

Summary of Final Report
On
Preparatory Survey on BOP business on development and
marketing of high added-value processed agricultural products
in Nepal

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Japan International Cooperation Agency

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1. Background

In Nepal, agriculture is a major industry and approximately 65 percent of the working population is engaged in agriculture. Most of them work on small holdings as self-employed or unpaid family workers, so it is difficult to earn a living through subsistence. In addition, intensive harvesting often causes hardships for farmers if the price falls too low. On the other hand, there is an increasing demand for agricultural processed foods as a result of shrinking farmland in urban areas and the change of eating habits. Moreover, the existing businesses and their distribution systems have not satisfied the needs of the consumers.

As stated in the key documents indicating the strategic direction for Nepal's mid to long-term development such as Three Year Plan (2010/11-2012/13) and Agricultural Perspective Plan (APP: 1995/96-2014/15), economic growth and job creation in agriculture are long-term issues in the country.

Under the above-mentioned situations, Japan International Cooperation Agency (JICA) dispatched the feasibility study team on BOP (Base of the Economic Pyramid) business, which intended to increase the profits of BOP in Nepal by developing and marketing high value-added processed agricultural products with the Japanese processing technology complying with the relevant Japanese standard of hygiene management.

Love Green Japan (hereinafter LGJ), a Japanese NGO registered as International Non-Governmental Organization in Nepal in 2007, started its community development activities since 1991 in Kavrepalanchowk district about 50km away from Kathmandu in cooperation with Love Green Nepal (hereinafter LGN). LGJ has felt needs to develop processed food industries in Nepal, thus have implemented various training programs and provided opportunities for the community to promote people's understanding towards the project, to provide agricultural technology, and to institutionalize and strengthen people's organization. Furthermore, LGJ assumed that the increase of sales of value added agricultural products in cities would become a drive force for changing industrial structure which currently seemed to be difficult to make profits. LGJ thought the trust on Japanese technology would become an important factor for such promotion of high value-added processed food.

In the search of cooperation with an appropriate Japanese firm which has already agricultural processed food technology, Aichi Small Business Support Center linked LGJ with Mitsui Food Industry Co., LTD (hereinafter Mitsui Food Industry). Since Mitsui Food Industry has limited information on Nepal compared to the one of other Asian countries, LGJ, which had sufficient experiences on community development, was a perfect partner. Mitsui Food Industry also became more serious about developing a business of high value-added processed food at the same time to achieve cooperate social responsibility by improving status of the local people in Nepal.

TAC International Inc. (hereinafter TAC) accumulated experienced development consultants in Nepal and surrounding countries, to contribute in necessary surveys effectively and efficiently for this new BOP business. Thus these three entities came into cooperation to conduct this feasibility study.

2. Purpose of study

The main purpose of this study is to determine the feasibility of BOP business on development of high value-added processed agricultural products in Nepal.

It should be notified that the initial business model was changed from the proposal at the very early stage of survey into producing ginger products such as *gari-shoga*, which is a kind of Japanese *tsukemono* (pickle) served with sushi. Instead of producing vegetable *achar* and ordinary Japanese *tsukemono*, *gari-shoga* business was thought to benefit the local people as it targeted not only the Nepalese market but the Indian market. This study was aimed to determine market needs and feasibility of BOP business based on those changed targets.

3. Methodology

1) Field survey area

A. Nepal

- Kathmandu metropolitan city including Lalitpur and Bhaktapur districts
- Project sites of LGJ in which the Technical Cooperation for Grassroots Project supported by JICA has been implemented (Kavrepalanchowk, Sindupalchowk and Makwanpur districts)
- Tarai area (those points to link to India on land)
- Ginger producing area (West and East Development Regions)

B. India

- Delhi including Gurgaon where many Japanese companies have offices

2) Method

The following four steps were taken for this feasibility study.

1. Preliminary survey prior to field survey, information collection includes existing information using internet and review of statistical data and related reports published by Nepalese government and international organizations.
2. Field survey using various methods including pilot project, field visit, interviews, questionnaires and sample tasting.
3. Formulation of business model and plan
4. Prediction of development impacts and the formulation of tentative plans to obtain the results

3) Interviewees

- Government stakeholders (Ministry of Agriculture Development, District Development Committee, Village Development Committees, etc.)
- *Achar* producers, private sector of agricultural processed foods
- Members of Federation of Nepalese Chambers of Commerce, trading companies
- Community people, farmers, and women groups participating in LGJ's grass root project
- Local cooperatives
- Participants of sample tasting events and pilot project
- Consumers in market and sellers

- Owners of Japanese restaurants and local eat out shops
- JETRO New Delhi Office, Delhi Japanese Association, trading companies in Delhi, Japanese restaurants in Delhi, concerned experts in Delhi
- JICA Nepal Office, Japan Oversea Cooperation Volunteers, Senior Volunteers, JICA project experts, Japanese embassy, etc.

4) Survey period and schedule

Initial start of survey began in October 2013 and ends in January 2015. Four field surveys were organized as follows:

1st field survey-28 November -17 December, 2013 (three weeks)

2nd field survey-21 April-11 May, 2014 (three weeks)

3rd field survey-6-15 July, 2014 (ten days)

4th field survey-1-21 September, 2014 (three weeks)

5) Survey team members

No	Name	Designation	Title and Affiliation
1	Mr. Yasumasa IWATA	Leader Business model development	Management Planning Director Mitsui Food Industry Co., LTD
2	Mr. Masao AIKAWA	Sub-leader Survey on agricultural sector	Managing Director Love Green Japan (LGJ)
3	Ms. Junko SATO	Market survey and analysis Value-Chain survey	Senior Researcher Overseas Division Tac.International Inc.
4	Mr. Kazuhiko TORIGOE	Product development, quality control, survey on agricultural product, packing technology and equipment	Director, Quality Control and Development Mitsui Food Industry Co., LTD
5	Ms. Masako SASAKI	Survey on farmers' organization, law, social situation, environmental hygiene and labor force	Senior Researcher Technical Service Section Tac.International Inc.
6	Ms. Yuko SHIBUYA	Market survey and analysis Value-Chain survey (after 4 th field survey)	Senior Researcher Overseas Division Tac.International Inc.

4. Study conclusion and verifying factors

4.1 Changes made from the initial proposal

The study team concluded production business of the value-added processed agricultural foods in Nepal was feasible after four field surveys. The followings are the points that the original ideas were changed in accordance with the existing situation.

- Changes on the kind of processed agricultural products
 - Originally, producing *achar* targeting Nepali domestic market was proposed. However, it was changed into processed products using ginger produced by the Mitsui Food Industry. This was because the

product could target the local Nepalese market and as an export product into India. Regarding other processed products using other vegetables (Japanese pickle), will be produced as supplementary products and marketed and sold in both Nepal and India.

- Concerning *achar* production, a variety of products already existed prior the plan, so the project would have contributed to modernization, providing technical assistance on packaging and labeling of existing *achar* products.

➤ Changes on value chain

<Material production>

- Initially it was thought to procure materials from LGJ targeted areas and farmers but taking consideration of the gap between the procurable amount of vegetable under the current condition and the necessary amount of profitable processed food production, the main target was changed to procure material from other production areas and producers so that early materialization and stabilization of this business could be ensured. In future, once a stable supply change of vegetables is running from LGJ supported areas, the plan to procure necessary materials from the targeted areas and farmers will be reconsidered.
- The proposed business uses materials produced through IPM¹ methods, organic vegetables, and products that were instructed technically to assure the quality and size of Mitsui Food Industry requirements.

<Processing>

- The two-year trial period will be set and focus on ginger cultivation trial. Ginger product production will be contracted out to local business partners without the setup of individual processing plants, and technical assistance on producing *gari-shoga* and *tanzaku-shoga* will be provided.

<Marketing/sales>

- Although it was initially assumed to market *achar* through cooperatives, securing cooperatives as coordinating agents seemed difficult so it was re-planned to contract out marketing and sales in cooperation with existing *achar* manufacturing producers. Furthermore ginger products were identified as main export products so that domestic marketing/sales in Nepal could be a part of the whole business. In regards with other vegetable processed foods, besides ginger processed products whose supplemental production is planned, marketing and sales will be done through coordinated *achar* manufacturers. If food whole seller emerges in the future, marketing and sales by them will be considered.
- Concerning marketing and sales in India, ginger processed products (mainly *gari-shoga*) will be the main products. It is considered to conduct marketing and sales through trading company or local business partners.

¹ IPM is a method in which agricultural products are grown with no chemical pesticide. IPM has been promoted by especially FAO funded government project for food security purpose. IPM vegetable has three advantages: 1) safe to eat, 2) safe for farmers to grow, 3) no expenditure necessary for pesticide, and 4) less burden for environment.

<Consumption>

- Initially, Japanese resident were assumed to be the main consumers in India. However, the research team studied that Indian middle and wealthy class preferred or favored Japanese food, thus the local business partner candidate companies are also targeting those people. The revised business model additionally targeted the middle and wealthy class in India.
- Changes on business management
- The type of investment was changed from establishing joint ventures with local business partner to establishing local companies, with a sole investment by Mitsui Food Industry. This was so that they could reduce burden of local business partner and avoid problems that may arise in profit sharing. In addition, sole investment may be the most appropriate and efficient way of gaining mutual relationships with each independent business entity, as it may be necessary to coordinate with multiple business partners in the future. However, establishing local companies will be decided based on the results of trial business as mentioned before.
- It will contract out approval application processes on export foods and import procedure in India, as well as the relationship between local business partners in India.

4.2 Principle sources of the above decisions

The changed proposals were verified based upon several perspectives. The possibility of a smooth business management throughout all the stages of value chain (material procurement, process foods production, marketing/sales, consumption), whether it is a profitable business or not, sustainability of the business, and in addition whether the business can tackle development issues in the field survey. Discussions with local business partner candidates were repeated to put priority on their role. The followings are the major reasons why it comprehensively concluded this business feasible.

- Narrowing down the main material into ginger makes it possible to secure the material at required quantities. Putting the main product *gari-shoga* makes meticulous instruction on cultivation technique possible and also makes it possible to obtain high quality products which Mitsui Food Industry requires.
- It was confirmed that the demand for *gari-shoga* was high in India. It was proved by stakeholders in Nepal and India that our sample *gari-shoga* product were better in quality and tasty in comparison with the ones in current market. Hence, *gari-shoga* using Nepalese ginger produced based on Japanese quality standard was considered to have a high chance of success in India in terms price, taste and quality. It was also revealed that there were possibilities to explore exports into South East Asia, Middle East and EU and having future potentiality was a big plus point for this business.
- It was expected to establish good relationships with local business partner candidate companies through four-time field surveys. Especially coordinating with Annapurna Organic Industry seemed beneficial in renting the place for processing plant and securing employees. Furthermore, procuring necessary amount of material from BOP people as farmers groups and contracted farmers in ginger producing area, and getting support from local farmers groups on cultivation technique provision, etc.

were very beneficial. Mitsui can reduce the cost significantly if material procurement and processing production are contracted out to this candidate company, and Mitsui Food Industry will provide salaries to seasonal workers as well as introduce and instruct new technology.

- Contributing to secure a stable income and income generation of farmers by contracting cultivation to farmers was considered. This will be beneficial for providing employment to BOP people who live nearby from the processing plant and providing cash income and knowledge on processing technique and sanitation.

The background why these judgments were made is described below.

4.3 Major verification results

1) The current situation of institutional development of farmer groups

LGJ/LGN has been implementing a project called “The Project for Improvement of living through circulated agriculture and protection of landscape giving sufficient consideration to natural environment in hill district in Nepal” targeting four villages such as Devitar VDC and Kavre VDC in Kavrepalanchowk, Kuvinde VDC in Sindupalchowk and Bajarabarahi VDC in Makwanpur districts. In this study it was revealed that the amount of vegetable production and the level of farmers’ local institutions were not sufficient enough to build a basis of a business model. Though LGJ/LGN has been putting efforts on institutional development by providing various inputs, it was identified that infrastructure development including small roads and transportation measures was also necessary which would take three to five years. A stable supply of vegetable was prerequisite for food processing business. Therefore, the study team explored business opportunity towards ginger based processed food at the early stage of this study and shifted its interest towards ginger production and ginger processing business. But there are still possibilities to continue partnership with LGJ/LGN, to produce vegetable *achar*, utilizing vegetables grown by Integrated Pest Management (IPM).

2) Production of vegetable as material

It was initially planned to increase the added value of processed products by using the IPM vegetables, however, it was revealed that IPM vegetable was sold at the same price as other non IPM vegetables; in addition, there were almost no recognition on IPM vegetable in the market. Organic vegetable was more popular, and it became clear that health conscious consumers purchased organic vegetables intentionally. Thus, in order to promote IPM vegetables through market strategies, the first step was to spread the level of recognition towards safety of IPM vegetables, which was very time-consuming. Then LGJ/LGN had to put more effort on adding value to IPM vegetable by, for example, setting up an IPM vegetable shop in which IPM agriculture products are sold in the market. After the commencement of the business, building coordination with farmers in LGJ/LGN supporting area, this business would have to develop processed foods which utilize commodities cultivated by IPM method, in the long run.

Farmers who grow agricultural products using IPM method produce 60 ton of vegetable and consume 5-10% of it themselves. But for the time being, partnership with other private sector such as Ashapuri Organic Farm, which produces large quantities of organic vegetables should be taken into consideration.

Maintaining multiple links with organic vegetable producing private sector and farmers of LGJ/LGN project sites would be necessary to procure the sufficient amount of vegetables for food processing.

Regarding ginger production, Mitsui Food Industry Co., LTD. is going to process ginger into *gari-shoga* and *tanzaku-shoga*. It is necessary to improve the way of cultivating ginger so that its quality and productivity become more favorable for food processing. It will be done through multiple trials and the direct cultivation technique will be taught to ginger farmers in order to secure the stable production of qualitative ginger.

3) Achar domestic production, sales and marketing in Nepal

Through the investigation on *achar* production in Nepal, it was revealed that the level of cultivation was only at a cottage industry level. The environment in which the products were processed and produced in terms of sanitation and quality control was very low, at a primitive stage, and was drastically behind compared with Japanese food production. One of the larger *achar* producers called WEAN Multipurpose Cooperative pays women to produce the ordered products, being a key role in marketing. An example of a small cottage industry, called Nandini Food Product, takes order first and supplies demanded products to various supermarkets. Nandini Food Product produces *achar* taking order from both retailers and catering service. Increased order from catering service has made their business outcome more stable.

Currently entrepreneurship development of farmers and housewives through homemade *achar* production has been promoted. Department of Food Technology and Quality Control under Ministry of Agriculture Development also provides training of safe *achar* production, and also conducts other activities to promote the entire business itself.

There are no statistical data on pickle production including *achar* by manufacturers. Therefore, it is impossible to grasp the amount of *achar* in the market and how much are exported. However, the previously mentioned WEAN Multipurpose Cooperative seems to sell Nrs.15 – 20 million annually

Based on the findings above and the result of questionnaires, it was judged that directly entering *achar* production and sales by Mitsui Food Industry was impossible. Firstly, Mitsui Food Industry had no concrete knowledge on how *achar* production would cater the Nepalese people. Secondly, the scale of *achar* business was relatively small considering WEAN's annual business, so it was concluded that Mitsui Food Industry would focus on pickle production which could utilize its expertise and cooperate modernization of outer package of *achar* by upgrading product label and package quality.

4) Business development prospect in India

It will retain the market routes through various trade companies or Zovamo Pvt. Ltd. for exporting from Nepal to India. Mitsui Co. Ltd. India predicts that the demand for Japanese food will increase as the current trend of economic boost continues and expands its middle and wealthy class in India. Mitsui Food Industry may link with Mitsui Co. Ltd. India on export ginger products to India.

According to Zovamo Pvt. Ltd., the price of Japanese *gari-shoga* in India is IC500 per kg, compared to IC350/kg *gari-shoga* imported from Thailand and Singapore. The company deals about 10 ton of ginger material monthly, thus processing 100 ton of ginger products annually will be plenty to make a worthy profit.

The initially proposed business of Japanese pickle was targeting export for foreigners and retail sellers in

Delhi, India. After the changes into *gari-shoga* and *tanzaku-shoga* production as the main objective of the business, the demand for those products was the focus for the study. Through two field surveys conducted in India, Japanese food catering companies and Japanese restaurant clients was able to be identified.

However, due to strict compliance with the food security regulations and recent changes on import policies, importing Japanese food is currently very difficult. Actually Indian catering companies used to import *gari-shoga* from Japan, Thailand and Singapore, but the import was banned at the time of this study. Due to the bad quality of *gari-shoga* produced in India, the demand for good quality *gari-shoga* by restaurant owners, food traders and the Indian wealthy was extremely high.

Zovamo Pvt. Ltd. currently provides 3 tones of raw ginger, and the demand for *gari-shoga* is assumed to increase significantly targeting the wealthy class and Japanese restaurants. To tackle these urgent needs, Zovamo Pvt. Ltd. has considered to import various Japanese food products directly from Japan, but it would be beneficial for both parties if Mitsui Food Industry could provide high quality *gari-shoga* at the minimum cost from Nepal. Zovamo Pvt. Ltd. was identified as a prospectus business partner. Zovamo Pvt. Ltd. has been equipped with the assets to handle and approve procedures of importing food material.

Mitsui Food Industry will export demanded *gari-shoga* and *tanzaku-shoga* targeting wealthy or middle class people for India. In order to implement the processed commodities from Nepal into the Indian market, the value of the product must be addressed. This includes the quality of the product and assured safety, as well as the trustful Japanese food processing technology and sanitation management systems.

5) Business sites and local business partners

The study found it would be more beneficial to set up processing plant near the material production site. Though initially Kavrepalanchowk and Palpa districts were focused for procurement of vegetables, in the forth field survey, the team observed the current situation of ginger production in Pyutan district where Annapurna Organic Agriculture Industry had many contracted farmers. Sample production was conducted using ginger produced by their contracted farmers in Pyutan. Processing plant of Annapurna Organic Agriculture Industry in Kapilvastu was visited twice and it was listed as the most appropriate candidate for the processing site as it was close to India and had a stable electricity supply, with sufficient underground water.

Ashapuri Organic Farm is also offering to share its plant for Mitsui Food Industry in Sanga, Kavre district in which the company is going to produce yacon syrup. The site has a water spring nearby and is ideal for processing plant so we will keep in touch with this organic vegetable producer.

In conclusion, Annapurna Organic Agriculture Industry was identified as the most promising partner for ginger processing business and Ashapuri Organic Farm seemed relatively trustworthy partner for a vegetable processing business.

5. Tentative Business Plan

The final business plan is as follows:

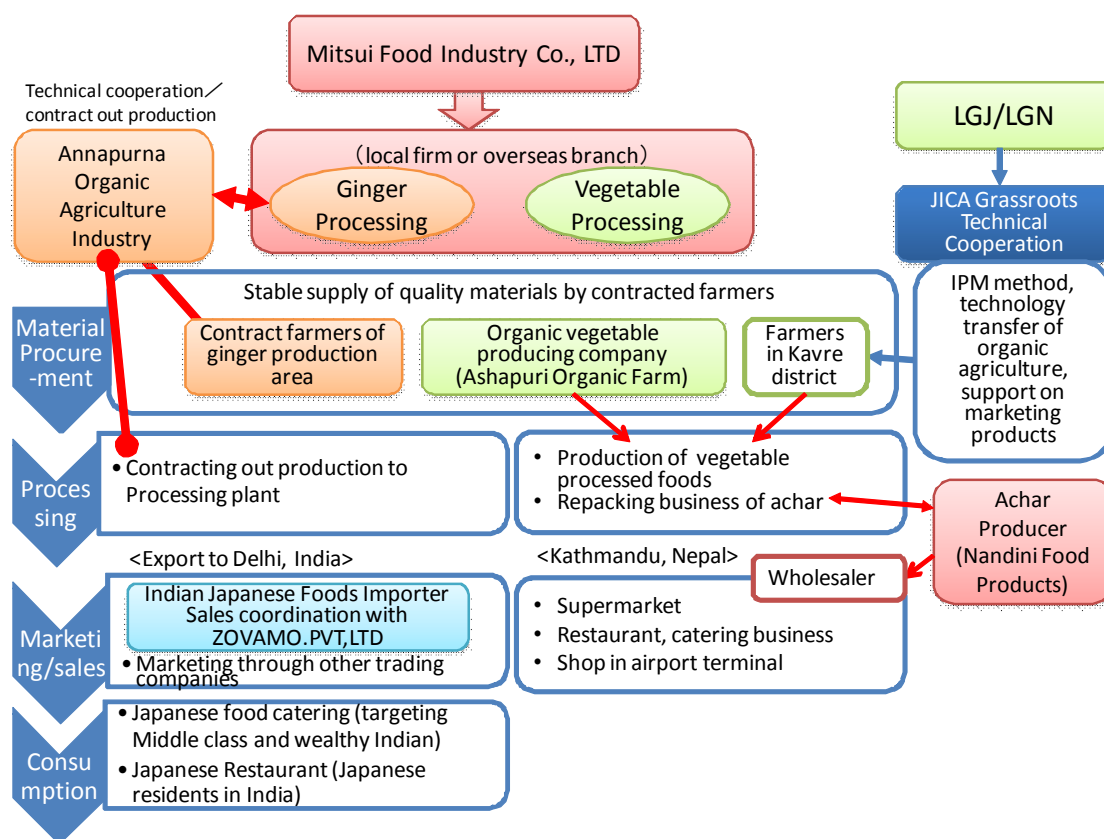
- Mitsui Food Industry will have a two-year trial period after this feasibility study.
- Mitsui Food Industry will either establish a firm in Nepal with their individual budget or contract

out its production to local business partners, keeping the management base in Japan.

- It will have two pillars; the production of ginger products including *gari-shoga*, *tanzaku-shoga*, etc. and the production of other vegetable products including *achar*, *asazuke*, dry food, juice, etc.
- The possible business sites will be Kapilbastu where one of the candidates for business partners has its processing plant or where they have contracted ginger farmers nearby, in the case of ginger business. In addition, Kathmandu or surrounding areas such as Kavrepalanchowk would be an appropriate location for vegetable products.
- Concerning business partners, Annapurna Organic Agricultural Industry was identified as the most promising partner for ginger processing as it had already manufactured ginger powder procuring materials from local farmers, through the promotion of such business. In case of vegetable process food business, Ashapuri Organic Farm, the largest organic vegetable supplier, would be the best candidate for material procurement. It can be also expected that the Farm would be able to produce ginger. Therefore, Ashapuri Organic Farm can possibly become a promising business partner.

5.1 Tentative Business Model

The modified business model is as below figure. The business details follows afterwards.



5.2 Tentative schedule for implementation of business plan

Based on the field survey results, the decision of cultivating ginger processed products have been made, with mainly *gari-shoga*, as the main product in order to sustain a decent profit. It is necessary to instruct

ginger producers on the appropriate cultivation technique that is suited for *gari-shoga* farming, and validate the amount of production and the quality of products as export processed food. It is also planned to implement trial cultivation for two years considering introduction of several varieties, unfavorable weather conditions during cultivation, occurrence of disease epidemic and so on. Then, the expected quantity of production would be 10 tones per year, while producing sample products. The tentative schedule is as follows:

March-September 2015	The first cultivation trial, deciding where sample products will be produced, processing machine and quality control equipments will be installed
September-November 2015	The first sample production including the first and the second processing, sanitation control and quality control
Nov. 2015-March 2016	Provision of sample products to stakeholders, the most appropriate variety of ginger will be identified
March-September 2016	The second cultivation trial
September-Nov. 2016	The second sample production including the first and the second processing, sanitation control and quality control
Nov. 2015-March 2017	Provision of sample products to stakeholders, start preparation for business establishment including application of processed food for export utilizing sample product, foreign investment in Nepal, registration of trade mark, etc.
March 2017	Starting business from material production which also involve maintenance of equipment

5.3 Remaining issues and countermeasures towards materializing business

Mitsui Food Industry has decided to have a two-year trial period after this feasibility study and verification project including instruction on ginger cultivation. Based on the result of the verification project, Mitsui Food Industry will decide whether they will start a business at full scale. During the trial period, cultivation instruction of ginger, sanitation management and quality control measures during manufacturing process will take place. However, there are still various issues or concerns such as securing budget for introducing machinery, dispatching staff to project site, construction of good relationship with partners, technology transfer, etc.

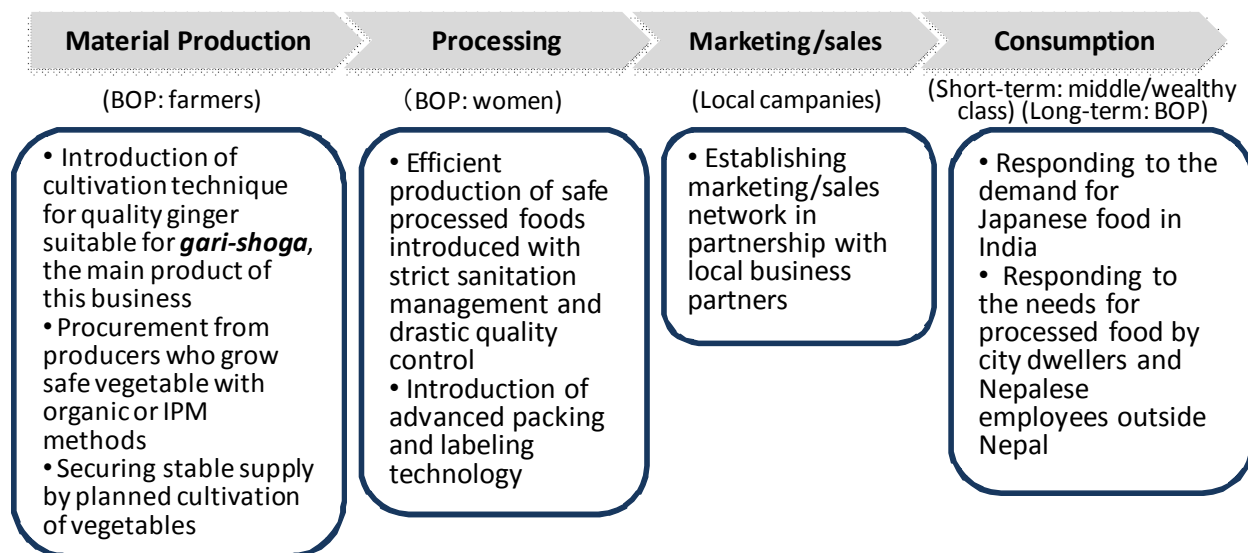
Especially procuring machinery for processing and analytical instrument for quality control is necessary. Mitsui Food Industry has a limited budget of 5 million yen so only a minimum amount machinery and equipment can be introduced during the trial period. Thus, although 10 ton of production is ideal, Mitsui Food Industry will implement trial by reducing production from 10 to 3 ton for the first year without introducing new machinery investment, hence replanning is inevitable to figure out the way to produce with a minimum investment. Mitsui Food Industry will start cultivation trial from March 2015.

5.4 Value chain planning

Participation and cooperation by BOP people is inevitable for constructing a value chain for high value-added agricultural food processing business. However, the relationship between Mitsui Food Industry and LGJ/LGN supported farmers is weaker now since some modification was made to the original plan to make ginger processing the main focus of the business.

Annapurna Organic Agriculture Industry which is the most promising business partner has built up a good relationship with ginger producing cooperatives which is composed of BOP people for material procurement, it can be said that this food processing business is still meaningful as a BOP business.

The value chain which this BOP business is seeking, is as follow:



The final draft of value chain construction for value added agriculture processing product business

5.5 Product development plan

The main source products will be *gari-shoga* and *tanzaku-shoga*. Since there are more possibilities of production and sales of other ginger processed foods such as ginger powder and dry ginger slice, the other products will be well considered in the two year trial period.

Regarding other vegetable food, product development with Nepalese favorable taste will be proceeded. For the time being, this product development will be conducted at a small scale as there are currently no detailed plans. The development will be implemented on a trial and error basis at a level where no big loss can be caused. Concerning *achar* production business, partnership with existing small industry is now taken into consideration and no new product will be developed.

5.6 Procurement plan of materials and equipments

In regard with ginger processing products, materials will be procured from contracted ginger farmers through Annapurna Organic Agriculture Industry. However, it is necessary to instruct the contracted farmers on proper cultivation techniques, to keep the quality of ginger suitable for *gari-shoga*.

Calculating the break-even point of *gari-shoga* production after surveying the current situation in Nepal and India, producing yearly at least 35 ton of *gari-shoga* is necessary. For that, at least 50 ton of material is required. Mitsui Food Industry intends to produce 3 ton of ginger product in the first year of trial project and then gradually increase the production. Then, two or three years later, this ginger business will be aimed to function at full scale, after securing the market for 35 ton *gari-shoga* production and this

expansion of producing 50 ton of ginger will be conducted in cooperation with Annapurna Organic Agriculture Industry.

Concerning equipments, it is necessary to introduce food processing machinery including vegetable washing machines, slicers, labeling machines, mixers, filling machines, metal detectors and analyzing equipments for quality control, generators, tractors for cultivation training and so on. It is planned to procure those equipment and machineries in Japan and transport them to Nepal. High quality packing and labeling material are not available locally in Nepal so it must be transported from Japan. Large tanks for soaking vegetables and working tables that are necessary for processing plants will be procured in Nepal.

5.7 Production, marketing and sales plan

The production of major ginger processed products is expected to be 10 ton annually for the time being as mentioned above to meet the demand in the Indian market. Marketing and sales of the ginger product will be taken by Zovamo Pvt. Ltd. with which Mitsui Food Industry is going to establish partnership. Zovamo Pvt. Ltd. runs a Japanese restaurant chain as well as distribute companies that provides Japanese food catering services in Delhi. It is expected to explore other marketing and sales partners through trading company. In the forth field survey, the team discussed with a personnel of Mitsui & Co. India Pvt. Ltd. who is in charge of food trading and requested them to explore more buyers of ginger processed food.

The study team also had a meeting with the representative of Alternative Herbal Products Pvt. Ltd. which had started to export ginger powders and slices to the Middle East and European countries in order to seek the possibility of export to those areas. Then it was confirmed that coordination with this company would make the sales to those area possible. However, this company is requesting to establish joint ventures so more discussions will be needed for further cooperation.

5.8 Personnel plan

The initial production scale was very small with only 10 ton of production of the main product which is *gari-shoga*. It would require two weeks for the first processing at the time of harvesting and another two weeks for the second processing after receiving order and before supply of ordered goods. Therefore, workers will be employed seasonally as short contract part-timers. Securing such workers will be commissioned to local business partner or workers and they will be expected to be assigned periodically. These will be detailed in the commission contract clearly.

This business will be led and managed by the staff dispatched from Mitsui Food Industry but management at local level will be responsible by employed managers who have experiences on management, sanitation control and quality control. Two managers will be employed.

In regard with human resource developments, training in Japan for managers is expected to be implemented and Mitsui Food Industry will provide chances to acquire knowledge and skills on processes of manufacturing, sanitation management, and quality control. The seasonal workers are also provided with job training so that they will acquire knowledge and skill on especially food processing and sanitation management.

5.9 Local business partner

As mentioned earlier, Annapurna Organic Agriculture Industry is the first candidate for a business partner. In addition, Ashapuri Organic Farm which is now constructing plant in Kavrepalanchowk is on consideration for a partnership too. Decision will be made during the trial period.

5.10 Business budget estimate

Cost estimate per year is as following table.

(Nepalese Rupees)

Budget heading	Items	Content and regards	Amount
Fixed cost	Personnel cost	2 managers X 50,000/month/perspm X 12months	1,200,000
	Electricity	Estimated based on hearing	200,000
	Water		
	Gas		
	Others		
Depreciation	5000,000 depreciated in 7 years	715,000	
Variable cost	Part-time workers	8 workers X 500/day X 40 days/person	160,000
	Material cost		2,000,000
Management cost	DA and lodging	7 daysX3 times=21 days X 25,000/day	525,000
	Travel	3 times X 160,000	480,000
Total cost			5,280,000

Implementing this business requires about 5.5 million yen at least based on the following calculation (1NRs=¥1.1 as of Oct 2014). It is conditioned that processing plant of local business partner will be utilized. In regard with construction cost of plant, calculating the exact expenditure is impossible at this moment since production scale is unclear.

Required initial investment

Acquiring license cost		NRs500,000
Machinery equipment investment		¥4,400,000
Slicer	3,000,000	
Labeling machine	300,000	
Inspection tools	100,000	
Metal detector	1,000,000	
Soaking facility		¥366,600
Water tank	234,000	
Lid resting directly on food	72,000	
Bucket	60,600	
Processing facility		NRs120,000
Working table	120,000	

5.11 Financial analysis

During the two-year trial period, production of *gari-shoga* will be the focus. Regarding other supplement products such as vegetable *achar*, a business plan will be made during the trial period. Thus, a business

plan has been created for *gari-shoga* production only.

5-year Business Plan

		Trial Period					(1,000Yen)
		Year 1	Year 2	Year 3	Year 4	Year 5	Remarks
Sales		Test calculation grounds 0.3 tn yearly	Test calculation grounds 5,600 10 tn yearly	Test calculation grounds 19,600 35 tn yearly	Test calculation grounds 28,000 50 tn yearly	Test calculation grounds 28,000 50 tn yearly	
Sales cost	Material cost	473 4.5 tn	1,575 15 tn	5,513 53 tn	7,875 75 tn	7,875 75 tn	1.5 times of production target, Yen105/kg
	Commission to farmers	35 5 ropani	105 15 ropani	371 53 ropani	525 75 ropani	525 75 ropani	Guaranteed commission for cultivation trial, 10,000Yen/month X 7 months (1 tn of ginger cultivation)
	Personnel cost	trial 4 80 person/day, 40 days	trial 8 person/day, 40 days	200 trial 10 person/day, 40 days	250 trial 10 person/day, 50 days	250 trial 10 person/day, 50 days	part-timer's daily wage is 500Yen
	Seasoning material cost	1,035	1,035	3,625	5,175	5,175	103.5Yen/kg of production amount
	Other expenses	200 100%	220	240	265	290	200,000Yen/year, includes facility maintenance, utility cost, water, etc., price increase at 10%
	Depreciation	715	715	4,300	4,300	4,300	depreciation in 7 years, 5million yen for purchasing equipment during the first and second year, equipment purchase after the 3rd year 25,000,000Yen
	Total	2,538	3,810	14,249	18,390	18,415	
Sales profit		-2,538	1,790	5,351	9,610	9,585	
Indirect cost		1,200 60% management	1,200 60% management	2,000 100% management	2,000 100% management	2,000 100% management	Managers' personnel cost, full-timer 2 persons, 50,000Yen/month, 200,000Yen/year
Ordinary profit		-3,738	590	3,351	7,610	7,585	
Reference	Fund by Misui Food Industry	5,000	5,000	0	0	0	
	Remaining loan						

Sales estimation: *gari-shoga* 1kg package, wholesale price: Nrs.560 (350Yen) (1) First year 3,000 packages/year, annual production: 3 tn (sample distribution), sales: 0 Yen, (2) Second year 10,000 packages, annual production: 10 tn, sales: 5,600,000Yen, (3) Third year, 35,000 packages/year, annual production: 35 tn, sales: 19,600Yen (4) Fourth year and fifth year, 50,000 packages/year, annual production: 50 tn, sales: 28,000,000Yen

After starting real business, manufacturing cost estimate of major product, *gari-shoga*, will be as follows:

(Nepalese rupees)

Items	Contents	Remarks	Price per kg	Cost
Material vegetable cost	Material price	Nrs.80/kg	105	
		Material cost total		105
Seasoning cost	Seasoning	Liquid unit cost	40	
		loss	44	
		Liquid amount to use	2	88
		Seasoning related material cost total		88
Packaging cost	Package	Package	10	
		Total	10	
		Loss rate	5%	10.5
	Outer package	Yen/entering no.	5	5
		Material cost total		15.5
Manufacturing cost				208.5
Other manufacturing cost	Processing cost			
	Packing cost		2	2
	Other personnel cost		5	5
	Utility cost		2	2
	Others (fixed)		1	1
	Other manufacturing cost total			10
Grand total cost				218.5

* Calculation was done based on sample production as pilot activity during the fourth field survey.

- Material will be purchased from contracted farmers of Annapurna Organic Agriculture

Industry.

- Additives such as sugar, vinegar, salt, etc. will be purchased in local supermarkets in Nepal. However, organic color additive will be brought from Japan. Based on those prices, seasoning cost has been calculated.
- Packaging material will be brought from Japan.

Based on the above, the break-even point will be estimated as below:

Suppose the planned sales price of 1kg *gari-shoga* is Nrs.350, fixed cost of Nrs.208 will be deducted from Nrs.350 ($350 - 208 = 142$). Then suppose total cost is 5 million rupees and A is break-even point.

$142 \times A = 5 \text{ million}$ Therefore A will be

35,000 packages/year (2,920 packages/month)

It means that in case of manufacturing 1kg package of *gari-shoga*, manufacturing annually 35,000 packages (50 ton of raw ginger needed) is the break-even point.

5.12 Financial source procurement plan

Mitsui Food Industry decided to allocate its own fund of 5 million yen per year of trial, thus two years would be equivalent to 10 million for two years. Since it is difficult to introduce high functioning equipments with this budget, other financial sources will be investigated.

5.13 Plan for acquiring permit and licenses

If after the two year period, the study shows profit and is sustainable, a plan to apply for foreign investment approvals and trademark registrations would take place in January 2017. However, it may apply for those approvals earlier in consultation with local business partners and lawyer during the trial period.

6. Development concerns

6.1 Sensitivity on environment, gender and social inclusion

Concerning environmental sensitivity, local ginger seeds recommended by Nepalese government that are not foreign species will be used during the trial. It is necessary to comply the rules and regulation on drainage and waste management and deal those properly.

In regard with employment of local workers, the employment of local indigenous people and women intentionally however small the scale would be, must be considered. Whenever training and seminar is conducted on ginger cultivation for contracted ginger farmers, selection based on gender sensitivity and social inclusion should be taken place. Balanced gender ratio in participants should be retained by a proper selection process, with clear instruction on numbers of women and men participants, and in addition, social inclusion should be considered if the area has certain number of Dalit, Muslim and Madeshi population.

6.2 Possible coordination with JICA program/projects

Though it has been diverted from the initial idea, it is still ideal to keep the good relationship with LGJ's JICA supported project so that the new business will benefit LGJ's target farmers. It is expected that this business can utilize vegetables which LGJ's farmers could supply stably and expand the production of other vegetable such as *achar* while maintaining the ginger processing during the trial period. These would require cooperation between two parties, LGJ and Mitsui Food Industry.

In addition, Mitsui Food Industry will put their own efforts on technical cooperation and technical transfer on cultivation to contracted farmers, and sanitation management and quality control to workers, cooperation with JOCV and Senior Volunteers.

6.3 Impacts on development

Development issues which this processing food business will look at are the following three:

1. Farmers' income increase
2. Sustainable employment creation, empowerment
3. Revitalizing the local economy, stopping depopulation (long-term impact)

Indicators for evaluating development effects of this business will be below:

1. Farmers' income increase
 - The number of contracted farmers (farmers who joined producers' cooperative)
 - The cultivating area of contracted farmers (both ginger and vegetable producers)
 - The amount of ginger and vegetable which contracted farmers cultivated and sold for this business
 - The income of farmers
 - The sales record of producers cooperative
1. Sustainable employment creation, empowerment
 - The number of employees
 - The number of trainees of in-house training and trainees who have completed training target
 - The number of implemented in-house competition and its content
2. Revitalizing local economy, stopping depopulation (long-term impact)
 - Changes on local environment such as infrastructure, etc.
 - Changes of living standard (housing and household goods) of local people