

**“Needs Survey” under the Governmental  
Commission on the Projects for  
ODA Overseas Economic Cooperation  
in FY2014**

**Summary Report**

**The Lao People’ s Democratic Republic**

**Needs Survey for  
Agriculture, Energy/Environment, and  
Vocational Training/Industrial Development**

**March, 2015**

**Kaihatsu Management Consulting, Inc.**

The content of this report is a summary of the needs survey, which is commissioned by the Ministry of Foreign Affairs of Japan in the FY 2014 and was carried out by Kaihatsu Management Consulting, Inc. It does not represent the official view of the Ministry of Foreign Affairs.

Table of Contents

Abstract ..... 1

Introduction ..... 1

I. General Statement ..... 1

II. Agriculture Sector ..... 1

III. Environment / Energy Sector..... 2

IV. Vocational Training / Industrial Development Sector..... 4

V. Result of Workshop..... 4

# **Abstract**

## **Introduction**

This survey was conducted for identifying the needs for products and technologies of Japanese small and medium enterprises to be promoted through Official Development Assistance (ODA) by Japan in the Lao People's Democratic Republic (Laos). The following three sectors and related products and technologies were selected to be targeted on this survey, based upon the 7<sup>th</sup> National Social and Economic Development Plan (NSEDP) of the Laos and Japanese ODA Country Assistance Policy; Agriculture Sector (agri machinery and plant factory), Energy and Environment Sector (electric vehicle) and Vocational Training and Industrial Development Sector (training and educational materials for automation).

## **I. General Statement**

Laos is the only landlocked country in the ASEAN. In comparison with the neighboring countries such as Cambodia, Myanmar, Vietnam, Thailand, its population (around 668 million) is little, also population density is low. Since the year 1986, this country has endeavoured political and economic reform to promote regional and international integration. Laos became a member of the ASEAN in 1997 and WTO in 2013. As for the trade, Thailand, China, and Vietnam are main partner, meanwhile trade between Laos and Japan is increasing. Laos exports mineral resources, tree and wooden goods, electricity by the hydraulic power generation, garment and coffee, and imports fuel, vehicle, machinery, electric appliance, mainly.

Laos tries to convert its weakness as landlocked to strength as land linked, connecting through 5 international bridges over Mekong River and other means. Also Lao government promotes foreign direct investment, arranging 10 special economic zone. As of October 2012, 83 Japanese-affiliated companies have established business.

As of 2012 Laos is still one of Least Developed Countries, however, in late years economic growth has exceeded 8% constantly. Poverty reduction has advanced firmly. The number of absolute poverty population reduced from 2.05 million in 1992/93, represented 46% of total population, to 1.85 million in 2002/03, 33.5%.

In urban area like Vientiane Capital, wealthy and middle class population is increasing. The GDP per capita in the nation was 1,349 USD, whereas in Vientiane Capital 2,750 USD in 2012.

## **II. Agriculture Sector**

### **1. Description of the current situation and development needs of the concerned development issues in the surveyed sectors**

75% of working population in Laos is engaged in agriculture, however, a proportion of agriculture occupied in GDP declined from to 38.7% in 2004 to 26% in 2012. Because Laos has fewer farmland areas and little agricultural population compared with neighbouring countries, large-scale agricultural development is difficult. Also the diffusion of agri machines, except for 2 wheel tractors, goes behind. Recently scarcity of seasonal agricultural labors and increasing their labor expenses suppress the management of farmers.

Laos has been accomplished food self-support in cereals, so the Government of Laos intends to promote export of agricultural products. However, the export of them accounts for only 4% of all export items. Thai agricultural products have strong brand power in freshness and hygiene whereas Laos products, despite of low price, do not have enough competitiveness in the market.

Therefore, improvement of productivity and strengthening of export competitiveness are required for further development of agriculture in Laos.

The Lao government aims in the 7<sup>th</sup> NSEDP at self-support of foods and export promotion of agricultural products to achieve an average of 3.5% a year of growth of the agriculture sector. Japanese ODA

implements various project to increase productivity in agriculture and step-by-step development from self-sufficiency to market-oriented agriculture.

## **2. Sectorial analysis on the effectiveness of the products and technologies developed by the Japanese SMEs**

Japanese SMEs have developed several agri machinery accorded with the situation of Japanese agricultural field which locate in mountainous area in small scale and distorted fields in many parts. These machinery can use effectively in Laos under a relatively similar field condition.

Plant Factory is agro-industrial facilities that can control the growth and cultivation in a plant, creating favourable environment to produce efficiently high value-added agricultural products such as lettuces and herbs.

Plant Factory can classify roughly into two types; a plant using artificial light and a type using sunlight. Plant using artificial light type, of which Japanese SMEs have technical advantage, is smaller and requires less initial costs compared with plant using sunlight, although the operation cost is higher. Therefore artificial light type plan will be suitable to introduce to Laos.

## **3. Possible applicability of the SMEs' products and technologies to the future ODA projects in the surveyed sectors**

The following ODA Projects shall be proposed;

- (1) Feasibility Study (F/S) with the Private Sector for Utilizing Japanese Technologies in ODA Project or Technical Cooperation Project (TCP) for dissemination of agri machinery to Laotian farmers.
- (2) ODA loans (two-step-loans) to supply middle and long term fund to promote the diffusion of agricultural machinery and TCP to strengthen ability of agricultural financial institutions and farmers as lenders so that funds can be utilized effectively.
- (3) F/S with the Private Sector for Utilizing Japanese Technologies in ODA Project or Verification Survey (V/S) with the Private Sector for Disseminating Japanese Technologies for disseminating Plant Factories.

## **4. Possibility of business development by utilising the SMEs' products and Technologies in the surveyed sectors**

The expected client for small agri machine will be around 100,000 farmers which hold a farm of around 1-3ha in the plains along with Mekong River and small scaled processing factories in 34 Districts.

Plant Factory can install in a facility of the local business partner like food processing companies in Vientiane Capital to sell locally and to export to neighboring countries, targeting at wealthy and middle class citizens who prefer to high quality and safe vegetables.

# **III. Environment / Energy Sector**

## **1. Description of the current situation and development needs of the concerned development issues in the surveyed sectors**

The number of registered vehicles in 2013 in Laos increased to approximately 7 times in 1.44 million from the year 2000. In this period the amount of import for vehicles and oil have increased rapidly, which causes expansion of trade deficit and decline of the amount of foreign currency reserves. At the same time, in Vientiane Capital where most of the vehicles are concentrated, air pollution and traffic jam are worsening. The public transport network is not still sufficient, although the Grand Aid for provision of 42 large buses and technical cooperation to strengthen the operation of Vientiane Capital Bus Enterprises were implemented by the Government of Japan. Many citizens still use a privately-owned car and a motorcycle for private use. The government of Laos emphasizes the importance of achievement of both economic growth and environment conservation in the 7<sup>th</sup> NSEDP. The Government of Japan has collaborated through implementation of several cooperation to create an environmentally harmonious and comfortable society”.

Laos promotes construction of hydraulic power generation in the Mekong water system. Actually Laos can supply the cheapest electricity in Southeast Asia. Under this circumstance, the Government of Laos has interest to introduce EV as a means of urban transportation to reduce fuel import and air pollution.

## **2. Sectorial analysis on the effectiveness of the products and technologies developed by the Japanese SMEs**

In Japan, under the aim approved in a Cabinet to reduce 80% of greenhouse gas by 2050, the research and development of next-generation car, including EV, are carried out under the cooperation of industry, government and university. There are SMEs which commenced production of small EV. Some SMEs produces “conversion EV”, which means they convert existing gasoline engine car to EV.

Mainly SMEs produce EV with limited function, simple structure. Those EV are low-cost oriented, good for urban short-range transfer with one charge of battery and are not expected to use in high-way. This type of EV can utilize as a means of urban transportation in Vientiane Capital, such as mini-bus, tuktuk and bike taxi, linked with route buses operated by Vientiane Capital State Bus Enterprise.

EV enables those short-distance urban transportation to reduce the fare by utilizing cheap electricity instead of expensive gasoline, so that it is expected that they provide more convenience transportation for citizen.

## **3. Possible applicability of the SMEs' products and technologies to the future ODA projects in the surveyed sectors**

The following ODA Projects shall be proposed;

(1) F/S with the Private Sector for Utilizing Japanese Technologies in ODA Project to improve complementary transportation services such as mini bus, tuktuk and bike taxi, conforming Japanese EV to the needs and environment in Laos and verifying feasibility of operation plan for complementary transportation services.

(2) F/S with the Private Sector for Utilizing Japanese Technologies in ODA Project to study for multipurpose use of battery of EV as a means for auxiliary power supply.

(3) TCT, aiming smooth introduction and diffusion of Japanese EV in Laos, with provision of norms and regulations, infrastructure for EV and human resource development for development and maintenance of EV.

Expected effects are as follows: improvement of convenience of public transportation, mitigation of air pollution and noise.

V/S with the Private Sector for disseminating 3-wheel EV bus for 6 passengers in Louangphrabang is being implemented. SMEs which intend to develop their own business should use the result and lessons of this project. Also collaboration with Vientiane Capital State Bus Enterprise is important so that small EV transportation provides convenient transportation services with route buses.

## **4. Possibility of business development by utilising the SMEs' products and Technologies in the surveyed sectors**

Possibility of business development in EV can be categorized as follows;

(1) Small EV bus to complement route buses, targeting to private companies which have intention to operate mini bus services in Vientiane Capital.

(2) EV tuktuk to convert existing around 1,200 tuktuk in Vientiane Capital. If government loose a regulation imposed to tuktuk drivers in the capital, the demand for EV tuktuk is expected to increase.

(3) Electric motorcycle for bike taxi, of for company for business private use.

A local company in Laos is interested to handle EV as a business partner. For Japanese SMEs need to discuss more deeply about specification and price of EV. Also it is required to provide training for company stuff to maintain and repair EV. At the same time it should be considered to study the possibility to assemble EV in Laos, utilizing materials procured locally, whereas importing important parts like battery, motor, etc. from Japan or other Asian countries.

## **IV. Vocational Training / Industrial Development Sector**

### **1. Description of the current situation and development needs of the concerned development issues in the surveyed sectors**

In Laos, accompanied by increase of foreign direct investment inflows, the demand for labor force with skill and technical knowledge about electronics, system engineering, information processing, and mechanical engineering begins to increasing. However, foster of human resource such as manufacturing talented person goes behind, due to low quality of teaching facilities and materials in the educational and vocational training institutions.

It is estimated that the labor demand increases to 4.2 million, but the shortage of supply of approximately 600 thousand workers is also anticipated. In Laos, where population is scarce, there is possibility to raise the work force cost rapidly and lose the competitive advantage compared to neighbor countries. It is, therefore, necessary to switch from labor-intensive industry to capital-intensive industry.

With AEC participation in 2015, the Lao government emphasizes importance of industrial human resource and infrastructure development to modernize and industrialize the country. Therefore, the Government plans to expand and reinforce higher education institutions including national universities and vocational training schools. The Government of Japan has been implementing ODA projects to upgrade higher education institutions as instrument in strengthening the private sector and the transition to a market economy.

### **2. Sectorial analysis on the effectiveness of the products and technologies developed by the Japanese SMEs**

In Japan some SMEs produce training materials to foster middle engineer and plant manager concerned with industrial automation. Among those materials, the following materials shall be effective to solve the tasks on industrial human resource development in Laos; (1) Mechatronics training materials by which trainees can learn automation technique required to work as middle engineer in plant, and (2) Production control simulation software to learn the way to control production with efficiency and the way to solve problems in the manufacturing process. Those materials have been introduced in universities, vocational training centers and technical high schools in Japan. Also textbooks directly linked with those training materials are developed and published. These materials can be introduced translating to Thai or English.

### **3. Possible applicability of the SMEs' products and technologies to the future ODA projects in the surveyed sectors**

F/S with the Private Sector for Utilizing Japanese Technologies in ODA Project, and/or V/S with the Private Sector for Disseminating Japanese Technologies to enforce industrial human resource development in universities and vocational training institutions. Through ODA project, master trainers will be fostered, and they are expected to disseminate their technique and knowledge obtained to other institutions.

### **4. Possibility of business development by utilising the SMEs' products and Technologies in the surveyed sectors**

The target client in the first stage shall be educational and training institutions, considering the contribution to the needs for development in Laos and future expansion of business through trainer and students learned. In addition to introducing the training materials suitable for foster students for industries, it is required to intent job-matching between companies and students.

## **V. Result of Workshop**

On 5<sup>th</sup> December 2014, the Needs Survey mission held workshop at Vientiane Capital. The purposes of the workshop are; (1) to share findings with concerned Laotian authorities, Japanese institutions in Laos,

and private sectors and to reflect a given opinion to the report, and (2) to introduce Japanese SMEs product and technologies which shall contribute to the development of Laos. In total 64 persons from both countries were attended and various questions and opinions, earing to disseminate those products and technologies.

Attachment : Outline of the survey



# Needs Survey for Agriculture, Energy/Environment and Vocational Training/Industrial Development

## The Lao People's Democratic Republic

### Research Company and Counterpart Organization

- Name of Research Company : Kaihatsu Management Consulting, Inc.
- Survey Site /Counterpart Organization : Laos (Vientiane, Savannakhet, Pakxe, Louangphrabang)、 C/P: Ministry of Agriculture and Forestry, National Agriculture and Forestry Research Institute, National University of Laos, Ministry of Public Works and Transport, etc.

### Concerned Development Issues

- Agriculture : Improvement of productivity, agricultural income and strengthening of export competitiveness
- Energy / Environment : Improvement of urban transportation taking into consideration of the environment
- Vocational Training / Industrial Development : Development of mechanics, middle engineers and facility managers

### Products, Technologies, etc. of SMEs, etc.

- Agriculture : (1) Small agri machinery for production, harvesting and processing (2) Plant factory
- Energy / Environment : (1) Electric vehicle and motorcycle (2) Charging and storage system
- Vocational Training / Industrial Development: (1) Industrial automation training curriculum and materials (2) Production management training curriculum and materials

### Proposed ODA Projects and Expected Impact

- Agriculture : (1) Feasibility study (F/S) or Technical cooperation project (TCP) for dissemination of agri machinery to the ordinary Laotian farmers (2) TCP on the strengthening of agricultural finance (3) F/S or Verification survey (V/S) for disseminating plant factories. Expected effects are as follows: improvement of agricultural productivity, agricultural income and strengthening of export competitiveness.
- Energy / Environment : (1) F/S to improve complementary transportation system, introducing small EV (2) TCP related to promote EV systematically, with arrangement of laws, infrastructure and policy for EV related industries development. Expected effects are as follows: improvement urban transportation system, mitigation of air pollution and noise.
- Vocational Training / Industrial Development : F/S, V/S or TCP on the development of mechanics, middle engineers and facility managers needed for industrialization. Expected effects are as follows: development of sustainable industrialization through modernization of industrial structure and increase of foreign direct investment by conversion from labor-intensive industrial to capital-intensive industrial structure.

### Future Business Development of SMEs, etc.

- Agriculture : (1) Exports and local assembly of agricultural machinery and parts (2) Plant factory business with local partners and exports of high value-added agricultural products to the ASEAN country from Laos.
- Energy and Environment : Increase of exports and local assembly of EV, parts and charging system.
- Vocational Training / Industrial Development : (1) Increase of exports of education materials related to industrial automation and operational management (2) Promoting direct investment of Japanese manufacturing industry accompanied by industrial human resource development.

