

**PREPARATORY SURVEY
ON
BOP BUSINESS ON THE PROMOTION
OF JAPANESE KAMPO THROUGH
MEDICINAL PLANTS PRODUCTION
IN
MYANMAR**

**FINAL REPORT
(SUMMARY)**

May 2016

Japan International Cooperation Agency (JICA)

Shinnihonseiyaku Co., Ltd.

Nippon Koei Co., Ltd.

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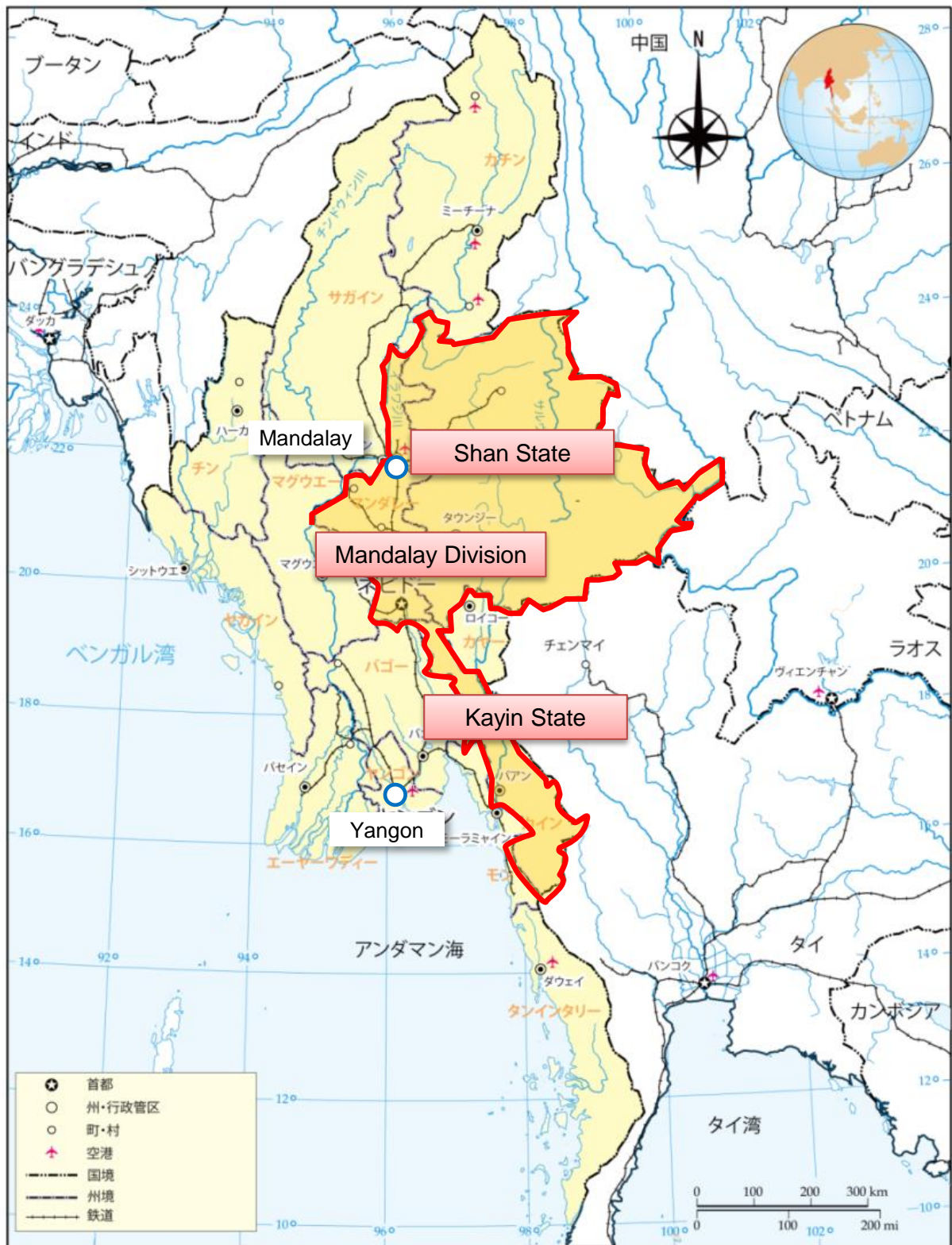
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出典:国際連合の地図を基に弊社作成

Location Map

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1.1 Background and Objectives

(1) Background

Job Opportunity for Base of the Pyramid

(BOP) in Rural Area

The Myanmar economy has developed rapidly due to lifted economic sanctions. However, past economic slump continuously makes Myanmar one of the countries with the lowest gross domestic product (GDP) per capita among the Association of Southeast Asian Nations (ASEAN) countries.

According to the United Nations Development Programme (UNDP)

report, poverty ratio in the whole Myanmar had declined from 32.1% to 25.6% between 2005 and 2010. One out of four household is still below the poverty line. Also, there is clear poverty gap between the urban area and the rural area where a majority of BOP lives.

Landless-farmers in rural areas are engaged in agriculture accounting for 30% to 50% of rural households¹. Income from farming is from MMK 1,500 to 2,500 (JPY 150 to 250) per day for males and MMK 1,200 to 2,000 (JPY 120 to 200) per day for females². Moreover, the annual income from farming is very limited due to the short farming season, accounting for only 130 days per year. Even if farmers own land, most of them are small-scale farmers who owned only 2 to 5 acres of land. The farmer's income depends on the market price; however, cultivation techniques have not been provided at the farmer level due to lack of extension workers, leading to their low income. Therefore, securing stable income and job opportunity for them will be assured.

Disseminating Japanese Kampo

Herbal plants are being used as traditional medicine in Myanmar. Considering the main raw materials of herbal medicine, such as *licorice*, are being imported from India there would be a need to cultivate raw materials if Shinnihonseyaku succeeds in Myanmar.

Generally, traditional medicine is dispensed in a convenient way at the household level but the quality is unassured due to undeveloped pharmacopoeia. Nippon Foundation has supported the preparation of pharmacopoeia in the ASEAN

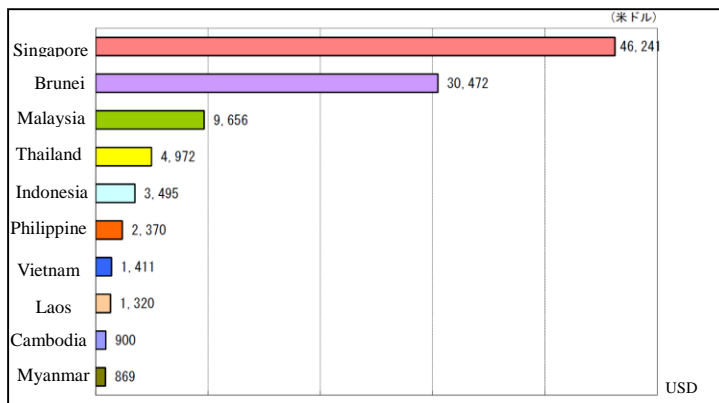


Figure 1 Comparison of GDP Per Capita between ASEAN Countries (2011)

Source : Ministry of Foreign Affairs of Japan



Herbal Medicine Market in Yangon

¹ Country strategic opportunities programme, IFAD, March 2014

² Interview by the Team

countries. Therefore, if Shinnihonseyaku will supply purchasable and a certain quality of crude drug product, it would be able to extend its target group in Myanmar to the whole ASEAN countries.

Shiunko is, which is said to be effective in treating Leishmaniasis, one of the six major infectious diseases that affects around 20 million patients mainly in developing countries. *Lithospermum erythrorhizon*, a raw material of *Shiunko*, is said to be a difficult plant to cultivate; however, Shinnihonseyaku Group has succeeded in the cultivation of *Shiunko* in commercial level in Japan. Therefore, it will be possible to supply the crude drug product at a low price in Myanmar and surrounding countries.

Securing stable supply of raw materials to Japan

Eighty-eight percent of herbal medicine used in Japan is imported mostly from China, accounting for 83% of it. Moreover, *Licorice* makes up 70% of raw material being used in herbal medicine in Japan, which is being imported 100% from China.

In spite of the demand for raw material, desertification and depletion of natural resources due to overexploitation are becoming serious problems in China. As a result, China limited its export since 2000 leading to recent increase in import prices. Therefore, securing a stable supply of raw material to Japan posed a problem.

Strengths of Shinnihonseyaku

Shinnihonseyaku started its cultivation research of *Licorice* seven years ago. The company incorporated with five local governments and launched a council for *Licorice* cultivation since 2013. The cultivation practiced by Shinnihonseyaku adopted a self-developed superior seeds and cultivation method of growth suppression of stolon in short tube which is pending for patent capital. It is demonstrated that the method, by which growth of stolons (underground stem) is suppressed while the growth of the main root is accelerated.



Harvested roots of *Licorice*

It can shorten the cultivation period to two years. It also contains 10% to 20% more glycyrrhizic acid, an active constituent of *Licorice*.

Furthermore, harvesting can easily be done because the cultivation method of growing a short tube results in the reduction of harvesting cost.

Besides, Shinnihonseyaku demonstrated the cultivation of ephedra herb and peony root and thus succeeded. These plants are considered endangered species and difficult to cultivate.

Shinnihonseyaku attempts to disseminate the cultivation techniques and develop the entire industry through publishing special issues or journals of “Medicinal Plant Research”.

(2) Objectives

The objectives of the survey are: a) to create job opportunity and transfer the techniques through establishing a production system for the poor like the ethnic minorities in the rural area; and b) to improve the health

service in Myanmar by selling crude drug products at low prices. The survey will study the market, analyze the needs, test the cultivation, and explore the dissemination method. According to the results of the above mentioned implementation, a business model will be verified.

	Production of medicinal plant	Kampo preparation	Sale in domestic Export to Japan
Concerned Development Issues	Unstable income Lack of job opportunity Lack of technical training	Lack of job opportunity Lack of processing technique	Lack of good quality and cheap crude drug product Risk of Infections Lack of export products
Beneficiaries (BOP)	Small scale farmer (BOP) Land less farmer (BOP)	Processing plant (BOP, including worker) Traditional medical worker	
Expected Development Effects	Stable income Job opportunity Technique transfer	Technique transfer Job opportunity	Supplying Japan quality crude drug product Reduction of infections Acquisition of foreign currency by exporting

Figure 2 Value Chain and Development Effects

Businesses will cooperate with some companies in order to achieve a successful production of medicinal plant, Kampo preparation, and sales.

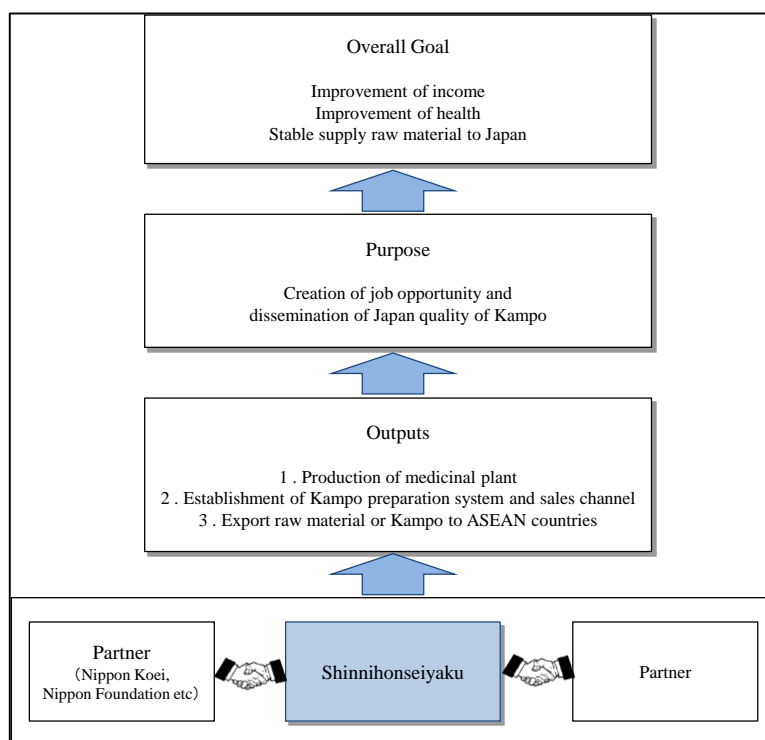


Figure 3 Overall Achievement Goal

(3) Japanese Policy for Development of Myanmar Agriculture Sector and JICA’s Policy and Achievement
The Japanese Policy for Development of Myanmar Agriculture Sector defines the improvement of livelihood including the minority and poverty support, agriculture, and area development. Especially, agriculture and rural development, support for ethnic minorities, disaster prevention, health, grant assistance for cultural

grassroots projects, non-governmental organization (NGO) partnership are added as one of the priority sectors. The survey would contribute to support the ethnic minorities, reduce poverty, and improve health. Therefore, the survey matches the Japanese Policy for Development of Myanmar Agriculture Sector and JICA's Policy.

1.2 Survey Site

The climate of Myanmar depends on the region because the land extends from north to south. For example, hilly and mountainous region from east to north is colder than the plain areas; and this region has humid temperate climate. The central dry region, centered in Mandalay, has savannah climate with less than 1,000 mm rain. Coastal and delta region, including Yangon, have tropical monsoon climate.

Climate is divided into three seasons, namely: dry season (end of February to middle of May), rainy season (end of May to middle of October), and cool season (end of October to middle of February). These three regions are targeted in the survey in order to verify the cultivation condition in different types of climate.

Table1 Survey Site

Region	Target Area	Climate
Central dry region	Mandalay Division	Elevation: 80-120 m Annual rainfall: 800-1,000 mm
Hilly and mountainous region	Shan State (Southern and northern regions) Mandalay Division (PyinOoLwin) Kayin State (Northern Region)	Elevation: 800-1500 m Annual rainfall: 1,200-1,500 mm
Coastal and delta region	Kayin State(Southern Region)	Elevation: 0-100 m Annual rainfall: 2,000-5,000 mm

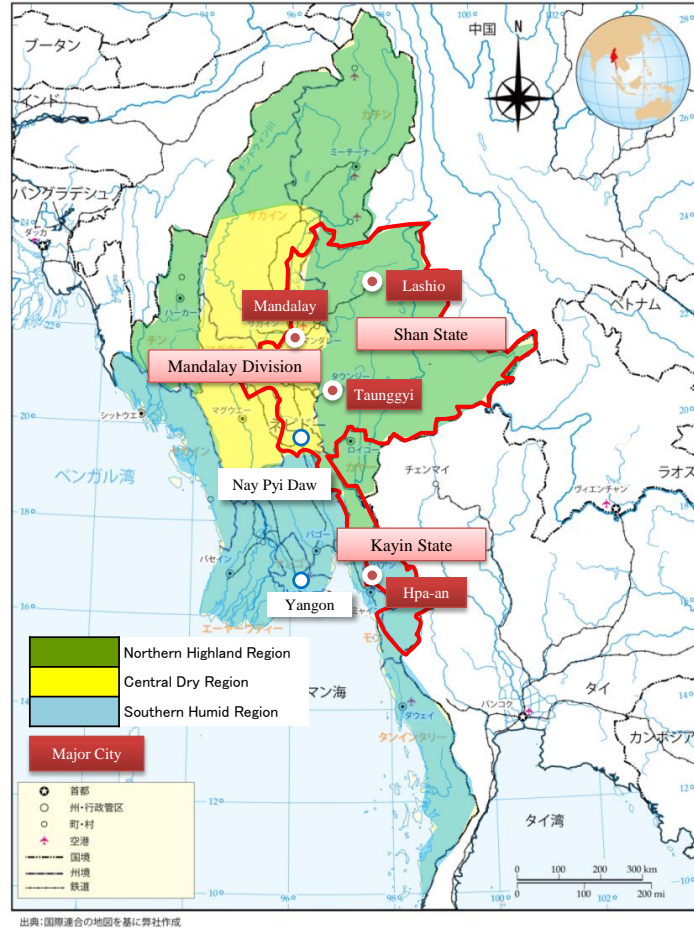


Figure 4 Site Map

1.3 Survey Outline

The survey was implemented based on the basic policies below.

- Sufficiently analyze the market situation and needs.
- Verify the business continuity in case Nippon Foundation withdraws the Traditional Medicine Project.
- Sufficiently verify how to develop human resources of partners and how to entrust production.
- Clarify the policies for continuous benefits, in terms of health and medical care, to the BOP except the employed BOP such as farmers.
- Consider involvement of BOP through technique transfer.
- Verify the price setting of Kampo which is purchasable for BOP. As necessary, re-think the price or verify to sell by smaller unit rather than by boxes, and to sell to community groups.

The survey clarifies the actual situation of production site, distribution, and infrastructures. At the same time, Shinnihonseiyaku tests the cultivation of several types of medicinal plants in the three pilot sites; and the survey verified the feasibility of cultivation. Based on the result, the initial implementation plan was revised and an indicator was set to measure the expected impact of the business, while proposed official development assistance (ODA) projects are listed up.

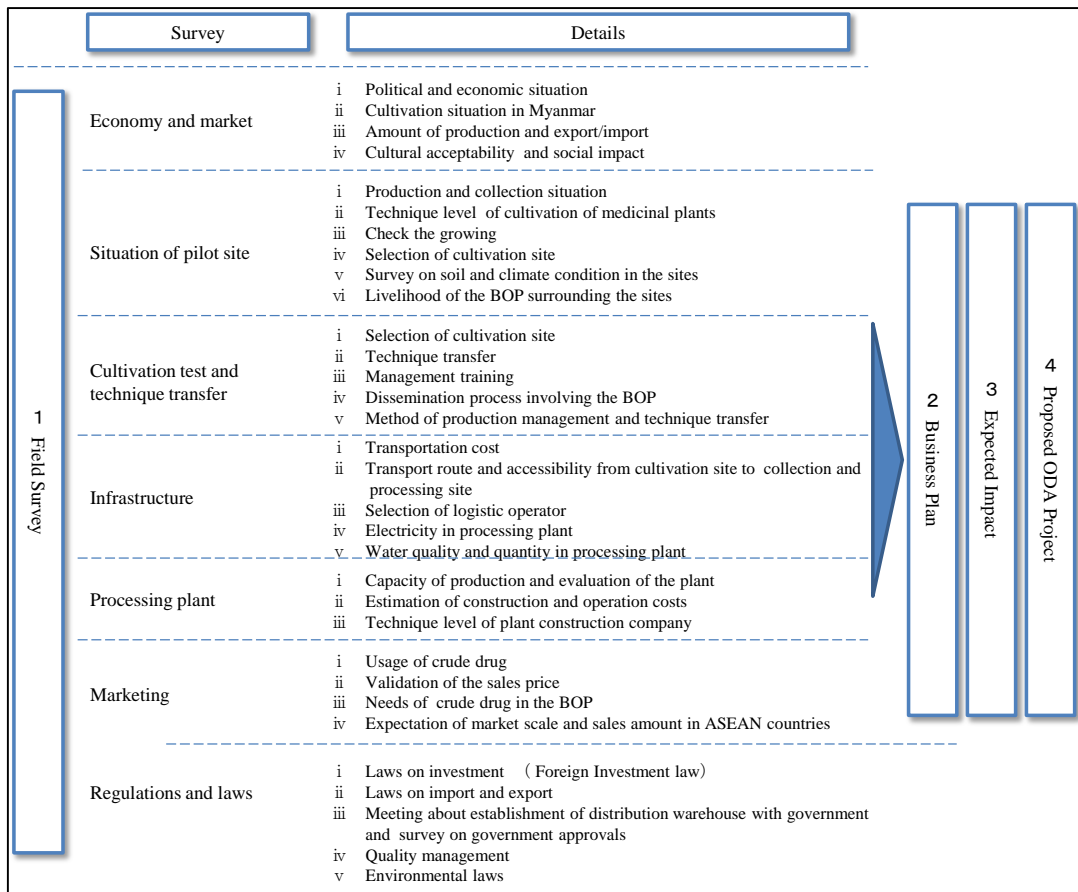


Figure 5 Survey Outline

Although the project term was initially planned from March 2014 to March 2016, it was found that there are high potentials of cooperation with the JICA Project, entitled “Project for Eradication of Opium Poppy Cultivation and Rural Development in the Northern Part of Shan State” through the continuous survey. Therefore, the survey period was extended by three months in order to verify and formulate the business plan.

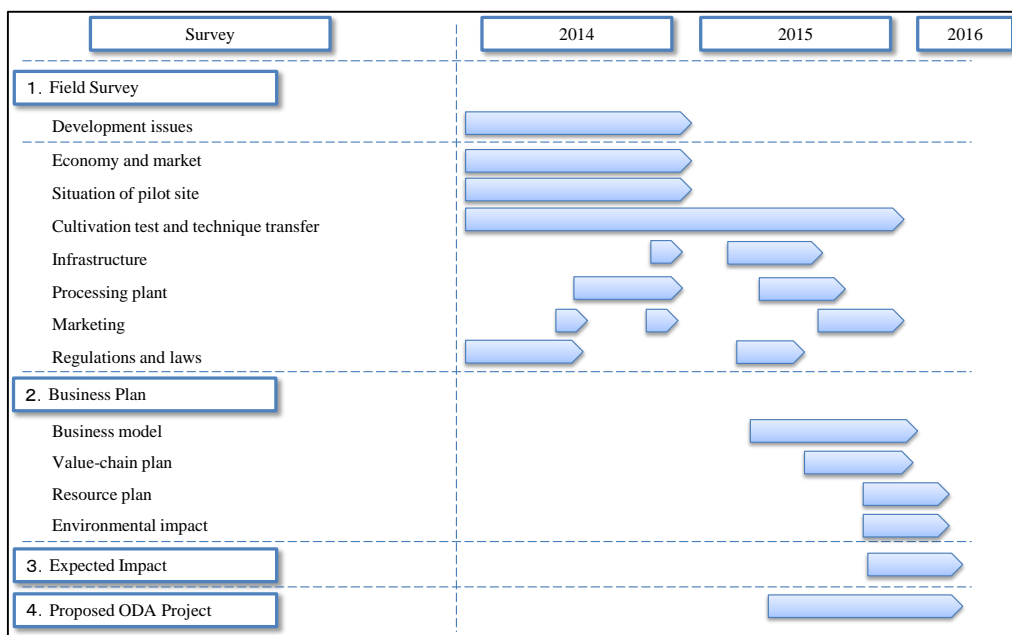


Figure 6 Survey Schedule




1.4 Business Priority

The survey expected three different business models and verified the business priority.

- 1 Produce and sell medicinal plant (*Licorice*)
- 2 Produce and sell medicinal plant (*Job's tears*)
- 3 Produce and sell Kampo (*Shiunko*)

Initially, the survey expected a business that will produce and sell *Licorice*. However, it was found that *Job's tears* has high potential since it has been originally cultivated in Myanmar. Therefore, *Job's tears* was added as one of the expected businesses. In addition, business potential of *Shiunko* was also verified. It was found out that there is a high demand of *Shiunko* in Myanmar according to the needs survey.

Table2 Business Priority

Expected Business	Objectives	Priority
Produce and sell medicinal plant (<i>Licorice</i>) 	To improve farmer's income by producing high value-added products in the dry area of Mandalay and to stably supply raw material to Japan and ASEAN countries.	<u>To be discussed</u> Growth test is good and farmers are motivated to cultivate the plant. But it requires to wait for three years to know the results of the quality and yield. Also, when <i>licorice</i> is processed to medicine, a partner company should be selected and an environmental impact assessment of the processing plant should be conducted.
Produce and sell medicinal plant (<i>Job's tears</i>) 	To improve farmer's income by producing high value-added products in the mountainous area of Shan State and to provide stable supply of raw material to Japan and ASEAN countries. More importantly, it is expected that this will be distributed and propagated as an alternative crop to Opium poppy in the drug cultivation area.	<u>To be discussed (but with high potential)</u> Growth test is good. Estimating purchase price and distribution costs, <i>Job's tears</i> has high potential for business. But, remaining problems on the establishment of production management system and techniques of processing and transportation should be solved.
Produce and sell Kampo (<i>Shiunko</i>) 	To produce and sell Kampo medicine made by domestic raw material at low price and high quality.	<u>To be discussed</u> <i>Shiunko</i> has high potential for business based on the results of the training conducted to the staffs of the Department of Traditional Medicine and market test of the product. But there are still remaining problems such as delay of government approvals for production and sale of the product as medicine should be immediately solved. As soon as approved, production and sales shall be started in cooperation with Nippon Foundation Project. A part of production will be entrusted to a local maker and sold through a pharmacy.

As a result, all of the expected three businesses have business potential. Nevertheless, it is needed to be discussed and verified more in order to decide whether to start the business or not. Therefore, it was decided to implement the survey and verify the remaining issues continuously after the survey.

1.5 Results of the Survey

The survey subjects and results for each business model are shown in Table 3 below.

Table3 Survey Subjects and Results

Survey Subjects	Survey	Results
1 Produce and sell medicinal plant (<i>Licorice</i>)		
1-1 Identify land suitability for cultivation of each medical plant.	(1) Growth test (2) Climate condition at the sites (3) Land suitability for cultivation	Shinnihonseiyaku tested the cultivation of several types of medicinal plants in ten sites. The survey verified that the growth of the plant was good even in the dry area surrounding Mandalay. But it has to wait for three years to know the quality and yield results.
1-2 Identify production system of medical plant	(4) Production management system (5) Cultivation plan and acquisition of sites (6) Profitability (cost and profit) (7) Dissemination process of cultivation techniques (8) Select a local partner company (9) Production system of seedlings	Shinnihonseiyaku presented the purchase price to BOP farmers and they were interested in the cultivation. The cultivation system is preferable to produce seedlings at the government's experiment station and train farmers.
1-3 Identify collection and shipping system	(10) Collection and storage site (conditions of a location, facility condition, cost) (11) Transport route and transportation	The plant takes three years to yield. How to collect and transport the crop should be verified.
2 Produce and sell medicinal plant (<i>Job's tears</i>)		
2-1 Identify land suitability for cultivation of each medical plant	(1) Growth test (2) Climate condition at the sites (3) Land suitability for cultivation	Cultivation test was conducted in cooperation with the JICA Project for Eradication of Opium Poppy Cultivation. Growth was good and the yield reaches expectations.
2-2 Identify production system of medical plant	(4) Production management system (5) Cultivation plan and acquisition of sites (6) Profitability (cost and profit) (7) Dissemination process of cultivation techniques (8) Select a local partner company (9) Production system of seedlings	Shinnihonseiyaku temporarily set the purchase price of <i>Job's tears</i> and compared the profitability with the existing crop. The result showed that <i>Job's tears's</i> cultivation ensures more profit than rice. Establishing a production management system involving local NGO (Saetanar) should be considered.
2-3 Identify collection and shipping system	(10) Collection and storage site (conditions of a location, facility, and cost) (11) Route and transportation	Shinnihonseiyaku and a Japanese trading company had a meeting regarding transport route to Japan. It is needed to verify the processing and transportation techniques.
3 Produce and sell Kampo (<i>Shiunko</i>)		
3-1 Establish a production system of Kampo	(1) Selection of partner company considering continuity of Nippon Foundation Project and budget allowance (2) Production system (facility, capacity, quality management, and human resources) (3) As necessary, cost estimation and	Based on the needs of crude drug, a training of making <i>Shiunko</i> for staffs of the Department of Traditional Medicine was conducted. The benefits are the small production costs and the purchasable price for BOP (less than 1 dollar).

	infrastructure such as electricity, water, and road	
3-2 Establishing own sales network of Kampo	(4) Needs of Kampo for sale (Usage of crude drug) (5) Purchase price (6) Route and transportation	It was found that there was a strong desire for <i>Shiunko</i> to be used as liniment. In order to improve the recognition of Kampo as high quality herbal medicine, Shinnihonseiyaku developed its own brand name, package, and sales network.

As a result of the above verification, it was established that producing and selling *Job's tears* is most likely feasible among the different business models identified in terms of profitability, sales, and transportation. Also, BOP business should be significant in terms of the self-reliance of ethnic minorities and eradication of opium poppy cultivation. On the other hand, producing and selling *Licorice* is still too early in determining its business potential since the plant takes three years to grow. So, it is needed to verify the yield and quality after three years and look for a local partner. Regarding the production and sale of Kampo, it is needed to delve deeper on the drug registration process. Also, a business model, in collaboration with the “Traditional Medicine Box” Project by Nippon Foundation, together with the production of other medicinal plants, is preferable because the profit earned from simply selling Kampo is relatively low. Therefore, profitability of the product has to be verified.

1.6 Business Model

Closed to public

1.7 Remaining Issues and Required Survey for Future Business

As mentioned above, there are remaining issues to be solved and a required survey needs to be conducted.

1) Regulations and Laws

It is found in the survey that there are no constraints in the regulations and laws in the production and sale of *Job's tears*. However, *licorice* is regarded as a traditional medicine in Myanmar, while *Job's tears* is considered as food. Therefore, producing and selling *Licorice* and *Shiunko* would be against “7. Production of drug, chemicals and insecticide” and “29. It can be a large-scale production” as economical activities requiring an environmental impact assessment as stipulated in MIC Notification No. 50. It is important to discuss with MIC these matters based on the business plan.

2) Dissemination of Techniques

Agricultural techniques are not likely to be disseminated to farmers due to lack of extension workers and technical skills. Therefore, it was decided that a package dissemination including basic cultivation techniques should be done to ensure trusted production of farmers. The agriculture minister of the Mandalay Division also expects the transfer of Japanese techniques and agricultural training.

In response to this, Shinnihonseiyaku conducted a training on basic agricultural techniques for staffs of the Department of Agriculture, Department of Traditional Medicine, and farmer's group.

- 1 Cultivation of medicinal plants and their usage
- 2 Production of compost and its application
- 3 Farm management
- 4 Production of Kampo (*Shiunko*)

The participants evaluated the training and expected continuous practice. According to the evaluation, it was concluded that business practices such as training of trainers (TOT) to extension workers and transfer of training techniques to contracted farmers are good. Also, it would be preferable to cooperate with the JICA project and local NGOs due to the limited capacity of the company to disseminate the techniques.

3) Contracted Farmers

In the business, it will establish a trusted cultivation system and ensure quality and quantity of medicinal plant through planned cultivation and dissemination to contracted farmers. Especially, *Job's tears* cultivation targets the ethnic minorities of Lashio and Hopong in the northern Shan State. Establishment of a contracted cultivation system with social considerations on ethnic minorities is needed.

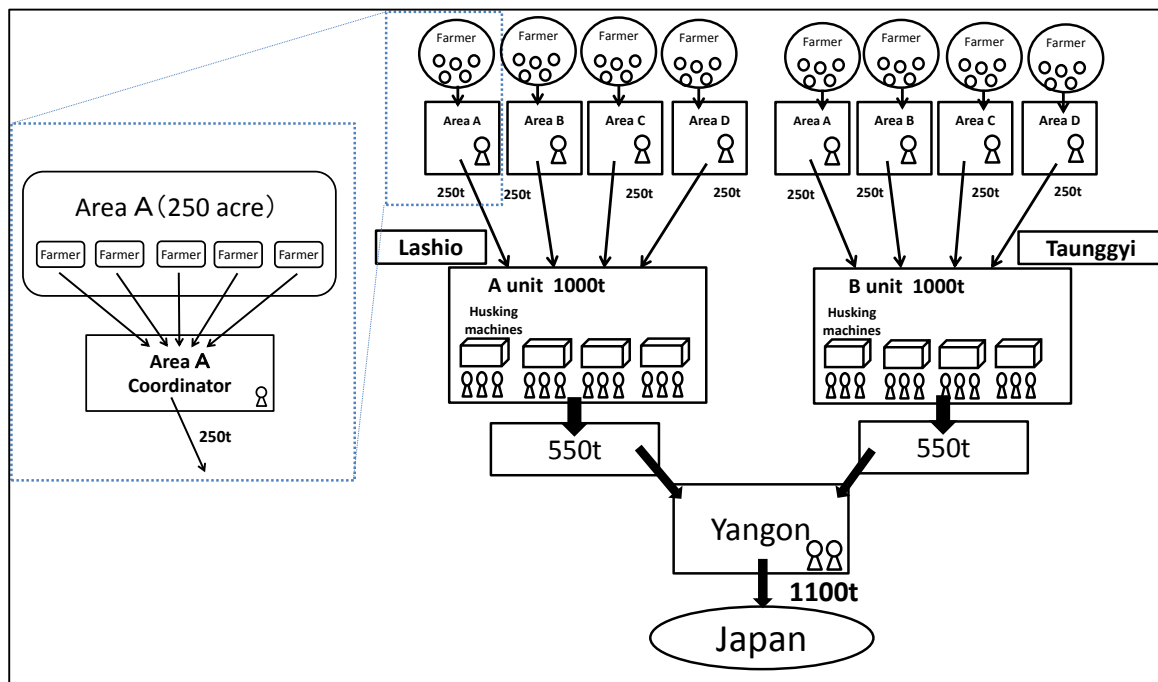


Figure 7 Structure of Trusted Cultivation

4) Transportation

Job's tears grains are transported from Lashio to Yangon via Mandalay. It was pointed out that the time in the transportation cycle tends to be long due to undeveloped roads and export process leading to quality deterioration or loss. In other words, it is important to transfer the techniques of nitrogen filling in order to reduce losses due to transport-related problems. The techniques are applicable to other crops and can improve the distribution system in Myanmar.

1.8 Business Plan

Closed to public