decrease); (iii) the US imported 1.74 million items at $6.11 million (a 34.9% increase); and (iv) Canada imported 160,000 items at $3.24 million (a 689.2% increase).

1.2. Trends in the Volume and Amount of Clothing Exports

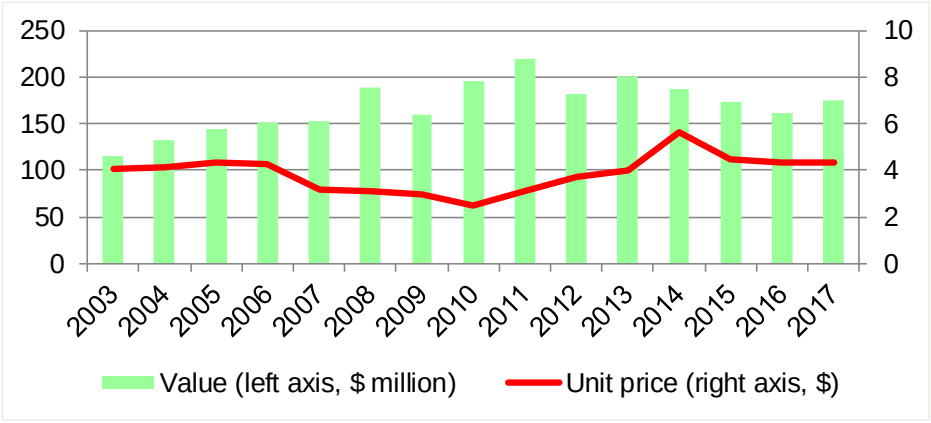
Figure 2.1 shows that the EU (depending on the generalised system of preferences [GSP] obtained) is the major destination of the Lao PDR's clothing exports, and that, while the value of goods exported to Japan may be small, the amount is stable. Figure 2.2 shows that, although export values have been plunging over the past several years, the average value is gradually expanding; and that, despite a temporary plunge in 2010, the unit price of goods is rising.

Figure 2.1: Data on Trends in the Lao People's Democratic Republic's Clothing Exports to Major Export Counterparts ($ million)



EU = European Union, US = United States.
Source: Ministry of Industry and Commerce, Lao Trade Portal. https://www.laotradeportal.gov.la/ (accessed 13 April 2019).

Figure 2.2: Data on the Value and Unit Price of the Lao People's Democratic Republic's Clothing Exports



Source: Ministry of Industry and Commerce, Lao Trade Portal. https://www.laotradeportal.gov.la/ (accessed 13 April 2019).

The top five export items in the Lao PDR are shown in Table 2.1 (for clothing) and Table 2.2 (for shoes) in 2016.

Table 2.1: Top Five Items in the Lao People's Democratic Republic's Clothing Exports

($ million, 2016)

Product	Value	Export destinations
Non-knitted men's suits	102.0	Germany: 41%, United Kingdom: 18%, Japan: 12%
Non-knitted men's shirts	28.4	Germany: 19%, Japan: 13%, Netherlands: 12%
Non-knitted women's shirts	19.3	Japan: 57%, Germany: 19%, Denmark: 9.9%
Knitted women's shirts	17.9	United Kingdom: 34%, Japan: 29%, Italy: 15%
Knitted men's undergarments	17.4	Germany: 38%, Italy: 26%, Canada: 17%

Note: Only the countries with the largest export shares are noted here.
Source: BACI International Trade Database, Centre d'Études Prospectives et d'Informations Internationales. http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=1 (accessed 13 April 2019).

Table 2.2: Top Five Items in the Lao People's Democratic Republic's Shoe Exports

($ million, 2016)

Product	Value	Export destinations
Leather footwear	20.4	Japan: 62%, Italy: 9.8%, United Kingdom: 6.1%
Footwear parts	11.4	Thailand: 72%, Japan: 28%
Rubber footwear	3.9	United Kingdom: 55%, Japan: 26%, France: 9.0%
Fake fur	3.1	Japan: 71%, Thailand: 29%
Textile footwear	2.0	United Kingdom: 72%, Germany: 10%, Italy: 4.0%

Note: Only the countries with the largest export shares are noted here.
Source: BACI International Trade Database, Centre d'Études Prospectives et d'Informations Internationales. http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=1 (accessed 13 April 2019).

1.3. Orientation of the Five-Year National Socio-Economic Development Plan and its Assessment

The Prime Minister's Order No. 24 on the Five-Year National Socio-Economic Development Plan (7 May 2014) is based on the Ten Year Development Strategy for Manufacturing and Trade of the Ministry of Industry and Commerce: 2011–2020. The goals of the plan are as follows:

(i) increased production efficiency and improved quality of workers to attract and promote labour-intensive industry;

(ii) the establishment of a major clothing manufacturers group;

(iii) increased productivity of the processing industry (priority areas: food processing and beverages, building materials, clothing, tobacco, and shoes);

(iv) the promotion of silk and textiles (woven materials) as a new processing industry; and

(v) the creation of global partnerships for development to increase exports by providing incentives, especially for agricultural goods, clothing, and textile goods.

Although approximately 26,000 workers are currently employed at sewing factories, the ALGI has determined that worker shortage is a chronic issue in this industry, and is preventing exports from increasing. However, according to a survey conducted by the MOIC, 30,000 unemployed people who have worked at sewing factories or similar companies in the past are seeking re-employment. Thus, it should be possible to secure about 60,000 people for the sewing industry. The 'worker shortage' identified by the ALGI refers to workers who have acquired the minimum required skills, while the 30,000 people identified by the MOIC are less skilled workers. Thus, it is essential to improve the skill quality of workers. Sharing the burden of providing the necessary education may be a major issue in the implementation of upskilling, that is determining whether employers will provide their workers with the education they need after receiving some kind of incentive from the government, or whether the government will provide education to workers directly.

Since the ALGI has been already established as the major clothing manufacturers group, a workers' organisation for clothing manufacturing is needed. Having such an organisation to maintain the working environment and educate workers may also be a means of improving labour skills in this industry.

Although the exploration of new markets and creation of global partnerships are extremely important factors, it is also necessary to conclude trade agreements and a broad range of GSPs with various countries including the United States in relation to trade (especially exports).

2. The Lao People's Democratic Republic's Advantages in Clothing Manufacturing: Preferential Tariff

Exports of goods sewed in overseas factories are normally subject to tariffs, with some goods being subject to a tariff of 10% or more. In many developed countries, clothing is often subject to a considerable tariff. However, clothing and bedclothing exported from the Lao

PDR to other countries do not need to clear customs if 'Form A' or 'Form AJ' is obtained.

Form A refers to a certificate used to enjoy general preferential duties, which is a system to apply a low tariff rate or make the goods tax-free. This is provided by developed countries to support developing countries' economic development through trade. For example, exports of goods to Japan from developing countries such as Thailand or the Lao PDR can be made on more favourable conditions than those from developed countries such as the US or Germany. Since the Lao PDR is one of the poorest of the developing countries, it enjoys the special preferential tariff for least developed countries (LDC). In particular, under the customs agreement between Japan and ASEAN, goods can be exported to Japan from ASEAN countries including the Lao PDR on favourable conditions if Form AJ is obtained.

Form A is based on the principle of the two-step rule. As an exception, Form A can be obtained for fabric clothing (Harmonized System Code Chapter 62: articles of apparel and clothing accessories, not knitted or crocheted), even if the goods have undergone a single process of sewing. However, in principle, to obtain Form A with respect to clothing and bedclothing, not only the process of sewing but also the process of weaving the cloth must be conducted in the producer country. In other words, two production processes must have occurred in the producer country. Based on the economic partnership agreement between Japan and ASEAN, this condition is relaxed if Form AJ is obtained. For example, the processes of weaving and sewing the cloth must be carried out in the Lao PDR under ordinary circumstances, but if the cloth used was woven in an ASEAN member state (AMS) such as Thailand, Form AJ can be obtained, even if only the process of sewing was carried out in the Lao PDR. Form AJ cannot be obtained when the clothing is sewed from cloth imported from a non-AMS country, such as China.

In exporting goods from the Lao PDR, Form A can be applied if, for example a silk fabric woven in the Lao PDR using thread spun in the Lao PDR is exported or if clothing sewed in the Lao PDR using cloth woven in China is exported. On the other hand, Form AJ is applied when clothing or bedclothing sewed in the Lao PDR using cloth woven in Thailand is exported. As described above, one of the major advantages of sewing clothing in the Lao PDR is the possibility of enjoying a preferential tariff rate both when goods are created by sewing cloth imported from an AMS, such as Thailand, and when sewing fabric clothing using cloth imported from countries other than an AMS, such as China.

3. Major Bottlenecks for the Developing Garment Industry

The Lao PDR's sewing industry has seen a decline in recent years. The total export sales of the industry increased from $87 million in 1995 to a peak of $219 million in 2011, but have been gradually declining since then, falling to $174 million in 2015. In addition, clothing accounted for approximately 36% of exports during 2001–2005, but this share declined to approximately 8% during 2011–2015. FDI in the sewing industry amounted to $65 million during 1991–2000 but declined to $29 million during 2001–2010, and even further to $10 million during 2011–2015.

The revealed comparative advantage index of the Lao PDR's sewing industry was an average of 13 during 2001–2005 due to the emergence of other leading export items, such as mining, electricity, and electronic components, but has declined to no more than 4 during 2011–2013 (World Bank, World Integrated Trade Solution). Although the revealed comparative advantage index of the sewing industry narrowly exceeds 1 (meaning that the Lao PDR still maintains its comparative advantage in this industry), this is also a signal of a decline showing that the industry is gradually losing its competitiveness.

One major reason for this decline is the decreasing demand in the global market. The majority of the Lao PDR's sewing industry consists of the so-called 'cut, make, and trim' (CMT) service, which mostly consists of work subcontracted from large companies in neighbouring states. The Lao PDR's industry is much smaller in scale than that of its competitors in neighbouring states. Due to weak domestic demand, most of its sewing factories depend on export demand for their production volume. The sluggish demand in EU economies and other markets is directly connected to the decline in orders for sewing produced in the Lao PDR. According to the ALGI, not only have orders recently been decreasing in EU markets, but also demand has been shifting to cheap products.

As mentioned above, the labour shortage is also creating a bottleneck for this industry. As a result of the major increase in the minimum wage in Thailand in 2012, Thailand's labour market became enormously appealing to workers in neighbouring states, including the Lao PDR. In addition, competition for workers with other industries, such as the booming services sector and 'other manufacturing' sector, has also occurred in the domestic labour market, and such competition is becoming especially intense in special economic zones. Thus, it has

become increasingly difficult for the sewing industry to secure and retain its workforce, especially in major manufacturing hubs.

Low labour productivity in the sewing industry is leading to increased production cost per product. While the Lao PDR's nominal minimum wage is extremely competitive within the ASEAN area, its labour productivity is significantly low relative to that of neighbouring states. Therefore, the real wage calculated by adding labour productivity is substantially high, resulting in a very small profit margin. This trend is especially prominent in CMT-based factories, where wages account for more than half of production costs.

The Lao PDR's sewing industry needs more supporting industries. Most of the necessary materials are generally procured from abroad through parent companies, contractors, and buyers. Ironically, cardboard materials are the only materials that can be procured domestically. This lack of domestic materials limits the potential to incorporate upstream works. Since the Lao PDR's small-scale sewing industry has limited experience and little processing ability in the private sector, it has no choice but to specialise in the simple CMT service, which is only a small step in the regional or global supply chain. This shortage of supporting industries is inhibiting the development of the Lao PDR's sewing industry.

To develop this labour-intensive industry, it is paramount to secure its workforce. However, since merely increasing the size of the workforce will not lead to increased labour productivity, enhanced education for workers is necessary. A workforce for the sewing industry can be mobilised by encouraging the movement of labour from agriculture to manufacturing. To do this, it is necessary to widen the wage gap between agriculture and manufacturing sufficiently; however, if companies independently increase wages, this could cause a heavy burden on the industry. Therefore, to improve labour productivity, it is necessary to provide the industry with incentives to do so, while supporting the provision of education on labour standards and codes of conduct to workers.

Box 2.1: What Next for the Lao People's Democratic Republic's Apparel and Textile Industry?

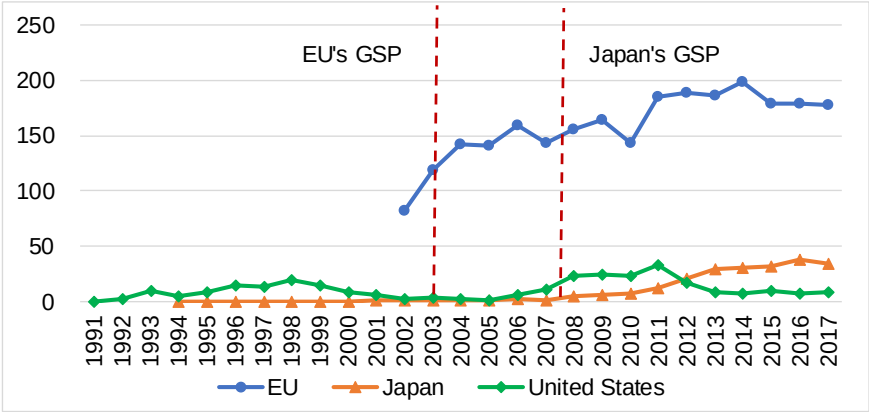
Industrialisation in most developed countries began with the apparel and textile industries. For example, the industrial revolution in Great Britain began in the 18th century with the introduction of steam-powered mechanisation in the textile industry. The apparel and textile industry played a major role in the emergence and expansion of factory-based production, and, thereby, industrialisation in most industrialised economies in Europe, the United States (US), and Japan.

The tradition of making clothes exists in all pre-industrial societies. The apparel and textile industry, which is literally the making of clothes using industrial means and methods, has undoubtedly smoothed the transition from traditional to industrial societies. Likewise, most newly industrialising economies kick-started their industrialisation through foreign direct investment in the labour-intensive apparel and textile industry starting in the 1970s. China did this in the 1990s, and has since made tremendous progress in industrialisation beyond the apparel and textile industry.

The apparel and textile industry can be an effective tool for facilitating the transformation of the Lao People's Democratic Republic (PDR) from a traditional to an industrial society. Since the 1990s, the Lao apparel and textile industry has grown to be by far the largest source of formal employment. Yet, in recent years growth has stagnated. Employment numbers declined from a peak of more than 50,000 to about 30,000 in 2017, and export volumes have also declined.

Thus, is necessary to ask what can be done to regain the growth momentum of the sector. Examining the development of the apparel and textile industry in the Lao PDR so far (see Figure 2.3) provides a hint as to what may be done next. After foreign direct investment was introduced in the 1990s, apparel products began to be exported, partly as a quick and easy way to privatise the loss-making state-owned enterprises. Exports to the European Union (EU) market jumped from nothing to more than $100 million by 2001. Although the EU's generalised system of preferences (GSP) was not formally given to the Lao PDR until 2002 upon official request, most exports since the mid-1990s had been carried out under such a scheme. In recent years, annual exports to the EU have amounted to $150 million–$200 million. Sizable exports to Japan, which also began with a GSP, amounted to around $1 million annually between 1994 and 2007, and have sharply increased since 2008. Japan's GSP was effectively granted to the Lao PDR in 2007.

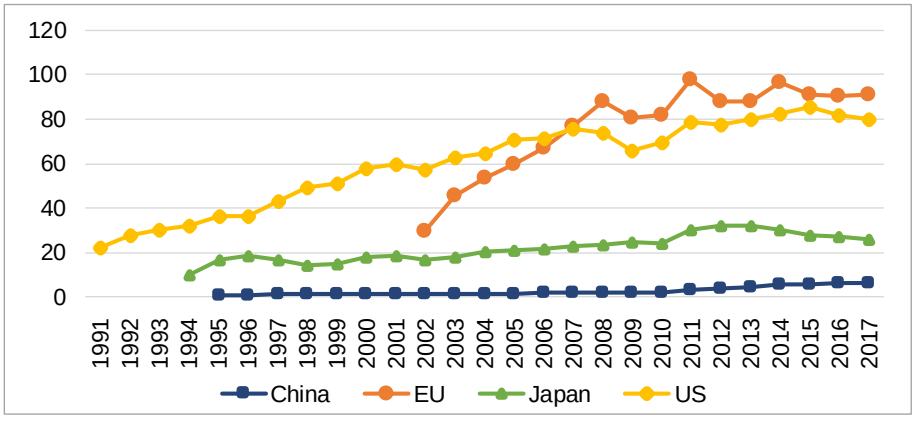
Figure 2.3: Major Lao Apparel Exports and Destinations ($ million)



EU = European Union, GSP = generalised system of preferences.
Source: Global Trade Atlas. https://www.gtis.com/English/gtis_about.html (accessed 13 April 2019).

On the other hand, apparel exports to the US only amounted to around $7 million in 2017. This is disproportionally small given the relative size of global imports by the US. As of 2017, the US was by far the second largest destination for apparel exports after the EU (Figure 2.4). Apparel exports to the US increased significantly after 2005, when normal trade relations were granted to the Lao PDR. However, benefits from normal trade relations and the GSP remain large, and only the latter can reasonably compensate for the high transportation costs and other locational disadvantages currently facing the Lao PDR. As has been the case with most newly industrialised economies since the second half of the 20th century, the US's GSP would undoubtedly give the Lao apparel and textile industry a big boost and effectively push forward industrialisation in the country.

Figure 2.4: Major Global Apparel Importers ($ billion)



EU = European Union, US = United States.
Source: Global Trade Atlas. https://www.gtis.com/English/gtis_about.html (accessed 13 April 2019).

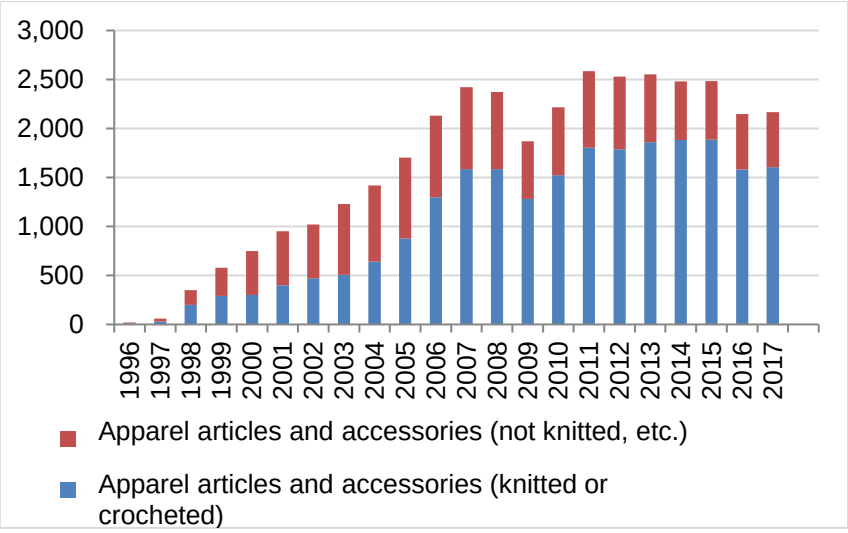
4. Policy Recommendations

4.1. Development of Export Infrastructure Based on Agreements Such as Trade Agreements and Generalised Systems of Preferences, and, in Particular, the Conclusion of an Agreement with the United States (Trade Agreement on Textile and Apparel)

Another factor prohibiting the expansion of exports is the stagnation in the expansion of agreements as such GSPs and the Textile and Apparel Trade Agreement (TATA). The expansion of domestic demand has had an extremely small effect on the promotion of clothing manufactured in the Lao PDR, and promotion measures centred on exports must therefore be taken.

To promote exports, it is first necessary to develop an environment in which it is possible to utilise agreements enabling the Lao PDR to export goods on more favourable conditions than those of other countries (i.e. trade agreements and GSPs). Of the Lao PDR's neighbouring states, Cambodia and Myanmar have already concluded agreements such as TATAs, and have sharply increased their export volume of textile products to the US (for Cambodia, see Figure 2.5). To resolve the comparative advantage with these competitors, the Lao PDR should conclude a TATA with the US to promote its current production network-type manufacturing industry. To promote the textile industry in particular, it is essential to conclude agreements with the US, where fast fashion is purchased in large amounts (for more details, see Box 2.1).

Figure 2.5: Transition in the United States' Imports of Clothing from Cambodia ($ million)



Source: United States Census Bureau. United States International Trade Data. https://www.census.gov/foreign-trade/index.html (accessed 13 April 2019).

As shown in Figure 2.5, exports from Cambodia to the US became notable in 1997, and the US granted Cambodian products 'most favoured nation' treatment based on the 1996 agreement for normal trade relations with Cambodia. Cambodian products also enjoyed tariff exemptions or were assigned a low tariff based on the GSP by countries such as the US and EU. This preferential treatment prior to joining the World Trade Organization in 2004 has helped to expand Cambodia's exports of sewn products. Even after the lapse of the Multifibre Agreement under the World Trade Organization, Cambodia was treated as an LDC, and many goods in addition to GSP items are covered by tax-free status or tariff reductions. Based on the preferential treatment granted to imports of Cambodian products by developed countries, the Government of Cambodia has given preferential treatment to foreign capital and further introduced aggressive measures to attract foreign investment by enacting the Investment Act in 1994. Such preferential treatment for import countries, including European countries and the US, aggressive measures to attract foreign investment, and the development of a cheap and abundant workforce have attracted many foreign companies to expand their businesses in Cambodia.

Factories in the sewing and shoemaking industries often choose countries and regions where low-cost production based on low wages is possible. In many production sites around the world where foreign companies are located, working conditions established by organisations such as the International Labour Organization (ILO) are not complied with in a strict sense. However, Cambodia has increased its exports on the condition that it complies with labour standards such as those established by the ILO. When the US granted Cambodia 'most favoured nation status,' its imports of sewn products from Cambodia increased sharply. Furthermore, the US–Cambodian Bilateral Textile Agreements concluded in 1999 are a system to grant a quota of textile products that can be exported to the US under special duties, on the condition that Cambodia complies with the core labour standard. Under this system, production in a bad working environment, such as one in which cheap labour and child labour are used, is prohibited, and compliance with the ILO-specified labour conditions is required. Therefore, the Government of Cambodia is taking various measures, including amending the labour law, allowing the organisation of labour unions, and accepting an ILO audit on working conditions to enable sewing companies to obtain an export license.

Name brands and retail stores in developed countries that delegate production to factories in developing countries require compliance with the international standard of work

environments and corporate code of conduct at the time of production from the viewpoint of the company's corporate social responsibility (CSR), and surveys are carried out not only by the companies themselves but also by independent organisations. As a result, ILO inspections and the increasing costs of improved working conditions are less likely to lead directly to the withdrawal of companies from Cambodia, and instead often produce a virtuous cycle in which an improved working environment leads to improved worker quality and productivity.

Accordingly, even if labour unions are allowed to organise in the Lao PDR, labour disputes are less likely to occur if salaries and worker treatment matching the skill of the workers are ensured. Moreover, a certain increase in costs is considered less problematic for international manufacturing businesses and retail stores complying with CSR. The acceptance of an ILO audit, with which the Ministry of Labor and Social Welfare is concerned, is unlikely to cause major issues. If the Ministry of Labor and Social Welfare cannot solve this issue, it could be understood externally as creating a bad working environment or facilitating child labour, making it difficult for foreign companies emphasising CSR to expand their business in the Lao PDR. It would also stymie the promotion of all industries and the improvement of worker incomes.

4.2. Protecting Workers and Providing Basic Education

To resolve the problems of relatively expensive wages due to a shortage of employable workers and insufficient basic skills of workers, it is necessary to encourage the movement of the workforce from agriculture to industry and to provide support to educate workers on labour standards and codes of conduct.

Priority matters include creating a job-matching pilot project with the support of international organisations or cooperating with foreign-capitalised textile factories, training trainers to educate workers (i.e. training of trainers), and developing teaching materials. From this point of view, education to enhance awareness of jobs (e.g. recognition of service, habits of punctuality, and compensation for labour) is required from the primary and secondary education levels. Moreover, it is vital to organise labour unions and allow them to suggest programmes that they think necessary for education from an on-site perspective, and thereby

seek to enrich workers' education with the cooperation of the public, private, and labour sectors.

Sewing factories in Thailand currently employ a considerable number of skilful Lao workers as line managers and in similar roles. Highly skilled people can be easily secured by using appropriate treatment to encourage these people to return to the Lao PDR to work. Thus, it is important to provide preferential treatment that supports such movement of labour.

4.3. Possibility of Expanding to the Materials Field Prior to Intensive Processing

With respect to the possibility of expanding to the materials field, only raw materials originating from and producible in the Lao PDR, such as wooden and silk products, are competitive products. Since silken threads are mainly produced by hand in the Lao PDR, it is necessary to improve and introduce silkworms to make the original yarn, introduce and spread the growing technology, introduce yarn twisters, and foster technical experts. Since the stable production of mulberry trees is essential for the stable production of silkworms, cooperation from the MOAF is also necessary. The Government of the Lao PDR must establish, as a state, the specific direction and goals that outline its future vision for the production of silk thread.

5. Participation in the Supply Chain

It is important to establish an omnichannel for clothing and to streamline manufacturing and logistics. In particular, unless cost reductions in logistics and prompt readiness are realised, it will be difficult for the country to participate in the regional supply chain. Thus, policies to realise these goals are necessary.

Since fashion in clothing changes rapidly, sudden changes frequently occur even when production is scheduled in every quarter. As such, there are many cases where corrections must be made contrary to the import and export control stated in the current master list. However, since current circumstances make it difficult for the Lao PDR's apparel industry to respond to such cases, the expansion of Lao businesses is limited to factories that create simple and stable products (e.g. underwear and shirts). Thus, the Lao PDR's apparel industry must enhance its cooperation with the apparel manufacturing companies within ASEAN,

especially major companies that have expanded their business in Viet Nam, Thailand, and Cambodia. The country can obtain a better position in the global supply chain by being incorporated in a single integrated production block, with a labour sector based on the advantages and limits of each country.

In addition, the government must clarify its policy on the clothing industry and take proactive measures to restore the previous system of refunding value-added taxes, or give preferential treatment to business matching for rental factories or the rental of manufacturing lines, to promote the industry in the future.

Box 2.2: Establishing an Omnichannel for the Garment Industry

'Omnichannel' refers to a system in which consumers have multiple options to obtain information, order, pay, and receive the goods they intend to purchase. In terms of clothing, this leads to a concept known as 'demanding consumers,' where customers order goods after customising the size, colour, and design online according to their own tastes, and receive the product manufactured to their order. This concept is a transformed model of 'customer-centricity,' and is a result of extreme advancements in information technology and efficient distribution.

The establishment of an omnichannel in the clothing supply chain is producing the following changes.

(i) Diversification of customer contact: Customer contact is expanding not only through conventional channels (such as phone calls and e-mails), but also through social media and chat functions, in both business-to-business and business-to-customer service.

(ii) Acceleration and visualisation of logistics: Since customers expect to obtain products rapidly and to know where the product is at all times, it has become necessary to make logistics more efficient and to cooperate with both warehouses and brick-and-mortar stores.

(iii) Information transmitted by customers: In addition to the information transmitted from companies, the evaluations made in social media have all been connected to customers' decisions. Therefore, product planning and marketing must be based on the collection of information transmitted from customers.

5.1. Support for the Expansion of 'Fast Fashion' Business

Since fast fashion is heavily affected by changes in fashion trends and requires promptness, environmental concerns are arising in many places. Therefore, in allowing the expansion of fast fashion business in the Lao PDR, it is important to support such expansion only after establishing certain limitations, such as standards (e.g. labour and environmental standards in a narrow sense). Although this is extremely difficult under the Lao PDR's current circumstances, it may be possible to attract fast fashion factories in the future if workers' skills are improved and the supply environment is developed.

6. References

6.1 Company C (Japanese Company Operating in the Lao People's Democratic Republic; Shoemaking Industry; 600 Lao Workers)

Present Business Operations

Business is expanding smoothly, and the company mainly produces products for Japan. Due to the large number of factories that have moved into the surrounding areas, it is becoming more difficult to secure a workforce.

The Advantages of the Lao People's Democratic Republic

Labour is cheap, and people are motivated since the country is young. Expenses including electricity are also relatively cheap. If proper educational methods are used, it will be possible to provide a thorough education based on the Japanese '5S' methodology (i.e. sort, straighten, shine, standardise, and sustain).

Present Bottlenecks

It is difficult to provide operator education on machines, for example, as workers have an insufficient level of basic knowledge of industry. This should be taught in the subject of science at junior high schools in Japan. The personnel turnover rate is also higher than in other countries. When we started our business, the rate was approximately 10% per month; it has now settled to approximately 4% per month, but this is still high. Human resource development and the job retention rate are not balanced. Some people choose to leave their

jobs despite having acquired a certain level of skill and increased salary. This is extremely problematic for the company as it is directly connected to production.

Requests to the Government of the Lao People's Democratic Republic

Certain issues concerning the refund of value-added tax need to be resolved. Although we have carried out the procedures as specified by law, we have not been refunded value-added tax since 2014. Another issue is that the master list cannot be established beyond the amount of capital. Under the current situation, basic factory management accounting by which capital and assets are separated cannot be implemented. Materials and other items are liquid assets, and production according to orders is the basis of factory production. While the production volume can be planned to some extent, in some cases the necessary volume increases rapidly due to economic trends, making it impossible to respond to such cases by production control based on the master list. It is difficult to handle the flow of increased orders, expansion of production volume, and expansion of the factory.

Policies and Improvements Required for Future Business Expansion

Although the change in the legal system itself is of no consequence, if the system is not operated scrupulously in keeping with the law, it is difficult for the manufacturing industry, which is investing in factory equipment, among other things, to expand its business. Legal amendments can be reflected in management if notification of them is provided in advance. However, unless the laws are operated accurately, the company will lack reliable sources to help them decide whether or not to continue investment. Forms for export and registration, for example, must be unified and computerised. Much time is lost due to the many procedural corrections caused by frequent changes of forms and corrections in office procedures, which lack unity because they involve people at counters.

Measures Required for the Future Development of the Lao People's Democratic Republic

Rapid development might be unnecessary for the Lao PDR. We believe that a certain level of developments that do not put the Lao PDR off its stride are relevant to the quality of the products produced in the factory.

Workers must acquire basic knowledge in the industrial field. People tend to continue working being satisfied with the same amount of experience on which they have been relying while lacking any basic scientific, physical, and industrial knowledge. This is reflected in the

quality of goods being produced. We believe that it is currently difficult for Lao workers to engage in the production of advanced industrial products, for example. While it may be unnecessary to teach detailed industrial knowledge at the elementary, junior high, or high school levels, it is necessary to implement education swiftly to encourage Lao workers' interest in basic knowledge and science. We believe that this is a major necessary step to secure the future of the Lao PDR.

6.2 Company D (Japanese Company Operating in the Lao People's Democratic Republic; Sewing Industry; 240 Lao Workers)

Present Business Operations

Business is on track with a focus on women's apparel and pants for men's suits; the company mainly produces products for Japan. The company also exports 100,000 items of women's clothing, and produces original manufacturing equipment every year.

The Advantages of the Lao People's Democratic Republic

Labour is relatively cheap, and there have been no recent power outages, making the infrastructure stable.

Present Bottlenecks

Worker quality is a major issue. Although labour is cheap, workers have a low level of basic knowledge about labour, meaning that the advantages of the low labour cost cannot be fully enjoyed. The annual turnover rate for factory workers is higher in the Lao PDR (20%–30%) than in other countries (less than 10%). Many processes, such as cutting, sewing, and shaping, are mechanised, and many workers leave their jobs without moving to another factory, despite having been trained as operators and reaching a sufficient level of expertise. Such circumstances make it difficult to improve the state's industrial level in this industry.

Requests to the Government of the Lao People's Democratic Republic

The labour law is a major bottleneck. While the establishment of minimum wages was anticipated and is not disruptive, the establishment of payment for holiday or overtime work in such a manner as adding a specific percent to a worker's base salary makes it difficult to use managing members with high base salaries flexibly. To maximise the efficiency of the

factory, machines must be operated at all hours. Under the current provisions, unless we stop the machines during holidays and at midnight, the cost of operating the factory will prove prohibitive and investment recovery will take time, making it difficult to realise additional investments. We ask that the Lao government separate the provisions for simple workers from those for managing members, to permit more flexible operations. Equality in labour recruitment must be also ensured.[1]

Policies and Improvements Required for Future Business Expansion

Issues concerning laws and procedures change every year, and the interpretation and operation of laws are carried out differently by each person in charge of the procedures at the counter. Policies lack consistency, making it difficult to grasp the specific direction in which the Lao PDR is seeking industrial development. Thus, as a manager it is difficult to determine the extent to which one should invest in facilities and the scope for expansion in the future.

Measures Required for the Future Development of the Lao People's Democratic Republic

Settlement of human resources is required. In any industry, technology and know-how will not be accumulated unless experience in the same business is gained over a significant period of time. The mismatch between the improved skill level of workers and wages should also be resolved. If the Lao craftspersons had the same skills as the factory workers in Japan, we would treat them similarly based on the principle of equal pay for equal jobs. However, the differences between the two cohorts in terms of skills and attitude toward labour is so large that it is difficult to provide identical treatment under the current conditions. We believe that it is more urgent than ever to educate workers of all ages on attitudes toward labour. Based on the experience of managing factories in the Lao PDR for more than 10 years, we believe that a factory in which treatment and comfort are well-balanced is necessary for the Lao people.

[1] Of the intermediaries that introduce workers to the Lao PDR's sewing factories or other sewing factories owned by foreign companies other than Japanese companies, some offer workers guarantees that they will be treated better at the destination factory than at other factories, on the condition that they post a security deposit to the company (i.e. the act of having the company keep part of their salary or boost in pay for several months as a reserve), to prevent them from leaving their job. However, in reality, the deposit is not returned if there is no change in their treatment; and equality in securing workers is not maintained.

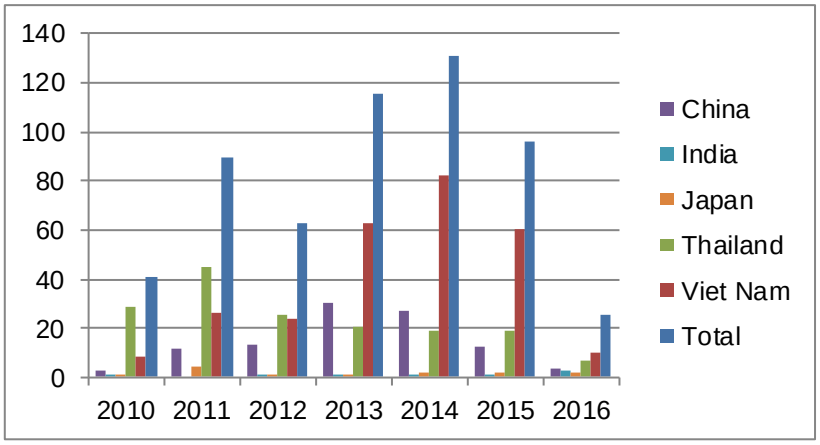
Chapter 3

Wood Processing

1. Current State

Export values of wood-processed products from the Lao PDR peaked in 2014 and have since been decreasing sharply.

Figure 3.1: Trends in Timber Exports of the Lao People's Democratic Republic ($ million)



Source: United Nations International Trade Statistics Database. https://comtrade.un.org/ (accessed 13 April 2019).

A close analysis of timber exports by processing category shows an increase in exports of low-processed products.

Table 3.1: Exports of Low-Processed Timber Products

Export		
Product	Value	Export destinations
Rough wood	173,000,000	China 89%; Hong Kong, China 5.6%; India 3.9%
Sawn wood	61,800,000	China 69%, Thailand 21%, Viet Nam 6.3%
Wood charcoal	128,000,000	Japan 40%, Republic of Korea 29%, China 25%
Veneer sheets	7,810,000	India 88%, Viet Nam 7.9%, Singapore 1.9%
Shaped wood	4,670,000	Thailand 43%, Viet Nam 32%, Republic of Korea 11%
Wood carpentry	4,410,000	Viet Nam 64%, Thailand 23%, Japan 7.7%
Wood ornaments	1,520,000	Japan 90%, United States 4.1%, China 4.0%
Wood kitchenware	860,000	China 79%, Thailand 9.5%, Japan 8.9%

Note: Only the countries with the largest export shares are noted here.
Source: United Nations International Trade Statistics Database. https://comtrade.un.org/ (accessed 13 April 2019).

2. Orientation of the Five-Year National Socio-Economic Development Plan and its Assessment

The following outlines the orientation of the wood processing sector in the Five-Year National Socio-Economic Development Plan, and the plan's assessment of the sector. The national goals are as follows:

(i) develop areas for the cultivation of high value-added plants, such as teakwood and rosewood;

(ii) establish demonstration areas for resource trees (such as rubber plants) that match local environments;

(iii) establish one or two factories with high-level processing technology in suitable locations;

(iv) support the creation of high-level production chains and integration in the Lao PDR; and

(v) establish production centres for bamboo and wisteria products.

The policy direction is considered very good in light of geopolitical and world trends. However, it should be understood that the cultivation of teakwood and rosewood, which are luxury timber, takes much time and labour, and that prices are affected by the forestry technologies used. It should also be taken into account that this cultivation will not immediately result in an income increase because at least 30 years must pass before the trees can be logged as timber. In addition, trees of the same kind, if planted in one area on a large scale, are exposed

to the risk of annihilation due to disease or insect damage; therefore, the planting of multiple kinds of trees should be considered. Since rubber plants and many other resource trees are affected by fluctuations in international prices, it is necessary to select trees with limited price fluctuations and disperse risks from a medium- to long-term perspective.

The promotion of non-wood materials, such as bamboo and wisteria products, will become increasingly important from now on. Paying close attention to the market for these products, the selection of materials, and the clarification of targets (such as where and what to sell) will make it easier to select cultivation areas, secure the necessary materials, and eventually lure businesses.

3. The Lao People's Democratic Republic's Advantages in Wood Processing

The Lao PDR is a forested country and has many planted trees. The country also contains several varieties of trees, including high value-added hardwoods, as it enjoys a tropical climate, is a long country measured north to south, and has mountainous areas. Farmers are very familiar with the mountains, and it is easy to search and trim trees.

4. Major Bottlenecks for the Development of the Wood-Processing Sector

4.1. Complication of Regulations for Exports of Wood-Processed Products

The Prime Minister's Order No. 15 (13 May 2016) was issued to toughen the management and supervision of timber logging, timber transport, and the timber business; and banned exports of all half-processed and unprocessed timber. With regard to processed wood products, the MOIC issued the (revised) agreement No. 0002 (3 January 2018) containing the list of exportable and unexportable timber products, subjecting exports of processed wood products in excess of the prescribed use and size to regulations. The regulations are aimed at producing high value-added wooden products and preserving raw wood materials in forests.

4.2. Obscure Information and Management

Data on timber used by ministries and agencies are unreliable, and it is unclear whether errors in these data are the result of smuggling and other transactions slipping through

government management, or are simply incorrect. First of all, management itself is considered inadequate. Under the present circumstances, overseas buyers and investors consider it difficult to recover their investment because price differences between smuggled and regular products destabilise prices and make it difficult to purchase regular timber stably. As a result, industrial promotion in this sector has been hindered.

As shown in Tables 3.2 and 3.3 below, there are wide differences between the data grasped by the MOIC and those released by importing countries. Normally, it is reasonable to understand that some products are being either smuggled or undervalued, resulting in the loss of a large amount of tax revenues.

Table 3.2: The Lao People's Democratic Republic–China Export Data, by Product Category, 2014–2015 ($ million)

Exports	MOIC	UN Comtrade	Difference
Wood and wood products	**28.5**	**498.6**	**–470.1**
Rubber and rubber products	20.8	83.4	–62.7
Chemicals and fertiliser	42.2	90.4	–48.2
Agricultural products	88.7	73.7	14.9
Other products	72.2	17.4	54.8
Metals and metal products	673.4	503.2	170.2
Total	925.8	1,266.7	–341.0

MOIC = Ministry of Industry and Commerce, UN Comtrade = United Nations International Trade Statistics Database.
Sources: Bannister, G.J., M. Ghazanchyan, and T.P. Bikoi (2017), 'Lao P.D.R: Assessing the Quality of Trade Statistics', *International Monetary Fund Working Paper*, No. 17/251. https://www.imf.org/en/Publications/WP/Issues/2017/11/16/LAO-P-D-R-45367 (accessed 13 April 2019).

Table 3.3: The Lao People's Democratic Republic–Viet Nam Exports Data by Product Category, 2014–2015 ($ million)

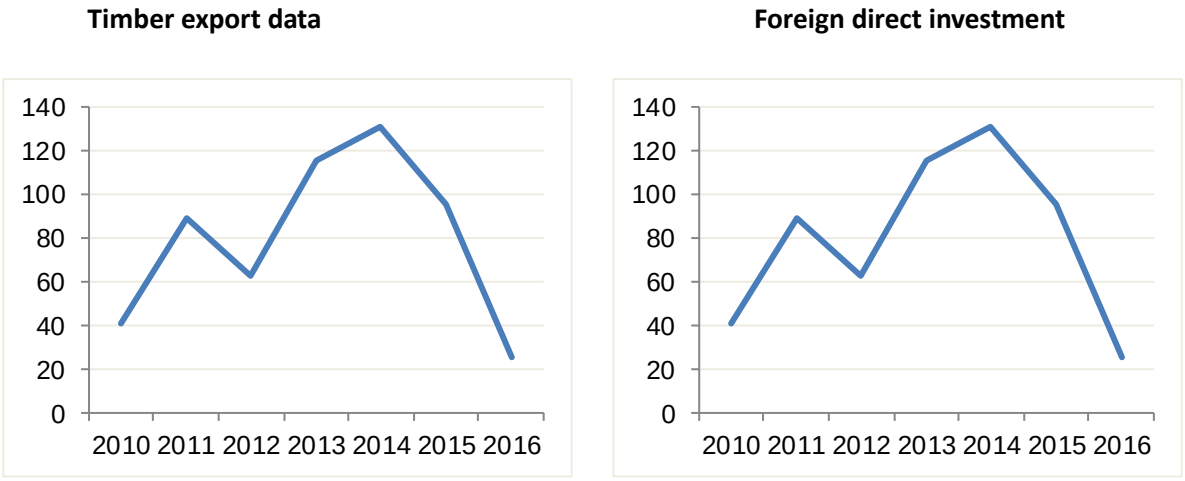
Exports	MOIC	Viet Nam	Difference
Wood and wood products	69.8	404.4	−334.6
Oil and oil products	0.0	30.0	−30.0
Chemicals and fertiliser	63.1	39.0	24.2
Metals and metal products	14.4	10.8	3.7
Maize	15.5	0.3	15.2
Other products	346.6	131.6	215.1
Total	**509.5**	**616.0**	**−106.6**

MOIC = Ministry of Industry and Commerce.
Sources: Bannister, G.J., M. Ghazanchyan, and T.P. Bikoi (2017), 'Lao P.D.R: Assessing the Quality of Trade Statistics', *International Monetary Fund Working Paper*, No. 17/251. https://www.imf.org/en/Publications/WP/Issues/2017/11/16/LAO-P-D-R-45367 (accessed 13 April 2019).

4.3. Irregular Exports Accompanied by Large-Scale Development

Table 3.2 compares the value of timber exports from the Lao PDR and FDI in the Lao PDR, and reveals that the amount of investment rose after timber exports increased. The transactions increased closely in time with large-scale projects to develop dams as well as rubber and other plantations. This suggests that timber exports were hewed out when mountains and fields were exploited, and that something was provided as incentives for investment. Such a practice hampers not only the maintenance of regular timber prices, but also the economic development of the Lao PDR by bringing in fabricated development with the aim of logging trees.

Figure 3.2: Timber Exports from, and Foreign Direct Investment in, the Lao People's Democratic Republic($ million)



Source: United Nations International Trade Statistics Database. https://comtrade.un.org/ (accessed 13 April 2019);
World Data Atlas. https://knoema.com/atlas (accessed 13 April 2019).

5. Discussion of the Current State

Under its current policy of exporting timber after processing, the Lao government gives companies incentives to process timber with the aim of increasing added values and income. Indeed, with respect to timber logging, such issues are partially legalised as areas where forest is conserved and felling is possible, tree species subject to conservation and available for use, processing methods, and so forth. However, it appears problematic that this legalisation is not widely known while the means of management remains insufficient.

In addition, the definition of timber is vague. Of all timber, wood containing materials for medical use is under the jurisdiction of the Ministry of Health, while the jurisdiction of wood for agricultural production, such as fruit, straddles multiple ministries and departments, including the department of the MOAF. This makes the definition of timber complicated and difficult to understand.

5.1. Policy Measures Adapted to Reality, Especially Industrial Promotion with an Eye on Exports

The Lao PDR has many tree species, including those with high values of use by industry, and the country's climate characteristics cause trees to grow more quickly than in Japan. Therefore, it is possible both to protect forests and to use their resources by involving people in forest succession. Specifically, use of forests that is sustainable and contributes to an increase in farmers' income is possible through such means as combining trees that grow quickly but are priced low, and trees that grow slowly but have high added values, as well as the linking of forestry and agriculture. To this end, it is first necessary to implement a national production plan for tree planting, nurturing, logging, and processing to meet the overseas demand for timber.

Next, it should be made easy for citizens to understand the forestry situation at a glance by (i) clarifying that the state will manage the forestry industry; (ii) preparing a list separating tree species for preservation, use, and exclusion from management; (iii) releasing the official price list of timber; (iv) setting management regulations that show how the state will manage the process of planting, processing, levying taxes, and implementing regulations for commissions according to tree species at each stage; and (iv) enacting a timber management law to control the abovementioned issues.

Commissions set and collected by the state (e.g. commissions for environmental protection) can easily be collected by the management at each stage of logging, transportation, processing, and export. Further, it becomes possible to manage forests sustainably by earmarking the commissions as taxes applicable to forest protection or subsidies for tree planting, afforestation projects, improvement of wood-processing technology, and so forth (footnote 1). It is also necessary to toughen crackdowns on illegal logging and hold open international bidding for timber seized by the government to secure national revenues to support the recovery of mountain forests damaged by illegal logging, and to promote transparent treatment.

5.2. Ways to Set Proper Targets After Adopting Policy Measures

It takes a long time for trees mature into timber. The maitiu trees used to make hard charcoal, mainly for exports to Japan, take 3–5 years to grow; acacia and locust trees, which are material for plywood, gain added values after 30 years; and more than 60 years are needed for luxury timber, such as ebony and red sandalwood. It is also important to utilise timber based on differences in growth speed in order to realise the stable use of mountain forests. Thus, planned planting of multiple tree species is necessary. At present, however, the Lao PDR lacks the processing accuracy demanded by other countries and is limited to primary processing.

According to official export data for 2014, $1.7 billion worth of timber (8% of total exports from the Lao PDR) was shipped mainly to China and Viet Nam (which accounted for 96% of total exports by volume). With exports consisting mainly of logs, boards, and wood chips, some 80% of exports took the form of crude material. In 2015, timber exports came to $892 million, of which raw wood accounted for 50%, boards 45%, and charcoal 3.4%. Toughened regulations are considered to have caused the change in the value of exports between 2014 and 2015. Even if demand can be accurately projected based on future legal improvements, it appears meaningless to refer to past export data (see section 3.4).

In setting target numbers for legal improvements, therefore, it is necessary to survey the current state of this sector, such as the exportable amount of timber and the amount of domestically usable timber relative to the available resources of planted and naturally growing trees. At the same time, the necessary amount of planting and afforestation to achieve forest recovery, as well as the shippable amount of timber should be calculated every 5 or 10 years to calculate the disposable amount of timber, which must not be higher than the country's rate of forest conservation. Thus, it is also appropriate to conduct a rough estimation of the future exportable amount of timber for each year.

The best option is to pursue the recovery of forested national land and the fair and profitable use of forest resources, which are an asset for the country and its citizens, by setting target numbers to be achieved every 5 or 10 years. It is also necessary to determine the proper rate of correlation between the usable amount of timber and the rate of recovery in the process of identifying final target numbers for the foreign coverage and recovery rates.

6. Policy Recommendations

6.1. Clarification of Prices and Procedures and the Establishment of Systems in the Process of Logging Raw Wood and Processing

The government can prevent unfair payments and illegal logging from the viewpoint of forest preservation by setting official prices for raw wood and disclosing taxes and commissions on the process from logging to export. By doing so, the MOAF can simplify its management of logging and forest preservation, as well as management at time of export at the border. At the same time, a tax incentive designed to lead to low taxes based on the degree of processing (e.g. high taxes for logging and low taxes for furniture) would not only promote transparency of government procedures but also increase demand for processed wood products. The best solution to prevent fraud is to minimise room for human judgment as much as possible by reducing the work to mechanical routine work. By simplifying and bringing transparency to the whole process in this way, the government can promote an inflow of capital from abroad and entries by foreign businesses.

Box 3.1: Regulations on the Export of Timber and Timber Products by the Government of the Lao People's Democratic Republic

The Government of the Lao People's Democratic Republic (PDR) has issued a number of regulations to restrict exports of wood and wood products with the aim of reducing illegal logging, promoting domestic wood processing, and facilitating industrial tree planting in the country.

In September 2008, the Prime Minister issued Order No. 17/PM on the enhancement of forest management, protection, and coordination in forest management and the wood business. This regulation emphasised that concerned authorities at all levels should manage and protect forests, as well as related businesses. Nevertheless, widespread illegal logging and wood exports persisted. Therefore, in 2011 the Prime Minister released Order No.10/PM banning the exploitation, buying, and selling of prohibited wood. Following these two orders, in September 2011, the Ministry of Industry and Commerce (MOIC) issued Notice No. 1904 on streamlining import and export procedures for wood and wood products. Earlier in the same month, the MOIC issued the similar Notice No. 1791 to facilitate industrial tree plantation by streamlining cumbersome import and export procedures for planted timber. Furthermore, in March 2014, the Prime Minister allowed the provinces and capital of Vientiane to approve the export of planted timber (Resolution No. 41/PM) to cut unnecessary export procedures

further. This enabled provincial industry and commerce divisions to process export applications based on the certification of plantations by the respective division. In May 2015, the Prime Minister's Office issued a notice to relevant ministries (No.790/PMO) to strictly prohibit exports of all kind of logs. Timber exploited from infrastructure projects, hydropower and mining projects, and other development projects must be sold to domestic wood processing factories to be produced for domestic use or export. With respect to wood from plantations, local processing is encouraged, but if this is not possible, then permit approval for exportation is needed. In October 2015, under Notice No. 2156 by the Prime Minister's Office, the government allowed half of all processed wood products to be exported. In May 2016, following the announcement of a new government and new Prime Minister, the government issued Order No. 15/PM to all ministries and provinces making the management and inspection of timber exploitation, timber movement, and timber business stricter, and strictly banning the export of timber from the Lao PDR's natural forests. Timber for export must be processed according to Decision No. 2005/MOIC. The order also bans illegal timber and forestry products from transiting through Lao PDR territory to a third country.

6.2. Use of Non-Wood Material

A survey should be carried out to collect basic information on plants suitable for industrial use as non-wood materials, make a list of materials producible in the Lao PDR, and specify producible materials of those on the list. For example, collaborative industry-government-academia research could be conducted, as well as a development programme for plants that grow in the Lao PDR and are usable as non-wood materials.

Preferential measures can be also introduced to increase the use of not only timber but also non-wood materials, such as bamboo, wisteria, and banana fibres. In addition to the production of bamboo products, such as disposable chopsticks, toothpicks, and skewers, the clarification of preferential measures for the use of non-wood materials and pulp to produce dishes, straws, and other items as alternatives to petroleum-derived disposable products (which have become a problem across the world) is expected to promote investment.

6.3. Technological Improvements Concerning Wood Processing

The Lao PDR is far behind prevailing global technology at all stages of raw wood logging, discharging, rough processing, drying, and processing into products. Those regarded as wood processing experts in the Lao PDR usually process wood using only their own techniques.

Even those trained by foreign companies that have entered the Lao PDR or through aid programmes often return to their own techniques after the period of training ends. This is because they lack basic knowledge with respect to the properties of wood, the purposes of the needed work, and the processes that should be undertaken. To address this situation, a bottom-up approach through educating shop-floor workers, rather than corporate executives and leaders of industry organisations, is necessary.

A model case to learn from is the Dissemination and Demonstration Project Relating to the Promotion of Exports from Lao PDR Utilizing Japanese Wood Processing Technology, a joint project between Takada Seizaisho, a limited liability company in Okawa City, Fukuoka Prefecture, and Legnatec limited liability company in Morodomi Town, Saga Prefecture, with the support of JICA. Under the project, Takada Seizousho will transfer the wood-processing technology that it has fostered over a long period of time, while Legnatec will offer its furniture-making technology. By combining their strengths, the two companies will work to develop human resources in the Lao PDR. The project targets the expansion of sales of 'made in the Lao PDR' wood products acceptable in the world market, including Japan, and is expected to serve as a trailblazer for other companies wishing to do business overseas in the future. It is important to create a foundation for wood processing through technological cooperation with various countries, so that 'made in the Lao PDR' products will be able to meet various needs.

6.4. Promotion of Exports of Processed Wood Products and Innovations

Since trends, designs, and functionality (among other factors) are affected by conditions in overseas countries, basic processing technologies must be improved when it comes to promoting export industries. A structure capable of coping with requested designs and specifications must therefore be established. To this end, technological cooperation with other countries is necessary (as mentioned above), as is overseas training to teach skills to people directly involved in wood processing.

6.5. Market Trends and the Introduction of Designs and Manufacturing Technologies Responsive to Them

Since market trends and designs are affected by changes in fashion in countries around the world, no country can deal with all potential changes. It is therefore important to improve basic technologies for the sake of dealing with ordered plans and designs. When basic technologies, such as proper means of drying and production methods that acknowledge the properties of wood take hold, processing capable of meeting any kind of order will be possible. To this end (as mentioned above), technological cooperation with other countries and overseas skills training for people directly involved in wood processing are necessary.

6.6. Stable Forest Management

The long-term management of sustainable forests will become possible through the establishment of a stable timber supply system or chain of custody.[1] To this end, the following steps are required: (i) a long-term national policy for forest management; (ii) systematic plans for forestation and logging; (iii) plans for periods of felling in forests subject to principal logging and thinning, areas of trimming, volumes of timber trimming, and trimming methods; (iv) plans for planting periods, planting areas, tree species for planting, and means of planting; (v) matters related to forest preservation; (vi) matters related to the establishment of work facilities, such as a network of pathways; and (vii) matters concerning the development and securement of human resources with regard to wood processing and issues related to equipment and technological improvements at factories and other facilities.

From a long-term perspective, the preparation of such plans enables forest preservation, sustainable timber exports, and the establishment of a stable income base in the agriculture and forestry sector.

[1] A chain of custody provides traceability certification for production, processing, and distribution processes. The two largest umbrella certification programmes are the Program for the Endorsement of Forest Certification, and the Forest Stewardship Council. This makes it possible to track products at all stages of the supply chain. Certification by certification bodies is an environmentally appropriate and socially beneficial product that supports forest management based on economically viable methods.

6.7. Thorough Crackdowns on Illegal Logging

Illegal logging and illegal exports drive down market prices of timber and upset the fair distribution of income to the state, managers, and workers. In mountainous areas, residents collect vegetables and small animals from the forest resources and supplement their livelihoods by consuming or selling them. In many cases, however, the rights to own and use forests are unclear. The destruction of forest environments by illegal logging without the permission of local villagers has occurred frequently in recent years, adversely affecting the life of local people.

According to a 2015 report by the World Wildlife Fund (Smirnov, 2015), the total value of 'made in the Lao PDR' wood products (tallied from reports from the countries into which they were brought) was several times higher than the value of timber exports, calculated according to data compiled by the Lao PDR customs department. The World Wildlife Fund report also pointed out that crackdowns on illegal logging by the Forest Management Bureau and other concerned Lao government agencies had little effect. Based on the scale of the illegal logging, it must have been conducted by big companies using a large amount of heavy equipment; however, only small-scale violations were exposed. The report added, 'Such large fleets of equipment are usually only assembled to convert forest lands for plantations, roads, transmission lines, reservoirs, mining, or geologic prospecting' (Smirnov, 2015: 1).

There is a clear correlation between deforestation and the drastic increase in Chinese and Vietnamese investments in the development of mines, agriculture, forestry, and hydraulic power generation in the Lao PDR, and the majority of land areas designated for such development projects are located in forest areas (Smirnov, 2015). While legal and properly managed projects cause no problem, the data testify to a large amount of timber exported illegally. Transparent and fair measures to promote the wood processing industry will help stabilise forest preservation and promotion in the Lao PDR in the future.

As shown in Box 3.1, the Lao PDR's current laws regarding forest preservation and wood distribution appear well arranged at a basic level. However, in reality, regulations, crackdowns, and applications of criminal punishment in accordance with the laws are only partly implemented, making it hard to say whether the laws are being strictly implemented in the wood processing sector. Due to the lack of equality in the application of these laws, it is necessary to consider formulating programmes to increase the effectiveness of the

application of the laws under relevant ministries such as the MOIC, MOAF, and Ministry of Finance.

7. References

7.1. Company E (Japanese Company Conducting a Technological Cooperation Project Jointly with a Lao Company)

Present Business Operations

The first project has been completed. As the smooth transfer of technology has become possible and a certain product policy goal is in sight, the company is moving ahead with the production of Lao-brand furniture, using timber from the Lao PDR. Designs by top Japanese furniture designers have been secured, enabling the company to complete the production of prototypes. Programmes for a future product line-up are underway.

The Advantages of the Lao People's Democratic Republic

Teakwood is abundant in the Lao PDR thanks to plantations, and the company is considering producing furniture using this wood as the main focus of its manufacturing operations. The stable procurement of resources is possible from a long-term perspective. Although the teakwood in the Lao PDR's neighbouring country of Myanmar is well-known, the company considers the Lao PDR better positioned because teakwood in Myanmar is mainly natural and thus tends to be extremely high in price as well as being unsustainable. Since many of the craftworkers handling wood in the Lao PDR are skilled workers, it seems likely that they will be able to learn the skills necessary to produce products acceptable in developed countries.

Present Bottlenecks

Although there are no problems with respect to the supply of materials at present, laws and regulations are often changed suddenly, raising serious concerns about long-term business operations. Due to large amounts of empty space created when packing shipments, the cost of transport is extremely high, and this significantly affects the prices of finished furniture. Another extremely worrisome problem is that many of the products produced under the existing laws and regulations do not match market needs.

Requests to the Government of the Lao People's Democratic Republic

As timber and timber products require extremely long-term planting plans and huge investments in equipment, business operations must take a long-term perspective. Thus, the government should minimise changes in laws and regulations from a similarly long-term perspective.

Policies and Improvements Required for Future Business Expansion

As in any other sector, legal compliance and fairness should be respected. Although the logging of natural trees and exports of logs are banned, it is not possible to take advantage of the origin of trees produced in the Lao PDR because natural trees and logs from the Lao PDR are available in countries such as Viet Nam. This hampers efforts to establish the 'made in the Lao PDR' brand and to reinforce competitiveness.

Measures Required for the Future Development of the Lao People's Democratic Republic

Cartels and corruption should be eliminated to create an environment in which any country and company can use high-quality timber from the Lao PDR. The Lao government's control of timber (e.g. logging permits, prices, and taxes) can create a significant sense of security to this end.

7.2. Company F (Japanese Company Operating a Wood Processing Plant in the Lao People's Democratic Republic)

Present Business Operations

The company has been in the business of purchasing logs, processing them into boards, drying them, and processing them into products in the Lao PDR for many years. Recently, it has been producing materials for wooden floors, mainly using teakwood, which it exports to Japan. It is facing extreme difficulty in continuing business because the supply of timber to China and Viet Nam has sent the prices of raw wood soaring while legal revisions have made it difficult to procure timber.

The Advantages of the Lao People's Democratic Republic

Local employees are skilful with their hands and there are no problems with the products they produce. While there are many kinds of rare hardwoods in the world, the use of Lao tree

species (if allowed) will make it possible to process local hardwoods into products with high added values.

Present Bottlenecks

Although teakwood is abundant thanks to planting, the scarcity of well-managed plantations makes it difficult to secure high-yield timber and raw wood with beautiful grains. Moreover, the cost of transport is high, and the acquisition of export and other permits takes more time and money than in other countries.

Requests to the Government of the Lao People's Democratic Republic

The fair enforcement of laws is necessary because companies that comply with timber-related laws and regulations are restricted in terms of competitiveness, compared with those that do not. When new regulations are introduced, advance notice is necessary.

Policies and Improvements Required for Future Business Expansion

The company's plant, which used to continue stable production in compliance with strengthened laws, is now facing extreme management difficulties. Although the legal revisions are considered highly effective from the viewpoint of resource protection, unless illegal exports (in the form of logs and exports of quince and red sandalwood, among other types) are strictly cracked down on, product prices will be directly affected.

Measures Required for the Future Development of the Lao People's Democratic Republic

The Lao PDR needs to unify procedures for price formation and the acquisition of timber, among other things. Although the Lao PDR also needs a market economy, trees are related to the natural environment and disaster prevention, and should thus be managed and cultivated through cooperation between people and the government. In Japan, the government is working out and promoting 30- to 50-year plans for the cultivation and production of forests, and has laws governing the use of forests as short-, medium-, and long-term income sources. The Government of the Lao PDR should develop and manage its forests by incorporating other countries' successful cases.

Chapter 4

Handicrafts and Artisan Crafts

1. Current State

1.1. Recognition of Current State

While the state of handicrafts and artisan crafts (hereafter referred to collectively as 'handicrafts') in the Lao PDR is not advanced in comparison with those in developed countries, the differences often lie in specifications and accuracy, and many of these can be settled through appropriate corrections and education. Handicrafts in the Lao PDR can be described as 'charming, graceful, tasteful, and attractive.' It is important to make use of these features in accordance with the nature and use of the products.

Materials produced in the Lao PDR, such as silk threads and timber, have world-class potential. However, the country's population is generally unaware of this fact and they are somewhat lacking in the skills necessary to process these materials into products. For example, they do not yet realise that improving certain skills (such as the use of spindle machines instead of manual work to process cocoons into silk threads or the adoption of the latest colour-fixing agent after dyeing) can raise the level of handicraft products to a global standard.

The Lao government does not currently take note of types of handicraft products in the country, and often focuses solely on products already widely circulated throughout the marketplace. In fact, the Lao Handicraft Association (LHA) only includes sections for fabric products, non-wood products, processed precious metal products, cultural products, recycled products (timber and buffalo horns), and earthenware. While the Lao government appears ready to upgrade handicrafts to a small industrial sector, it needs to recognise that 'craft' is different from 'industry.' Industry is the production of inexpensive and practical goods through mass production and other industrial methods, while craft produces tasteful, elaborate, artistic, traditional, and cultural goods at considerable cost and over a longer period of time. More attention should be paid to the essential differences between these two modes in terms of earning structures and sales targets.

1.2 Exports and Imports of Handicrafts

According to data for 2016, the Lao PDR exported $145,000 worth of art objects, of which antiques accounted for 33%, paintings 26%, sculptures 26%, and collectors' items 16%. Imports came to $136,000, of which paintings accounted for 86%, sculptures 13%, and collectors' items 1.4%.

1.3 Status of and Problems with the Five-Year Plan of the Ministry of Industry and Commerce

The MOIC presented the 'Nationwide Promotion of the Handicraft Industry and Development Project Plan (2016–2020)' based on the Prime Minister's Order No. 24 (7 May 2014), and the MOIC's 10-Year Development Strategy for the manufacturing and commerce industries, among others. The vision of the plan is to enhance the added value of products and seek the sustainable preservation of national cultures and customs by diversifying products and improving knowledge, ability, and technology for production in cooperation with handicraft experts

Although there is no problem with the vision, the government has not yet provided a clear definition of products' added values.

The goals of the plan are as follows:

(i) average annual growth of 15% for the production of handicraft products,

(ii) five pilot groups created for the production of handicraft products every year and the realisation of exports totalling $25 million,

(iii) an improved environment for investment in the handicraft sector to facilitate investment and management of plants, and

(iv) five capacity-building seminars for government officials in charge held every year.

The comments are as follows:

(i) Since handicraft products have largely been produced by farmers as sources of cash income during the agricultural off-season, this growth target is unattainable without an increase in the number of full-time producers. In terms of value, growth of 9% is necessary if the annual inflation rate of around 6% is taken into account.

(ii) The Lao PDR now needs to build a handicraft information platform that can enable access from abroad if it aims to target on exports.

(iii) It is unclear whether the Lao PDR is eager to promote handicrafts or convert the household production sector into a manufacturing industry. If the Lao PDR wants to improve the environment for investment in the handicraft industry then it should target microfinance; on the other hand, if the country focuses on the manufacturing industry, it must target the environment for bank loans.

(iv) Even if the government officials in charge attend capacity-building seminars, successful results often fail to be realised due to changes in assignment. Continuous policy action is necessary for producers who are actual beneficiaries.

The plan presents the following opportunities:

(i) government policy prioritising support for handicrafts to address the problem of poverty,

(ii) the presence of the LHA as a bridge between member companies and other organisations,

(iii) securement of materials to meet demand,

(iv) trust in talented craftworkers and craftwork inherited from their ancestors,

(v) room for raising added values due to the presence of various products across the country,

(vi) popularity both at home and abroad,

(vii) financial support from both domestic and foreign sources, and

(viii) products unique to the Lao PDR that are art objects unavailable in other countries and can compete with those of the ASEAN region and other nations.

The comments are as follows:

(i) This policy is related to ethnic collaboration and should consequently be given weight.

(ii) Member companies of the LHA include many large-capital firms, while the number of handicraft businesses as narrowly defined by this plan is small. Reforms related to the

status of the LHA and its activities such as the certification of Lao handicraft products are needed.

(iii) Detailed checking is first necessary to define what demand means. Even if production doubles from the current level, it is unlikely that it will become difficult to secure materials in light of the products manufactured at present.

(iv) In the case of Japan, the policy is guaranteed by the Human National Treasures and Professional Engineer Certification systems, which can be connected to branding and differentiation attempts.

(v) One subtle issue, but an important one for raising the added value of the Lao PDR brand, is whether the policy is targeting a combination of products or an increase in the added value of each product. Although various handicraft products are available across the country, the MOIC has failed to collect effective basic data on specialties and products in various parts of the country.

(vi) Added values of products and their sales will not increase unless certain distinctions are made, such as whether handicraft products are popular with some people with refined taste, popular as products themselves, or popular as a national product.

(vii) Whether development fails due to the absence of money or whether money does not increase due to the absence of development might be seen as a 'chicken-and-egg' problem. Investment environments in the Lao PDR cannot be established unless the roles of and legislation regarding the government and the LHA are clarified.

(viii) Differentiation attempts are important to branding, and it is important to clarify differentiated parts of Lao handicrafts.

Some challenges of the policy are outlined below:

(i) Use of skills and technologies is limited.

(ii) Plants and craft centres are scattered, making transport of materials and products difficult.

(iii) Producers' trust in domestic and overseas markets is limited.

(iv) Supply cannot meet large-lot orders, and productivity is low.

(v) Producers are small in scale and engage in domestic production.

(vi) Technology levels are low, and the volume of production is limited.

(vii) Market competitiveness is weak due to low quality and high production costs.

(viii) Designs fail to meet overseas demand and are thoroughly limited to domestic demand.

(ix) Access to capital is limited and interest rates are as high as 10–15% per year.

(x) Incentive funds are small in comparison with those in other sectors.

(xi) Producers' knowledge of, competency with, and access to electronic information are limited.

The comments are as follows:

(i) Handicraft products are the result of technologies fostered and accumulated over time, and there is a concern that they will become mere industrial products if cutting-edge technologies are introduced.

(ii) The problem of size and volume relative to the level of handicraft products can be settled in the Lao PDR by building a distribution mechanism.

(iii) To create trust, it is necessary to have branding, product certification, set specifications, and insurance, among other things, which are established by a nation. Trust in markets can be built through continuous efforts.

(iv) There is a concern that handicraft will go beyond its framework and become an industry if it pursues large-lot orders and improved productivity. Nevertheless, since the problem of improving productivity can often be settled by the introduction of technology and know-how, it is necessary to institute technological cooperation and other programmes from the public and private sectors, both at home and abroad.

(v) Small-scale domestic production is not seen as a problem as far as handicraft is concerned.

(vi) Basic levels of technology are ensured, and products of a certain quality are supplied to the domestic market at low prices. However, when it comes to exports, competitiveness is low, likely due to the lack of basic merchandise plans such as uneven specifications for each product and safety problems.

(vii) Even if Lao PDR producers enter into designs demanded by foreign consumers, it is difficult to compete with Chinese and other industrial products. To produce products that both retain a Lao style and are accepted in developed countries, merchandise plans are important, and designers capable of meeting demand among target customers are needed.

(viii) Current interest rates in the Lao PDR are not very high; real interest rates are 5–10% with an inflation rate of around 5%, compared to 20% charged by the Grameen Bank, and 15–20% for card and other loans in Japan. Since bank loans have become high hurdles for handicraft producers, preferential policy measures for small and medium-size enterprises by banks and microfinance providers are needed.

(ix) Incentive funds lack sustainability because of capital shortfalls. It may be necessary to transfer into the funds part of the commissions for certification under the One District One Product (ODOP) campaign, as well as commissions under the certification system for traditional crafts.

(x) Access to the internet is widely available, except for people who reside in mountainous areas. However, the question is whether citizens want access to electronic information. Motivated business operators are selling their products via Facebook and other platforms. The problem of access to electronic information is expected to be settled by the development of a user interface, usable even by people without knowledge of electronic information, as part of an ODOP platform established by the MOIC. This platform would cover such topics as information on ODOP products, electronic account settlements, and individual delivery services, including overseas.

Ten objectives of this plan are as follows: (i) the creation of handicraft pilot groups, (ii) professional training for handicrafts, (iii) the holding of exhibitions, (iv) supply of funds, (v) the reinforcement of expertise (skills), (vi) the protection of handicrafts, (vii) the creation and supply of a database, (viii) promotion and guidance for the use of information technology (IT), (ix) the establishment of a handicraft research centre, and (x) integration through the ASEAN Economic Community.

While the effectiveness of projects carried out by pilot groups to improve product technology and boost sales needs to be verified, experience suggests that the promotion of overall capacity building for producers, government officials, and the LHA is effective to avoid the

concentration of pilot-group projects in major companies. To facilitate the establishment of a handicraft research centre, it is desirable to (i) collect basic data on handicrafts, including traditional crafts; (ii) create a database; (iii) provide professional training and management guidance; (iv) introduce technology; (v) establish specifications and a certification system; and (vi) design and implement highly effective systems. The unification of cooperation among the MOIC, MOAF, and Ministry of Post and Telecommunications (MOPT), among others, as well as with overseas organisations will help streamline projects and support the sharing of information.

1.4 Cooperation with Foreign Organisations

A programme conducted by JETRO for handicrafts in the Lao PDR provides a model of an effective approach by overseas organisations. The specifics of the programme are outlined below (JETRO, 2017).

At the request of the Lao government, JETRO has been jointly conducting support activities with the LHA since 2001, with the aim of improving the quality and expanding exports of Lao handicrafts in accordance with the Lao PDR's export strategy. The 'Gift Project' begun by JETRO in 2015 is part of this effort. This project has been helping local handicraft makers learn how to develop their products into specialty gift items that can draw the interest of foreign tourists visiting the Lao PDR. While the quality of Lao handicrafts is held in high regard, in general the products have not been created from the perspective of selling them as gift items until now. Instead, the same products intended to meet the needs of local residents are also marketed to inbound tourists. JETRO thus began this project to help develop daily commodities into lucrative items by changing this outlook.

Figure 4.1: Pictures of a Japan External Trade Organization Activity

Sample gift product

Expert assisting at a seminar

Source: Japan External Trade Organization (2017), 'Laos Traditional Handicraft Assistance Project: The Gift Project by JETRO'.
https://www.jetro.go.jp/en/jetro/topics/2017/1701_topics1.html (accessed 13 April 2019).

In August 2015, JETRO dispatched an expert to the Lao PDR and held a seminar titled 'New Lao Gift, New Lao Handicraft' to provide information regarding the custom of souvenir-giving, packaging, and relevant trends. In addition, open consulting services were provided to Lao companies, and a lively discussion was held throughout the venue as to what can be improved upon. Some ideas regarding the creation of items never before seen in the Lao PDR were brought up, including new ideas for materials and design. The Laos Handicraft Festival in Vientiane (October–November 2015) held the first gift contest in collaboration with the LHA, with the aim of further improving the quality of Lao products as gift items.

2. The Lao People's Democratic Republic's Advantages in Handicrafts

Handwoven silk products and wooden artisan crafts are readily available at relatively low prices in the Lao PDR. While the introduction of technologies has made little headway, sustainable products dyed with natural and other pigments, which are popular in the US and the EU, remain abundant in the Lao PDR as do materials and processing work. Such products are extremely effective for branding.

3. Bottlenecks for the Growth of Handicrafts

The absence of unified specifications has made it difficult to distribute Lao handicrafts as general merchandise. As regulations concerning safety have yet to be established, products exported to other countries are each subject to inspection. Means of distribution for business-to-customer transactions are limited to postal services and transporters such as DHL, making the cost of transport extremely high and hampering sales for e-commerce sites and other routes.

4. Discussion of the Current State of Affairs

It seems that the Lao government has yet to formulate an overarching policy of how to define and develop handicraft products. Depending on the approach taken—such as whether to promote the development of handicrafts into an industry, raise the fundamental capability of producers as a means of fighting poverty, or preserve them as the country's cultural heritage—solutions vary and require the establishment of a working group for each approach. Industrial promotion of handicrafts in the Lao PDR is aimed at developing the industry of 'craftwork' into a niche industry with high added values. The selection of means to improve added values at each stage of production, production technology, sales targets, sales methods, and publicity methods is a policy priority.

4.1. Policy Measures Adapted to Reality, Especially Industrial Promotion with an Eye on Exports

As there seems to be no shared recognition in handicraft promotion policies of such basic elements as time span (When), places (Where), agents and subjects (Who), subject issues (What), reasons (Why), and means and measures (How) (otherwise known as the 5Ws and 1H), attention should be paid to the following improvements. First, the government's policy (the 5Ws and 1H) should be clarified. In particular, this policy calls for the protection of handicraft products as culture, the vitalisation of handicraft products as means to reduce poverty, and the development of handicraft products into a major industry. Further, necessary measures and financial issues can be clarified by establishing the definition of

handicraft products. Measures for each product can be clarified and the access of markets and buyers to products can be improved by providing quality data on handicraft products.

4.2. New Trends in Product Distribution

Currently, many product distribution transactions (business-to-business and business-to-customer) take place online. Utilising existing distribution networks and payment means, basic platforms are available that enable 'anyone' to do business easily with customers across the world 'anywhere.' Given the niche nature of handicraft products in the Lao PDR, the use of internet-based transactions must be activated. Detailed data on the current situation of e-commerce are provided in Tables 4.1 and 4.2 and Figures 4.2 and 4.3.

Table 4.1: Top 10 Economies by Business-to-Business and Business-to-Customer E-Commerce (2015)

Economy	Total		B-to-B		B-to-C
	$ billion	Share of GDP	$ billion	Share in total e-commerce	$ billion
United States	7,055	39%	6,443	91%	612
Japan	2,495	60%	2,382	96%	114
China	1,991	18%	1,374	69%	617
Republic of Korea	1,161	84%	1,113	96%	48
Germany (2014)	1,037	27%	944	91%	93
United Kingdom	845	30%	645	76%	200
France (2014)	661	23%	588	89%	73
Canada (2014)	470	26%	422	90%	48
Spain	242	20%	217	90%	25
Australia	216	16%	188	87%	28
Total for top 10	16174	34%	14,317	89%	1,857
World	**25,293**	**100%**	**22,389**	**100%**	**2,904**

B-to-B = business-to-business, B-to-C = business-to-customer, GDP = gross domestic product.
Source: United Nations Conference on Trade and Development (2017), *Information Economy Report 2017: Digitalization, Trade and Development. Geneva: United Nations Conference on Trade and Development*. https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=1872 (accessed 13 April 2019).

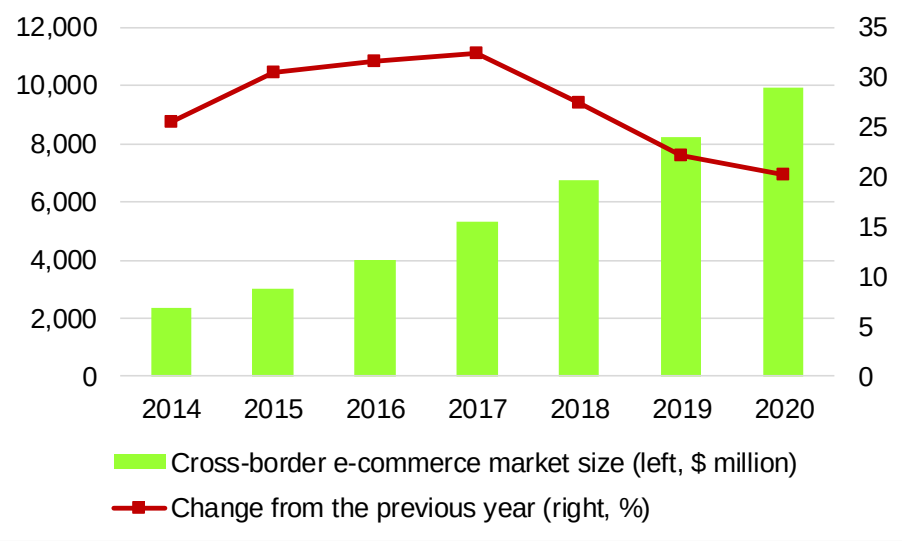
Table 4.2: Estimates of Cross-Border Online Business-to-Customer Purchases, Top 10 Importers (2015)

Economy	Cross-border online purchase (B-to-C)			Total B-to-C ($ billion)	Cross-border online shoppers
	Total value ($ billion)	Share of B-to-C in merchandise imports, by value	Share of total B-to-C		Number of shoppers (million)
United States	40	1.7%	7%	612	34
China	39	2.3%	6%	617	70
Germany	9	0.8%	10%	93	12
Japan	2	0.3%	2%	114	9
United Kingdom	12	1.9%	7%	200	14
France	4	0.7%	6%	73	12
Netherlands	0.4	0.1%	2%	19	4
Republic of Korea	3	0.6%	5%	48	10
Canada	7	1.7%	16%	48	11
Italy	3	0.8%	19%	17	6
Total for top 10	120	1.4%	7%	1,839	181
World	**189**	**1.1%**	**7%**	**2,904**	**380**

B-to-C = business-to-customer.

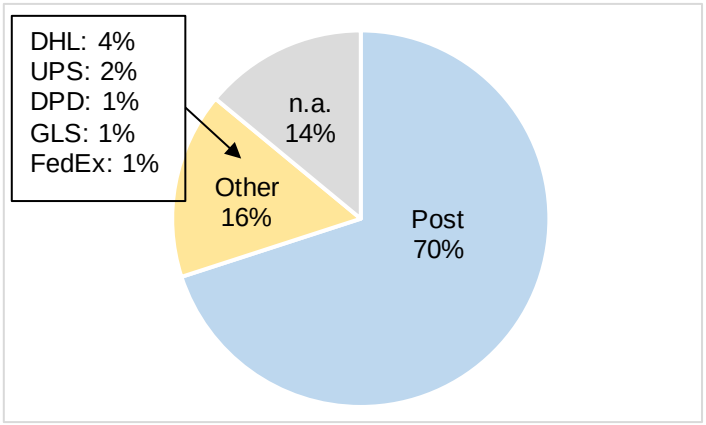
Source: United Nations Conference on Trade and Development (2017), *Information Economy Report 2017: Digitalization, Trade and Development. Geneva: United Nations Conference on Trade and Development*. https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=1872 (accessed 13 April 2019).

Figure 4.2: Global Cross-Border E-Commerce Market Size and Increase Rate

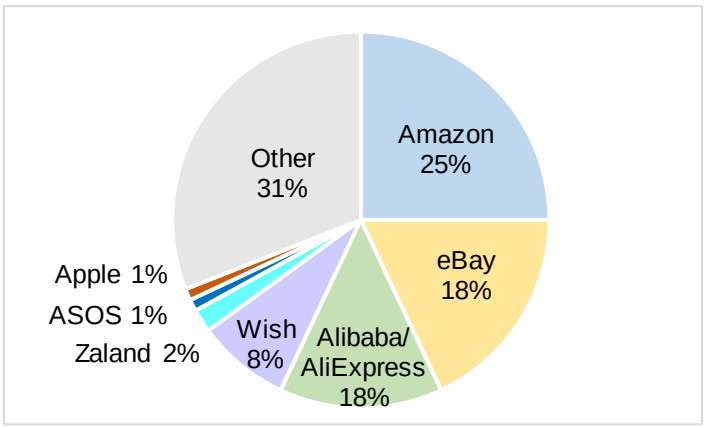


Source: Ministry of Economy, Trade and Industry, Japan (2017), 'FY2017 E-Commerce Market Size Survey.' https://www.meti.go.jp/english/press/2018/0425_002.html (accessed 13 April 2019).

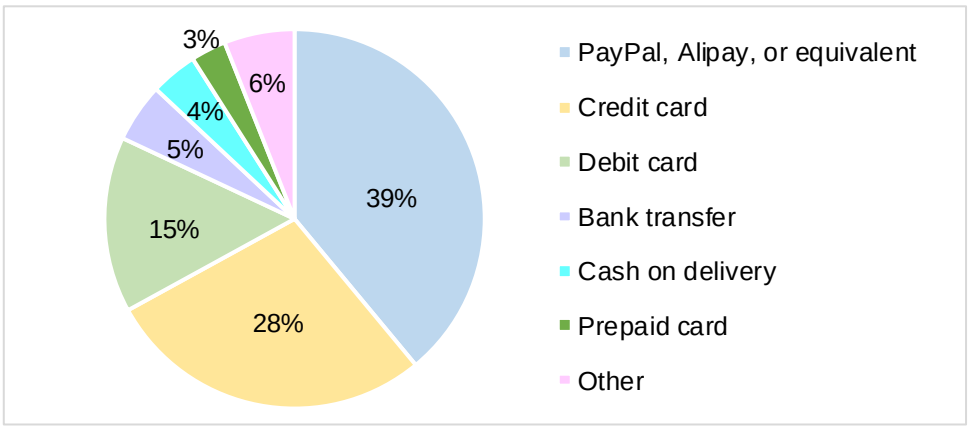
Figure 4.3: Main Use Components in Cross-Border E-Commerce Delivery Provider



E-Retailer



Preferred Payment Option



GLS = General Logistics Service, n.a. = not applicable, UPS = United Parcel Service.
Source: International Post Corporation (2017), 'IPC Cross-Border E-Commerce Shopper Survey 2017'.
https://www.ipc.be/sector-data/e-commerce/cross-border-e-commerce-shopper-survey (accessed 13 April 2019).

Electronic transactions via e-commerce sites and others, led by Amazon and Alibaba, are expected to keep growing, as seen in Figure 4.3. E-commerce creates an environment in which anyone in the world can purchase any merchandise, no matter where he or she may be. Necessity, safety, prices, scarcity, attractiveness, and stories are important for purchases as incentives. In the case of handicraft products, the attractiveness and scarcity of products create high added values, and purchases are prompted if their stories and backgrounds are played out to facilitate understanding. The more that products are oriented toward personal enjoyment, the less prices serve as a criterion for judgment for purchasing. The provision of basic information, the stories of the products, distribution means, and diversified payment means are minimum required factors for the development of e-commerce sites.

4.3. Relationship with the 'One District One Product' Campaign for Handicrafts and Artisan Crafts

An analysis of the current state, advantages, and bottlenecks described in this section on handicrafts can also be applied to ODOP commodities. It is strongly recommended that e-commerce be used fully as a tool to pass on vivid, memorable messages, while providing background information about indigenous craftworkers, families, and villages, as well as the quality of products, to consumers. Such products are likely to attract the attention of consumers who desire to contribute to reduce poverty in remote rural areas. To this end, policy measures should be steadily formulated to reduce shipping and transportation costs from rural, remote areas to Vientiane in response to the rapid progress of the digital economy in the Lao PDR.

Table 4.3: 'One District One Product' Certified Products

Target 'One District One Product' products	
Processed food	**Handicrafts**
(i) Dried beef or pork, and meat dried with herbs	(i) Carved flower pots or vases, and wooden carvings
(ii) Herbal tea	(ii) Pottery
(iii) Black ginger wine and citrus wine	(iii) Banana fibre products (e.g. napkins, cloths, and blankets)
(iv) Organic tea	(iv) Traditional Lao clothing made of Lao silk
(v) Rice products	(v) Rattan products (e.g. chairs, tables, and baskets)
(vi) Dried fruit	(vi) Accessories (e.g. scarves, earrings, bracelets, and bags)
(vii) Fruit juice	(vii) Carved pictures of places of attraction in the Lao People's Democratic Republic
(viii) Alcohol (made from fruit or rice)	(viii) Carved gold and silver bowls

Source: Authors.

5. Policy Recommendations

5.1. Creation of an E-Commerce Platform Designed for Exports

If weight is placed on exports, it is important to expose Lao products to as many people in the world as possible (see section 4.4.3). The development of e-commerce sites, which do not require much investment, is seen as the most important approach. Minimum necessary steps to establish e-commerce sites are the facilitation of bank transfers, credit card-based payments, multiple payments such as identification data payments via Amazon Pay and PayPal, and postal, door-to-door, and other delivery services. These platforms are expected to become a highly effective tool for delivery services and must be completed as early as possible. Express mail service and other overseas delivery services by the Lao Post are very user-unfriendly due to complicated payment systems and procedures. Thus, it is important for the MOIC and MOPT jointly to work out preferential measures for e-commerce sites and simplify the procedures.

There are five systems that can used for e-commerce platforms: (i) application service provider–e-commerce, (ii) open source, (iii) e-commerce package, (iv) cloud, and (v) full scratch. Annual turnover rises in value from (i) to (v); the customisation of services also improves, and advances in customisation are accompanied by rises in initial payments and management expenses. The application service provider–e-commerce system (i) is the best for the Lao PDR at present, and platforms should be upgraded as orders increase.

When purchases by domestic consumers and tourists are taken into account, the creation of omnichannel sites can help attract more repeat customers by improving customer satisfaction, and can boost sales on a long-term basis.

5.2. Technological Improvement for Handicrafts

Given the current market scale, it is important to pursue products that satisfy a variety of tastes and specialties. It is also important to introduce needed technologies, such as functions and designs, in cooperation with the overseas small and midsize companies handling them.

5.3. Matching with Market Needs

As market needs reflect the interests and tastes of customers or end buyers, it is impossible to meet all of them. Therefore, it is important to select target markets and countries, extract elements from Lao handicrafts capable of satisfying these, and focus on them to capture demand there. To sort out customers and find targets, it is necessary to accumulate sales data from e-commerce sites. Such data make it possible to collect and analyse a large volume of information and approach appropriate markets. In addition, the acquisition of purchase data from e-commerce sites for handicrafts in other countries makes it possible to discover target markets and needs by analysing purchase trends.

It is also important to collect data from physical stores, as this practice can provide useful information directly from customers, such as what products they want and defects of existing products. Duty-free shops directly operated by the government and shops of handicraft products should be opened at the Wattay International Airport and other locations where there is heavy traffic from abroad. Nationwide publicity can be implemented in collaboration with e-commerce sites by not only selling ODOP products but also selling and exhibiting products in sectors chosen by the government for promotion. Matching between handicrafts and tourism improves the accuracy of information on targets through mutual use of their information, and participating in tourism fairs and the like around the world makes it possible to analyse needs in various areas and disseminate information.

5.4. Preservation and Industrialisation of Traditional Crafts and Culture

While it is important to conduct market research and determine what kinds of products are in demand, it is also necessary to match them with market trends in terms of using the skills and designs currently owned by the Lao PDR. If the products are sensitive to market trends,

they will be subjected to price competition and a certain amount of them will need to be machine-produced. Such products will then become an industry rather than handicraft. The market demands products that convey a sense of the Lao PDR, which only handicrafts and art works can do. Furthermore, for domestic industrial protection, events such as 'Miss Handicraft' should be held to expose the products to as many people as possible, in part to raise interest among young people with the potential to engage in handicraft works.

5.5. Crafting Techniques and the Collection of Information Concerning Product Information

Customers can now perform an internet search to purchase needed products and obtain basic product and crafting technique information (although the problem of trustworthiness remains). Therefore, it is necessary to increase sales through the dissemination of production information led by the government and industry organisations, utilise ICT technology, and develop buying platforms. Crafting techniques should be documented in video-based archives to preserve traditional crafts and cultures, and information should be disseminated via video streaming sites to arouse interest in products and stimulate purchases.

5.6. Creation of a System to Deal with Domestic Sales, Exports, Projected Demand for Tourism, and Product Requests

As mentioned with respect to the MOIC's programmes, a certification system and database should be created by a handicraft research centre and other entities in cooperation with existing organisations. They should also ensure certain specifications (e.g. display, size, and quality of material) and certain safety steps (e.g. inspections into food hygiene and the safety of chemical agents, and the display of the results).

In addition, a government-led platform should be established to introduce products, serve as an archive of product information and stories, and present merchandise stories of their processing from raw materials into finished products, in order to educate observers that these are regional products of the Lao PDR.

6. References

6.1. Company G (Japanese Company Planning to Do Business in the Lao People's Democratic Republic; Information Technology Company Developing E-commerce Sites)

Present Business Operations

The company creates purchasing sites. Although based in Japan, it plans to establish a data processing centre in the Lao PDR to take advantage of inexpensive electric power.

The Advantages of the Lao People's Democratic Republic

Cost of labour and infrastructure expenses are low. There is ample room for introducing new technologies because unnecessary technologies have not been brought into the country. Since IT-related education will be mainly conducted as on-the-job-training, only basic programming knowledge is required.

Present Bottlenecks

The government's ICT policy is unclear. Handicraft and art products are not suitable for mass production as many of them are not used in day-to-day life. Although they must be converted into products with high added values, the technologies do accomplish this have not yet reached the necessary level. In addition, in the absence of basic understanding of market research, it seems important to deepen understanding of the market.

Requests to the Government of the Lao People's Democratic Republic

The IT industry requires the introduction of certain hardware and the development of software to operate it. As hardware and software are only a 'pair of wheels' for the industry, the government should provide guidelines and policy as to how to promote and protect the industry. Japan has realised handicraft and art products with high added values and high prices because the government and industry groups have established systems to certify products and producers, and ensure a certain level of quality. The Lao PDR has no such systems reaching that level. ODOP and other campaigns merely prove that products are made in the Lao PDR, and do not guarantee safety and stability.

Policies and Improvements Required for Future Business Expansion

As the domestic distribution of handicrafts is already saturated, future growth may depend

entirely on an increase in touristm. It is also important to consider exporting handicrafts. To this end, the establishment of certain specifications and levels of safety, smooth distribution channels, and archives and stories of product information are necessary.

Measures Required for the Future Development of the Lao People's Democratic Republic

To realise the objectives mentioned above, it is necessary to establish certain specifications (e.g. display, size, and quality of material), safety regulations (e.g. inspections into food hygiene and safety of chemical agents, and display of results), smooth distribution channels (e.g. cooperation with international postal services capable of dealing with purchases through Amazon), and archives and stories of product information. Since the number of products in the Lao PDR is not large, it is necessary to create a government-led platform for the introduction of products, instead of disorganised promotion. To open its door wider, the platform should accept participation free of charge, and can receive fees when deals are done. Product stories, which should be understandable to anyone on the internet, must emphasise 'made in the Lao PDR' products, as well as the process of production from raw materials to finished products.

With respect to handicrafts, which belong to the category of a hobby, the market (which is the world on the internet) is expected to grow if all forms of access are combined, since there are people with refined taste in every country. If appropriate policy measures are undertaken by conducting research on the market concerned, it will be possible to establish a long-term, stable market.

Chapter 5

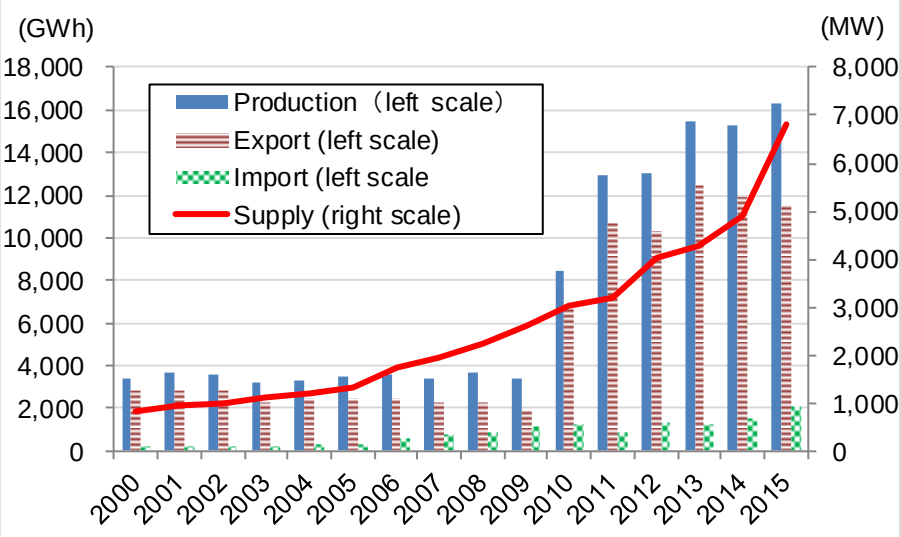
Information Technology in the Heavy Use of Cheap Electricity

1. Current State

1.1. Use of Electricity in the Lao People's Democratic Republic

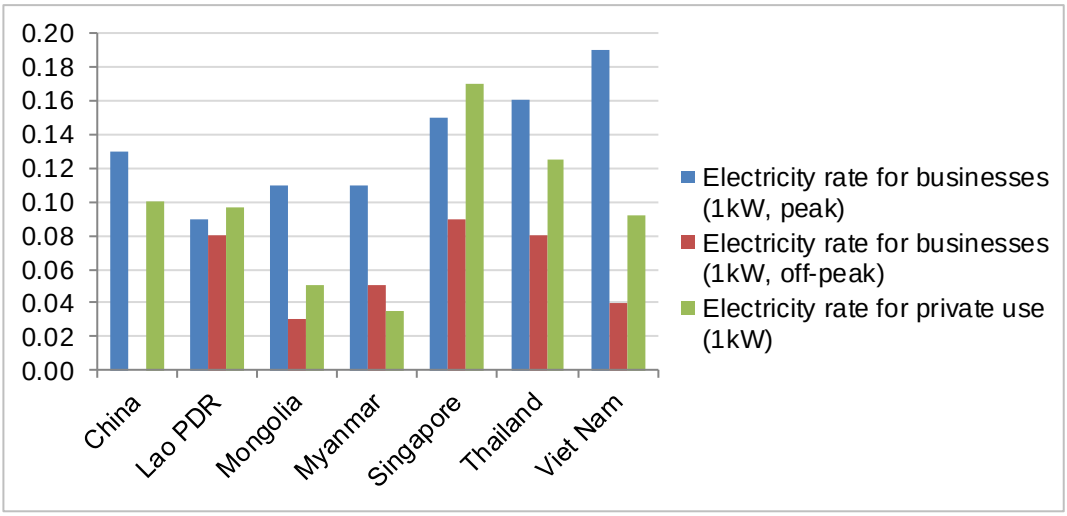
Currently, in the Lao PDR, electricity is generated in abundance, mainly by hydroelectric power, and the country exports electricity to Thailand in particular. Therefore, in the Lao PDR, the electricity rate is relatively low compared with neighbouring ASEAN countries.

Figure 5.1: Electricity Production, Import/Export Volumes, and Supply in the Lao People's Democratic Republic



GWh = gigawatt-hour, MW = megawatt.
Source: Ministry of Energy and Mining, Lao People's Democratic Republic (2018), *Lao PDR Energy Statistics*. Jakarta: Economic Research Institute for ASEAN and East Asia (ERIA). http://www.eria.org/publications/lao-pdr-energy-statistics-2018/ (accessed 13 April 2019).

Figure 5.2: Electricity Rates in Southeast Asian Countries, 2016($)



kW = kilowatt, Lao PDR = Lao People's Democratic Republic.
Source: Japan External Trade Organization (2018), 'The FY2017 Comparative Survey of Investment-Related Costs in Asia and Oceania' (in Japanese).
https://www.jetro.go.jp/world/reports/2018/01/d78a35442e4ce3c0.html (accessed 13 April 2019).

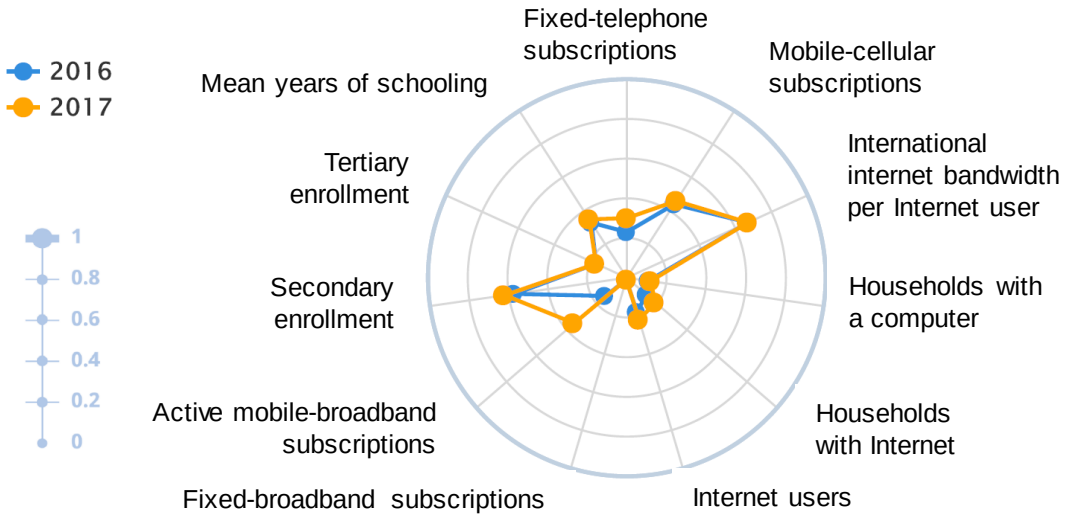
Regarding the export of electricity, the Lao PDR is currently prioritising supply to the Electricity Generating Authority of Thailand (EGAT). Even though domestic electricity demand has increased, exports are given precedence, and as a result, the Lao PDR imports electricity from the EGAT to make up for the ensuing shortage at home. Electricity with a voltage of 115 kilovolts is exported to the EGAT at a price of $0.0368/kilowatt-hour (kWh) during off-peak times (from 10:00 p.m. to 9:00 a.m. on weekdays and all day long on Saturdays, Sundays, and Thai public holidays hours) and $0.0491/kWh during peak times (9:00 a.m. to 10:00 p.m. on weekdays). Meanwhile, the import price is $0.0411/kWh during off-peak times and $0.0533/kWh during peak times (Lao Statistics Bureau, 2017). Thus, the Lao PDR is currently recording an import surplus in electricity trade, resulting in a deficit of around $100 million.

1.2. Information and Communications Technology Industry in the Lao People's Democratic Republic

The 2017 ICT Development Index of the International Telecommunication Union ranked the Lao PDR 139th in terms of ICT, meaning that the Lao PDR is less developed in this respect than its neighbouring countries, including Singapore (ranked 18th), Malaysia (63rd), Thailand (78th), Viet Nam (108th), Cambodia (128th), and Myanmar (135th). As for individual ICT-

related items in the Lao PDR in 2017, for every 100 inhabitants there were 17.72 fixed-telephone subscribers, 55.39 mobile-cellular subscribers, 21.9 internet users, 0.34 fixed-broadband subscribers, and 34.66 active mobile-broadband subscribers; moreover, 12.3% of households had computers and 18.7% of households had internet access (Figure 5.3).

Figure 5.3: The Lao People's Democratic Republic Various Statistics Profile



Source: International Telecommunication Union (2017), '2017 Laos Country Profile', ICT Development Index. http://www.itu.int/net4/itu-d/idi/2017/index.html#idi2017economycard-tab&LAO (accessed 13 April 2019).

1.3. Number of Business Operators and the Employment Situation in the Information and Communications Technology Industry

As is the case in other developing countries, many ICT-related government projects in the Lao PDR currently depend on grant aid and soft loans from international organisations and foreign countries. Therefore, these projects have been carried out by companies from aid donor countries. In addition, since ICT companies in the Lao PDR have no experience in developing large-scale ICT systems and the skill level of the engineers is not high, they have been unable to win orders for the development of such systems; instead, orders are snatched away by companies from neighbouring countries, such as Thailand and Viet Nam.

JICA and the Lao ICT Commerce Association jointly conducted IT service market surveys between 2009 and 2012 (Lao ICT Commerce Association, 2013). In the Lao PDR, there are

only around 150 IT service companies, most of which are small with a workforce of 20 or fewer employees. Most IT service companies simultaneously operate as personal computer and telephone shops, or as internet cafes. Only around 30% provide IT services other than hardware sales. Furthermore, human resource development in the Lao PDR is still lagging. In recent years, an increasing number of young people have grown interested in becoming IT engineers in the Lao PDR as a result of the development of financial services and other fields requiring IT. However, only around 1,000 students graduate from national universities, colleges, and vocational schools annually, and of these, only around 10% become IT engineers. Hence, the supply of human resources is limited.

1.4 Situation of the Internet in the Lao People's Democratic Republic

There are around 5 million mobile phone subscribers in the Lao PDR (79.5% of the total population). Third-generation (3G) services became available in 2008, followed by Long-Term Evolution (LTE)/fourth-generation (4G) services in 2011, respectively. As price competition among telephone service providers has intensified, the internet use fee has been falling year after year. For example, the fee for asymmetric digital subscriber line services with an access speed of 512 kilobytes per second fell from $80 per month in 2008, to a quarter of that level ($18/month) in 2018.

As a result of the development of an optical fibre network, a fixed-line internet service with an access speed of 1 megabyte per second was available at a price of $50 per month in the capital city of Vientiane as of 2018, while mobile phone internet access is available at $1.80 per gigabyte. In addition, access improvement due to the diffusion of Wi-Fi connections at cafes, restaurants, and other locations has led to the spread of smartphones and tablet computers at an explosive pace, mainly among younger people in Vientiane. E-commerce trade is also starting to increase gradually, as banks such as Banque Pour Le Commerce Exterieur Lao Public are introducing e-commerce and banking settlement applications for practical use.

2. Information and Communications Technology Policy in the Lao People's Democratic Republic

2.1 Orientation of the Five-Year National Socio-Economic Development Plan and its Assessment

Under its Five-Year National Socio-Economic Development Plan, by 2020 the Lao PDR aims to (i) promote the development of basic communication infrastructure; (ii) promote e-commerce by providing high-speed, high-quality services; and (iii) enact a media protection law.

More specifically, it aims to (i) establish automatic post boxes in post offices in all districts and provinces by 2020, (ii) construct an internet backup centre in the northern and central regions by 2018, (iii) establish a national data centre as a place for consolidated electronic data, (iv) create an intranet and long-distance meeting system to link 50% of government offices, (v) electronically implement 50% of administrative work at government offices, (vi) establish ICT learning centres, and (vii) increase the gross domestic product growth contribution of the post and telecommunications sector to 8%.

While these targets are considered effective, it is not immediately clear what objective they are intended to achieve. In many cases, ICT development can proceed in an uncoordinated way unless the objective of the targets is clear. Therefore, it is necessary to set a unified objective and clearly determine the direction of development. For example, the Lao PDR should aim for full electronification of administrative work to reduce paperwork errors, prevent billing for unnecessary expenses, and lower personnel cost. If administrative work related to automobiles and land can be made electronic by 2020, 50% of all administrative work at government offices will be carried out electronically.

Further, the Lao PDR should reduce expenses related to meetings at government offices as well as travel expenses related to the meetings of public servants. In addition, to support emergency medical care in provincial regions, the Lao PDR should improve the communication environment by developing intra-nets at government organisations, and achieve time and cost savings by taking advantage of network-based remote meetings and diagnosis.

2.2. Information and Communications Technology-Related Policies and Laws in the Lao People's Democratic Republic

Among the Lao PDRs' ICT-related policies is the National Information and Communication Technology Policy, which was approved as a prime ministerial order in 2009 (Sisombounh, 2012). This policy set the direction of ICT use in the Lao PDR. The objectives of this policy include the provision of ICT access to the Lao people, creation of an environment to promote investment in IT-related companies, establishment of a mechanism to protect information security, and dissemination of Lao-language content.

The revised Law on Telecommunications came into force in January 2012, and the Electronic Transactions Law, which prescribes the certificate authority that is indispensable to electronic signatures, came into force in December 2012 (Lao ICT Commerce Association, 2013). However, the Lao PDR still lacks a systematic national ICT strategy, master plan, or industrial promotion policy. This is presumably because, compared with other countries, the Lao PDR has very few senior government officials in decision-making positions who (i) correctly understand the fact that ICT is part of the industrial infrastructure, and will develop in the future in close collaboration with the global economy and all industries; and (ii) can formulate policies based on this understanding.

The realignment of government organisations approved at the first session of the 7th National Assembly in 2011 gave the MOPT and the Ministry of Science and Technology (MOST) jurisdiction over ICT. The MOPT absorbed the e-government project, the Lao National Internet Center, the Lao Satellite Project, and other matters that had been under the jurisdiction of the National Authority of Science and Technology (which was disbanded through the realignment). As a result, the MOPT has jurisdiction over the communications-related portion of ICT, while the MOST has jurisdiction over the technology-related portion. As the two ministries formulate policies and strategies individually, there is no clear unity in the Lao PDR's ICT policy.

3. Status of Cooperation and Activities by Donors, Among Others

In the Lao PDR, the maternal mortality rate is high. In particular, it is a serious challenge to manage the health of expectant and nursing mothers and unborn children in mountainous

and other provincial regions where medical care is not available, mainly during the perinatal period (from the 22th week of pregnancy to the 7th day after birth). Therefore, under the ASEAN Smart Network Initiative of Japan's Ministry of Internal Affairs and Communication, from the viewpoint of medical care ICT, a remote medicine demonstration experiment was implemented to enable expert doctors to conduct examinations based on data on foetal heart rates and other items concerning expectant and nursing mothers sent from regional hospitals to the central hospital. Through a web video conferencing system, the doctors were able to identify the health conditions of the expectant and nursing mothers and unborn children, and provide health guidance, with the aim of lowering maternal and infant mortality rates.

JICA also implemented 'Human Resource Development in IT Service Industry at National University of Laos' as a technical cooperation project in 2008–2013. This was spurred by the concern that, as the Lao PDR was lagging in the introduction of IT and the development of this technology field, the gap between the Lao PDR and other countries in terms of economic development promotion taking advantage of IT would grow further. In March 2001, at the Seventh Party Meeting, it was stated that IT education was important and the Lao PDR would seek to invigorate the economy by making use of IT. In response to the statement concerning the importance of education in the IT field and the intention to invigorate the national economy by introducing IT in all fields (including not only communication but also tourism, transportation, health, and the environment), a seminar on policy for implementing industrialisation and modernisation in the Lao PDR was held for directors and other officials in high positions at all ministries and agencies in January 2003.

The Lao PDR's e-government project was jointly developed in 2006 by Alcatel Shanghai Bell of China and the Lao PDR's National Authority of Science and Technology with loans provided by China (Luanglath, 2010). This project established a nationwide optical fibre network and a Worldwide Interoperability for Microwave Access network in Vientiane, and provided hardware and networking equipment to individual government organisations. It also developed a national portal for e-government applications, service applications for government operation, and applications for the Lao people. However, as there has been no report on the status of use or the evaluation of those applications, it is highly likely that the portal is not in general use, either because the development of the applications was unsuccessful or because the applications did not reach the diffusion stage.

4. Information and Communications Technology/Digitisation Strategies of Neighbouring Association of Southeast Asian Nations Countries

Of the major ASEAN countries, Indonesia, the Philippines, and Viet Nam are still focusing their ICT policies on the development of broadband lines and other infrastructure. On the other hand, Singapore, Malaysia, and Thailand have entered the second stage of infrastructure development under digital polices that aim to achieve industrial and social advances by making use of ICT.

In particular, Singapore, the only developed country in the ASEAN region, is implementing a digital policy that uses various data and advanced forms of ICT to resolve social challenges, such as an ageing society and traffic problems. The use of various forms of data, including image data collected through sensors installed nationwide, and the active introduction of advanced technologies from countries outside the ASEAN region have enhanced national security. With the support of the Government of Singapore, there is growing room for companies facing constraints on the handling of personal information and other data in their home countries in particular to use Singapore's ICT environment as a testbed where a large variety of data can be used by companies outside the ASEAN region as well.

Thailand, under its digital policy, is seeking to achieve a shift in its industrial structure to avoid the 'middle-income trap.' For example, Thailand aims to strengthen manufacturing, agriculture, and small and medium-sized enterprises by taking advantage of digitisation. However, although the policy indicated the government's perception of challenges and principles of action, concrete measures are still under study. Thus, there is ample room for Thailand to accept proposals and investments from foreign governments and companies. Germany and China have already approached Thailand at the government level, and the government of Japan has recently concluded a memorandum of understanding on cooperation with Thailand.

On 26–27 November 2015, ASEAN held the 14th Meeting of Information and Communication Ministers in Da Nang, Viet Nam. At this meeting, it was confirmed that the ASEAN ICT Master Plan 2015 would be completed and that efforts would be made to advance the digital economy in the region, promote ICT connectivity, make progress in human resource development, and enhance security. In addition, the ASEAN ICT Master Plan 2020, which represents policy goals for 2016 to 2020, was announced. The new master plan prescribed

the following strategic initiatives: (i) economic development and transformation, (ii) integration and empowerment of people through ICT, (iii) innovation, (iv) ICT infrastructure development, (v) human capital development, (vi) ICT in the ASEAN single market, (vii) new media and content, and (viii) information security and assurance. The meeting ultimately adopted the Da Nang Declaration, which was subtitled 'Towards a Digitally-Enabled, Inclusive, Secure and Sustainable ASEAN Community' (ASEAN Ministers of Telecommunications and Information Technology, 2015). On 27 November, the 10th Japan–ASEAN Meeting of Information and Communication Ministers was held in the same location. At this meeting, Japan and ASEAN jointly announced 'ASEAN Smart ICT Connectivity,' which offers a vision of cooperation following the ASEAN ICT Master Plan 2020.

5. Advantages of and Bottlenecks for Information Technology in the Heavy Use of Cheap Electricity

5.1. The Advantages of the Lao People's Democratic Republic

The Lao PDR has the following advantages in the IT industry:

(i) Since the Lao PDR generates large volumes of electricity through renewable energy, it can supply electricity at low prices and in a stable manner. The key point is a stable supply of electricity, which is the lifeblood of ICT.

(ii) In the Lao PDR, communication infrastructure has been developed to a certain degree, and the communication environment is particularly stable in and around Vientiane. The stability of communication infrastructure, which is a vital ICT network, is also a very important point.

(iii) The political situation in the Lao PDR is stable.

(iv) The frequency of earthquakes and other natural disasters is low. From the viewpoint of physical protection of data, national stability and the low frequency of natural disasters is important in the selection of locations for data centres and other ICT facilities.

5.2. The Lao People's Democratic Republic's Bottlenecks

In contrast to the abovementioned advantages, the following bottlenecks should be noted. The first problem concerns leadership. The Lao PDR lacks human resources with practical knowledge of ICT. Second, it is difficult to procure funds for the development of ICT-related projects. Due to globalisation, ICT-related support provided by international organisations and donor countries has come to play a central role in ICT-related projects in developing countries. As a result, developing countries themselves are lacking the systems, organisations, and knowledge necessary to address ICT-related problems proactively. In addition, due to insufficient social and economic development, the level of recognition and understanding of the importance of promoting the ICT industry is low, as is the priority placed on doing so.

Another problem is related to the quality of ICT-related human resource development and institutional tendencies. Although there is some degree of recognition of the importance of the ICT industry, there is not sufficient understanding of concrete approaches, including knowledge of which industries ICT should be applied to, and basic points such as how concrete approaches can be developed. In addition, just as there is a lack of understanding of electronic processing of administrative work, importance is attached to the existing method of paper-based processing with respect to import, export, and application forms. Therefore, institutional tendencies exist that are detrimental to improving the efficiency of administrative work and reducing personnel cost through the use of ICT.

Another problem relates to the development and use of infrastructure. While hardware is important with respect to ICT, the design and development of software, which is provided as a service, is of primary importance. In the Lao PDR, priority is often placed on hardware, but the country must sufficiently understand that software is of primary importance with respect to ICT.

Finally, there is a problem with coordination among the government, private sector, and nongovernment organisations (including universities and other research institutions). The major factor behind this problem is that, as a firm ICT policy has not been formulated, various donor countries and organisations are introducing technologies presumed to be necessary and effective without coordination, resulting in very low efficiency.

Box 5.1: Main Points of Attention Related to the Information and Communications Technology Strategy

We explain certain factors related to an effective information and communications technology strategy that are important for the Lao People's Democratic Republic in particular.

(i) The principle of market competition alone will not bring successful results. Although introducing the principle of market competition (or market opening) is important to promote the reduction of broadband fees, this alone will not yield successful results. Appropriate policy and regulation intended to promote both supply and demand are essential.

(ii) Communication infrastructure development is inadequate. There is a lack of infrastructure, particularly in thinly populated regions. As infrastructure investment is essential, it is necessary not only to reduce investment risk but also to implement policy measures to provide an incentive. For example, necessary policy measures include subsidies, tax exemptions, sharing of communication lines across companies, and public–private partnership. In addition, deregulation measures to promote the entry of new business operators and innovation are also important.

(iii) It is difficult to provide follow-up support in thinly populated provincial regions. Regarding the development of infrastructure and provision of services in provincial regions where the population (number of users) is too small to generate sufficient profits for businesses, it is key for the government to provide communication business operators with incentives through subsidies and tax exemptions. It is also important to develop local content and services. Since it is necessary to look for users abroad, deregulation and preferential measures should be implemented to promote entry by foreign investors.

(iv) The government's leadership is important for maximising the effects of broadband (e.g. job creation, job efficiency improvement, productivity improvement, and economic benefits). While many countries have formulated and implemented policies to promote a shift to broadband, such policies should be comprehensive. The policies should cover both supply and demand; for example, the government should encourage information and communications technology use among people at the bottom of the economic pyramid while promoting infrastructure investment.

6. Policy Recommendations

As a result of the arrival of technologies based on a blockchain, which has been attracting attention in recent years, new businesses such as FinTech and currency mining have emerged. Since these technological innovations are electricity-hungry, they are promising industrial fields in the Lao PDR. To promote ICT in the heavy use of cheap electricity in the Lao PDR, it is essential to invite data centres and other ICT industry businesses, while promoting the Lao PDR's domestic ICT industry. To this end, we present several recommendations below.

6.1. Concrete Measures for Industrial Promotion

Inviting Data Centres and Other Electricity-Hungry Information and Communications Technology Industry Businesses

The computer systems used in data servers, at data centres, and for currency mining consume a large volume of electricity, and electricity is also used to cool equipment. These systems require a constant supply of electricity. In addition, since important data are handled, systems must be established to guard against natural disasters. In this regard, the Lao PDR is the ideal location for the installation of these computer systems since it has a stable supply of electricity and a low risk of natural disasters and political disturbances. In particular, companies devoting efforts to environmental conservation, such as Google and Apple, are beginning to attach importance to business operations based on renewable energy. Therefore, it is necessary to indicate a clear framework and preferential measures for investment in and the introduction of computer systems.

Inviting Information and Communications Technology Industry Businesses Requiring Physical Input Processes, Such as Data Inputting and Processing

Many IT industry businesses still require physical input processes, such as map preparation, outsourcing of administrative work, and email-based call centres. If the abundant and cheap human resources in the Lao PDR are employed to perform these processes after receiving basic education, this will create many jobs. To this end, it is necessary to provide general computer knowledge and education to the human resources required by the ICT industry.

6.2. Improving Conditions

Promoting Basic Education in Preparation for a Shift to the Information and Communications Technology Industry

As many industries use ICT, educational institutions at every level must provide basic ICT-related education. Moreover, personnel involved in policymaking, including senior public officers, should acquire practical knowledge related to ICT strategy, and an environment favourable for indicating the Lao PDR's advantages to domestic industries and foreign investors should be developed. The mechanism of the blockchain is important as an advanced and fundamental new digital technology, and it is necessary to popularise blockchain technology.

Information Sharing Intended to Enhance the Information and Communications Technology Industry's Technological Capabilities

It is important for the MOIC and the National University of Laos to play a central role in developing a freely accessible database. Specifically, the sharing of basic information should be promoted, based on the concept that, if the public understand what ICT is, which industries use ICT in which ways, and which technologies will be introduced in the future, efficient business management will become possible even in the Lao PDR, despite its small population. In addition, the MOIC should implement industrial policy measures and the MOST and MOPT should cooperate in developing communications regulations, while prioritising the execution of an ICT strategy as an industrial policy.

Establishing an Inter-Ministerial and Inter-Agency Platform Concerning the Information and Communications Technology Industry

The ICT industry represents an amalgamation of diverse technologies in the fields of communication and finance. Thus, the MOIC must be involved and many ministries and agencies must cooperate to promote the industry's development. It is necessary to establish an inter-ministerial and inter-agency platform for policy and legislation development, industrial promotion, education, and training in the field of ICT. As ICT is an industrial sector using cutting-edge technologies, cooperation among international organisations and other

donors from ICT-advanced countries, including the US and Japanese embassies, should be promoted through this platform to set policy principles and work out concrete measures. This will make it possible to promote the ICT industry in a relatively consistent manner.

Strengthening Lao ICT Commerce Association

Although only very large companies can make technological advances in terms of hardware in the ICT industry due to the industry's research-oriented nature, small companies can achieve growth with respect to the internet of things technology, which centres on software. To support ICT businesses in the Lao PDR (especially small companies), the Lao ICT Commerce Association (LICA) was set up in 2006 under the auspices of the Lao National Chamber of Commerce and Industry, which consists of ICT service companies, software houses, system integrators, training institutions, and internet service providers. The LICA aims to nurture and enhance ICT players, start-ups, and entrepreneurs, and thereby, to realise sustainable economic development through a digital ecosystem in the Lao PDR. Thus, strengthening the role of the LICA has become increasingly important with an emergence of advanced ICT.

Key focuses of the LICA should include (i) providing more assistance and services to affiliated members; (ii) satisfying the demands and requirements of society; (iii) promoting the Lao ICT industry in collaboration with the Lao government; (iv) planning and implementing an ICT roadmap based on the perspective of the private sector; (v) facilitating the application of the latest ICT innovations (such as artificial intelligence, big data, blockchain, the cloud, and the internet of things) to industries and sectors within the Lao PDR and other countries; and (vi) improving the quantity and quality of ICT services by establishing certifications and providing skills training. Further, it is necessary to build close cooperation among relevant ministries (e.g. the Ministry of Post and Telecommunications and the MOIC) on a common platform to develop effective policies to catch up with the new wave of ICT and digitalisation.

Promoting Loans to the Information and Communications Technology Industry

In the ICT industry, even small companies can approach many businesses if they possess computers and the necessary knowledge for software development. Since the possibility of failure is small if the right goal and market direction are set, the ICT industry can be

invigorated by promoting small-lot and short-term loans (that is, small by the standards of the business world).

Method of Regulating the Information and Communications Technology Industry

Around the world, it is difficult to regulate the ICT industry pre-emptively because of its unique nature. While it is usually possible to implement regulation based on prohibitive provisions of basic laws, when business practices in cutting-edge fields may fall into a legal grey zone, countries exercise regulation gradually (e.g. when a practice has caused or may cause a disadvantage). It is mostly unclear what kind of problems may emerge until the ICT industry moves forward. Therefore, to promote the introduction of foreign capital, it is important to first let the industry grow so that human resources can be developed, and then implement regulation when a business practice has caused a disadvantage. In addition, to avoid inequality among stakeholders, it is important to design effective systems when the government formulates relevant laws.

Preferential Measures Related to Domestic Electricity Consumption

The electricity rate in the Lao PDR is currently lower than the rates in neighbouring countries, and this availability of cheap electricity is very attractive for ICT industry businesses, particularly those requiring massive electricity consumption for data storage and processing (the cooling of heat generated through data processing also requires massive electricity consumption). The Lao PDR's low electricity rate and abundant electricity generating capacity should be exploited to promote stable use in the Lao PDR. Therefore, as in the case of specified industries, such as agriculture, it is necessary to implement some preferential policy measures for ICT industry businesses that constantly consume electricity on a large scale. This is necessary both because the stability of their electricity demand will improve the efficiency of electricity sales, and because electricity consumed by the domestic ICT industry will create more jobs than will sales of electricity to foreign countries.

Moreover, in the future, it will become necessary to shift to a sustainable energy policy by creating smart cities in the Lao PDR, promoting energy conservation, and shifting from existing energy to electricity through the diffusion of electric cars within the ASEAN region.

A Shift to Information and Communications Technology in the Lao People's Democratic Republic's Administrative Systems

The Lao PDR's population is small, and the country is lagging in the development of its ICT environment, as well as in the dissemination of mobile phones and internet access. Paradoxically, this presents the Lao PDR with an advantage enabling it to introduce quickly the most advanced systems and software. The Lao PDR should exploit this advantage to digitise its administrative systems (such as systems for various applications and registrations, management of the cadastre, communications and email systems of government ministries and agencies, management of drivers' licenses and automobiles, and management of registries of public servants and citizens, among others) and its currency,[1] and introduce its own virtual currency.[2] Through these measures, the Lao PDR will be able to invigorate related industries. It is also necessary to indicate guidelines for actions to be taken in individual sectors, and to develop policy measures to promote cooperation by international organisations and investments from companies on a business-by-business basis.

Box 5.2: Trends in the Development of Information and Communications Technology

(i) Current Situation of Information and Communications Technology Worldwide

Information technology (IT) refers collectively to technologies related to computers and the internet. The Information Technology Association of America defines this as 'the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware.' In many cases, the term information and communications technology (ICT), which covers the field of communications technology as well, is also used. Under the present global trend, these technologies are ultimately moving toward realising the internet of things.

IT is used in a broad range of industries. Its applications include (a) the development of websites and computer-aided design of buildings; (b) the operation of e-commerce sites as represented by Amazon; (c) the management of information and data, including patient information at hospitals and land information; (d) visual information for electronic maps used by Google Maps

[1] This refers not to the introduction of banking and other application services but to the digitisation of the existing currency. The digitisation of the currency itself will make it possible to manage the movement of funds, thus enhancing transparency over tax revenue, preventing fraud, strengthening control of criminal funds, and reducing currency management costs.

[2] Unlike in the case of currency digitisation mentioned above, introducing a virtual currency and opening an exchange will improve the environment for introducing funds directly from other countries.

and other electronic map data used for autonomous driving (the use of which is expected to increase in the future); (e) the management of funds and processing of money transfer data used in financial services; and (f) the collection and analysis of big data used by Facebook and Line. Industries using IT can be roughly divided into two groups: (a) industries that use computers and the internet to improve the efficiency of existing working processes, and (b) new industries that have emerged as a result of the improved performance of computers and the development of the internet.

The first group improves the efficiency of administrative work. In particular, as processes involving human workers are reduced, errors and expenses decrease. In addition, since artificial intelligence (AI) technology has advanced sufficiently to enable AI systems to make routine judgments and those based on accumulated past data on behalf of humans, AI is being applied to image-based diagnosis using X-ray and computer tomography images. This means that it is possible to reduce wasteful investments and invest more appropriately and efficiently by clearly dividing work processes into those that can be performed (a) only by humans, or (b) other processes.

The second group is represented by industries based on new technologies, such as virtual currency, which cannot function without relying on networks and computing capacity. These industries replace existing inefficient infrastructure with efficient ones and make it possible for anyone to access infrastructure at very low cost.

Looking at the current situation of the ICT industry in the Lao People's Democratic Republic, it should be kept in mind that no company has yet advanced into any ICT business there on a large scale and that the country has not yet produced a large number of workers with advanced IT skills.

(ii) Trend of Social Development using Information and Communications Technology

The term ICT4D (information and communications technology for development) refers generally to the application of ICT in such fields as socio-economic development and international development. For ICT4D, the matter of direct concern is application research of IT for the purpose of resolving poverty. ICT applications include direct use of ICT for the benefit of people in need and indirect use, whereby ICT is used to support foreign aid donor organisations, nongovernment organisations, governments, and companies to improve socioeconomic environments in general. In many poor regions around the world, laws to realise and promote ICT applications need to be enacted, and administrative surveys need to be conducted out of consideration of the risk of monopolisation of communication infrastructure and censorship.

While the vision of ICT4D may be interpreted to be intended to support people in need around the world, it is typically related to the application of ICT to developing countries. ICT4D has come to be recognised as an interdisciplinary research field as a result of an increase in academic associations, workshops and publications that discuss it. The needs for research in this field have grown partly because ICT can be used to examine the effects of various ongoing projects and also because scientifically verified benchmarks and results have become necessary. Currently, many international organisations recognise the importance of ICT4D. For example, the World Bank's Global Information and Communication Technology department has a team of around 200 members that is specialised in dealing with problems related to this field.

In many cases, ICT4D ideas and projects are planned and implemented by international organisations, private companies (e.g. classmate PCs developed by Intel), governments (e.g. the E-Mexico plan), nongovernment organisations (e.g. Institute for International Cooperation and Development), and virtual organisations (e.g. a nonprofit organisation called One Laptop Per Child).

As an example of the impact of ICT in developing countries, farmers are obtaining and making use of better market price information to increase their income. Further, in the Republic of Burundi, mobile communication and radio broadcasting are being used in the fight against a corrupt society.

ICT4D projects aim to resolve at least one of the following challenges:

(a) Opportunity and infrastructure: provide appropriate hardware, operating systems, software, and internet connection.

(b) Capacity building and training in the ICT field: provide education on basic computer knowledge, hardware and software development, and digital literacy.

(c) Digital contents and services: improve access to digital technology by providing computer-based services and business processes, and a system for the use of computers in local languages.

(d) Control of the ICT sector and digital rights: enhance intellectual property rights, privacy, and security.

(e) Resolution of social issues in the ICT space: resolve gender issues, health and medical care issues, and development-related technical issues.

(iii) Paradox in Information and Communications Technology Development

Just as there is a 'development paradox,' where the use of funds for the development of developing countries does not lead to actual development, there is a 'productivity paradox,' where companies' investments in ICT do not lead to a productivity improvement. In the field of ICT4D, both of these paradoxes apply, as shown by the fact that many ICT4D projects are considered failures. This is because developing countries' ICT policies lack the following:

(a) coherence with the main development challenges (e.g. economic, environmental, security, and other challenges) faced by developing countries in the 21st century;

(b) coherence with the ICT4D value chain—ICT policies focus exclusively on superficial challenges, such as the development of ICT infrastructure and access improvement, and thus fail to cover the last stage of the process of ICT, which is producing an actual impact (i.e. ICT value chain) as represented by the assurance of sustainability and the method of adaptation to ICT.

(c) coherence with development policies; and

(d) delivery of ICT policy coherence—apart from support for the specifics of ICT policies ('what'), there is no support for the method of implementation, including how to formulate policies ('how').

References

Association of Southeast Asian Nations (2015), 'Da Nang Declaration: Towards a Digitally-Enabled, Inclusive, Secure and Sustainable ASEAN Community', Fifteenth ASEAN Telecommunications Meeting, 27 November 2015. https://www.asean.org/storage/images/2015/November/statement/DA%20NANG%20DECLARATION.pdf (accessed 13 April 2019).

Bannister, G.J., M. Ghazanchyan, and T.P. Bikoi (2017), 'Lao P.D.R: Assessing the Quality of Trade Statistics', *International Monetary Fund Working Paper*, No. 17/251. https://www.imf.org/en/Publications/WP/Issues/2017/11/16/LAO-P-D-R-45367 (accessed 13 April 2019).

Food and Nutrition Conference and Expo. https://eatrightfnce.org/ (accessed 1 May 2019).

Information Technology Association of America (1997), *Help Wanted: The IT Workforce Gap at the Dawn of a New Century*, Arlington, VA: Information Technology Association of America.

International Post Corporation (2017), 'IPC Cross-Border E-Commerce Shopper Survey 2017'. https://www.ipc.be/sector-data/e-commerce/cross-border-e-commerce-shopper-survey (accessed 13 April 2019).

Lao Statistics Bureau (2017), *Electricité Du Laos Statistics Yearbook 2016*. Vientiane: Lao Statistics Bureau. https://www.lsb.gov.la/en/all-statistical-yearbook/#.XIY568kzaUk (accessed 13 April 2019).

Japan External Trade Organization (2017), 'Laos Traditional Handicraft Assistance Project: The Gift Project by JETRO'. https://www.jetro.go.jp/en/jetro/topics/2017/1701_topics1.html (accessed 13 April 2019).

Japan External Trade Organization (2018), 'The FY2017 Comparative Survey of Investment-Related Costs in Asia and Oceania' (in Japanese). https://www.jetro.go.jp/world/reports/2018/01/d78a35442e4ce3c0.html (accessed 13 April 2019).

Lao ICT Commerce Association (2013), *Lao IT Service Market 2012*. Vientiane: Lao ICT Commerce Association; Japan International Cooperation Agency. https://www.jica.go.jp/project/laos/0800211/news/general/ku57pq00001u8f77-att/market_2012.pdf (accessed 13 April 2019).

Luanglath, C. (2010), 'Lao National E-Government Project', Capacity Building Programme on Local E-Government, 1−3 December 2010. Vientiane: Information Technology Research Institute, National Authority of Science and Technology. http://unpan1.un.org/intradoc/groups/public/documents/ungc/unpan043423.pdf (accessed 13 April 2019).

Ministry of Economy, Trade and Industry, Japan (2017), 'FY2017 E-Commerce Market Size Survey'. https://www.meti.go.jp/english/press/2018/0425_002.html (accessed 13 April 2019).

Ministry of Energy and Mining, Lao People's Democratic Republic (2018), *Lao PDR Energy Statistics*. Jakarta: Economic Research Institute for ASEAN and East Asia (ERIA). http://www.eria.org/publications/lao-pdr-energy-statistics-2018/ (accessed 13 April 2019).

Sisombounh, P. (2012), 'ICT Development Status in Lao PDR', ITU Workshop on Bridging the Standardization Gap, 30−31 July 2012. Vientiane: Ministry of Posts and Telecommunications. https://studylib.net/doc/13357445/ict-development-status-in-lao-pdr-itu-workshop-on-bridgin (accessed 13 April 2019).

Smirnov, D. (2015), *Assessment of Scope of Illegal Logging in Laos and Associated Trans-Boundary Timber Trade*. Gland, Switzerland: World Wildlife Fund. https://wildleaks.org/wp-content/uploads/2016/07/CarBi-assessment-of-scope2.pdf (accessed 13 April 2019).

Swiss Research Institute of Organic Agriculture and International Federation of Organic Agriculture Movements (2019), T*he World of Organic Agriculture: Statistics and Emerging Trend 2019*. Rheinbreitbach: Swiss Research Institute of Organic Agriculture and International Federation of Organic Agriculture Movements. https://www.ifoam.bio/en/news/2019/02/13/world-organic-agriculture-2019 (accessed 13 April 2019).

United Nations Conference on Trade and Development (2017), *Information Economy Report 2017: Digitalization, Trade and Development*. Geneva: United Nations Conference on Trade and Development. https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=1872 (accessed 13 April 2019).

United Nations, Food and Agriculture Organization (2016), *The World of Organic Agriculture 2016*. Rome: Food and Agriculture Organization. https://www.organic-world.net/yearbook/yearbook-2016/pdf.html (accessed 13 April 2019).

United Nations Population Fund (2014), *State of World Population 2014*. New York: United Nations Population Fund. https://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP14-Report_FINAL-web.pdf (accessed 13 April 2019).

World Bank, World Integrated Trade Solution. Lao PDR Exports and Imports by County and Region Data. https://wits.worldbank.org/ (accessed 13 April 2019).