

# Chapter **1**

## **Agriculture and Food Processing**

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# Chapter 1

## Agriculture and Food Processing

### **1. Current State**

#### **1.1. Recognition of the Current State**

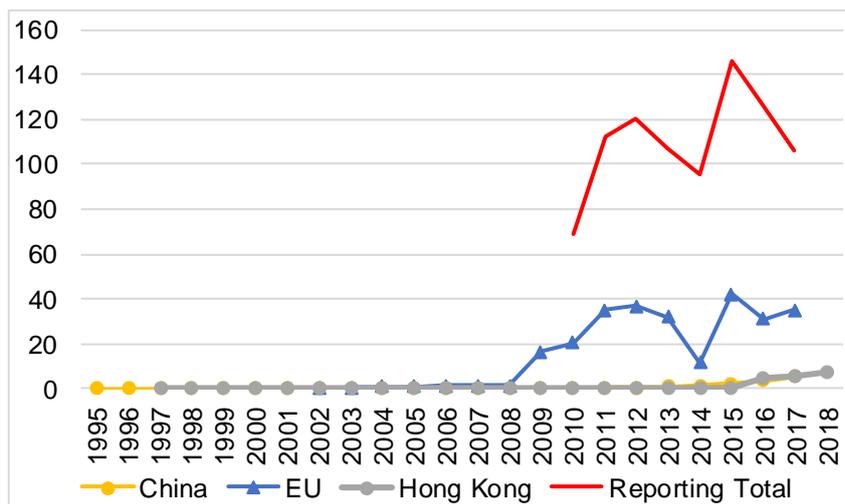
Agriculture in the Lao People's Democratic Republic (PDR) is characterised by food self-sufficiency and dominated by small, family-owned operations. Farmers sell surplus agricultural products left over after their own consumption to local markets to earn money, while agricultural exports other than the 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)**

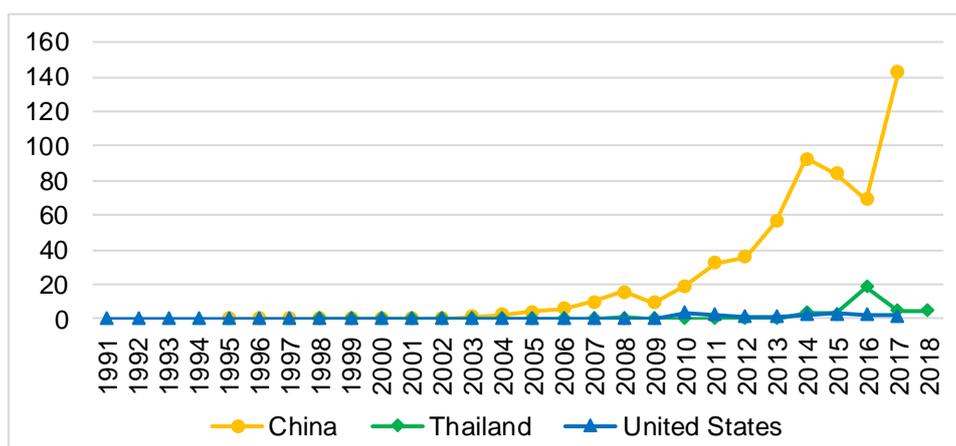


EU = European Union.

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](https://www.gtis.com/English/gtis_about.html) (accessed 13 April 2019).

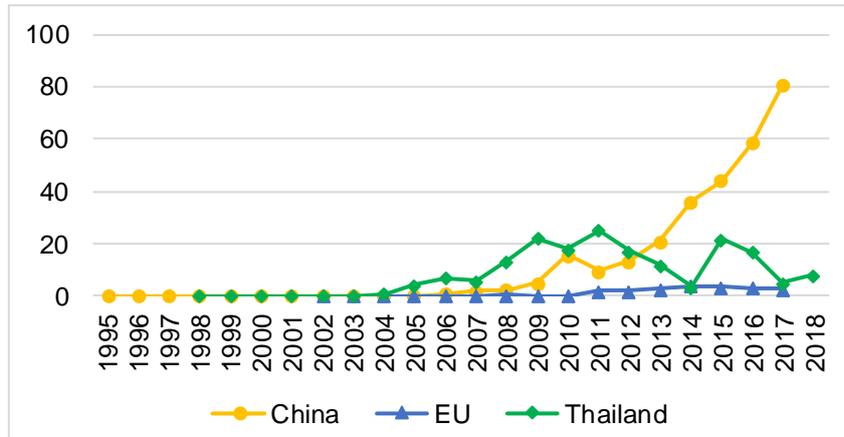
**Figure 1.2: Trend of Rubber Export Value and Major Destinations (\$ million)**



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](https://www.gtis.com/English/gtis_about.html) (accessed 13 April 2019).

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

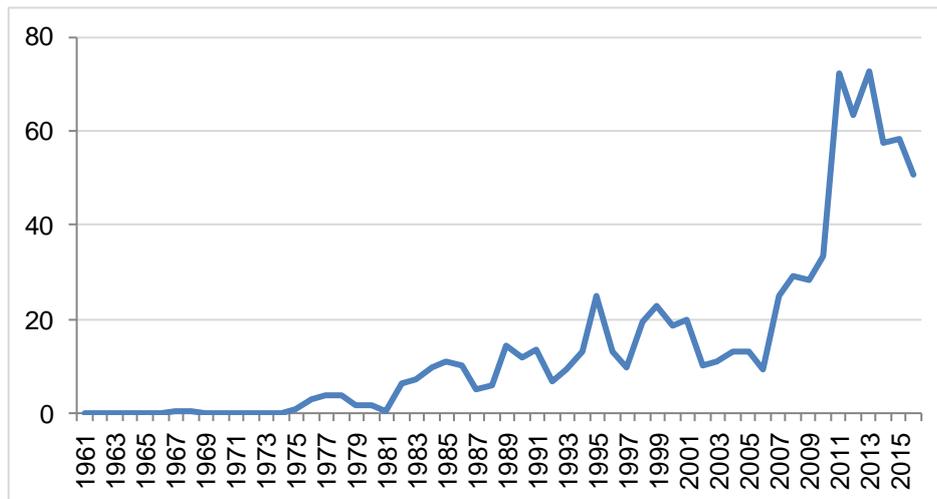


EU = European Union.

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](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+).<sup>1</sup>

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

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<sup>1</sup> 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,<sup>2</sup> 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

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<sup>2</sup> 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**

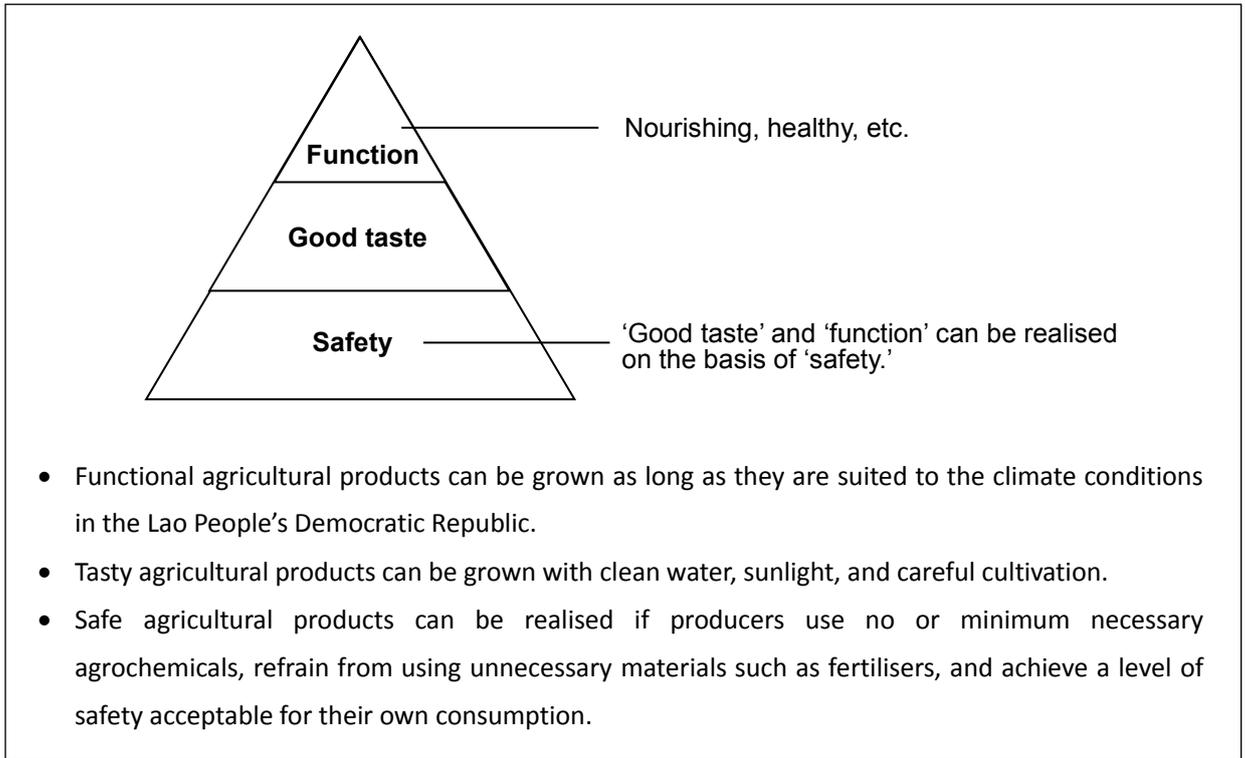
FODMAP stands for 'fermentable oligosaccharides, disaccharides, monosaccharides, and polyols', which are made from sugar beets, maize, and soybeans. As international research continues to make progress to determine the relationship between intestinal flora and human health and diseases, the American Dietetic 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.

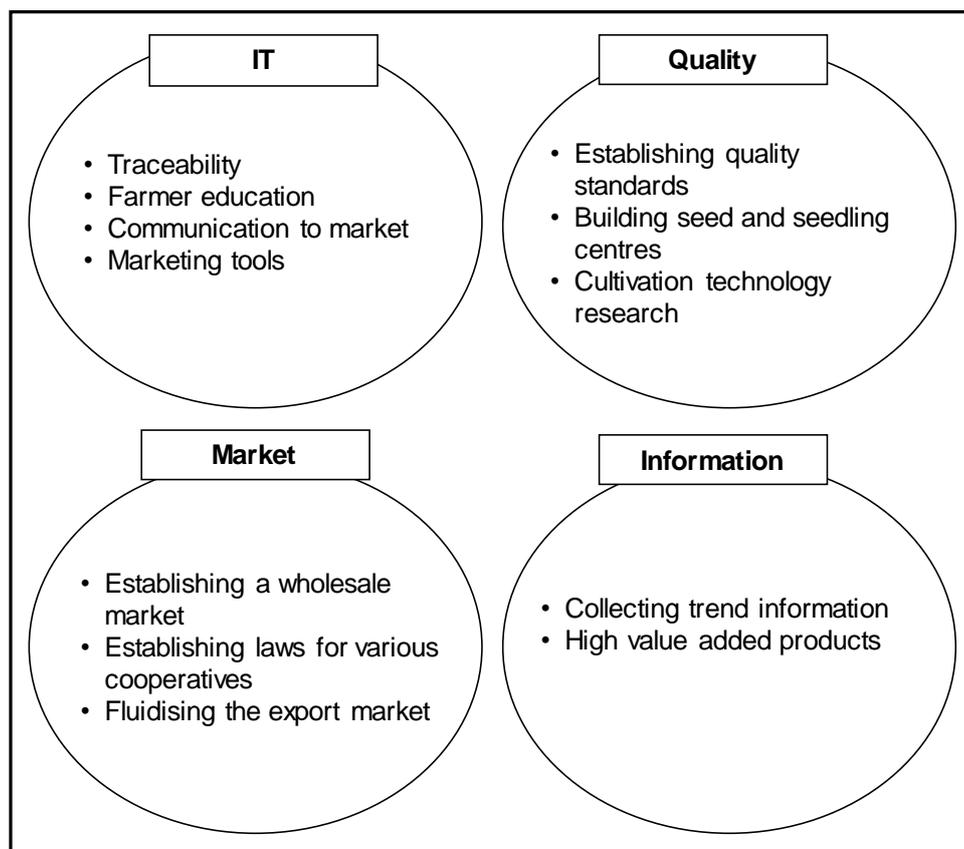
**Figure 1.5: Three Key Features of Agricultural Products**



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.<sup>3</sup> 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

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<sup>3</sup> 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,<sup>4</sup> 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

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<sup>4</sup> 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
	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.