

Socialist Republic of Vietnam
Nghe An Provincial People's Committee

Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An in the Socialist Republic of Vietnam

Final Report

March 2019

Japan International Cooperation Agency (JICA)

NTC International Co., Ltd.
Oriental Consultants Global Co., Ltd.

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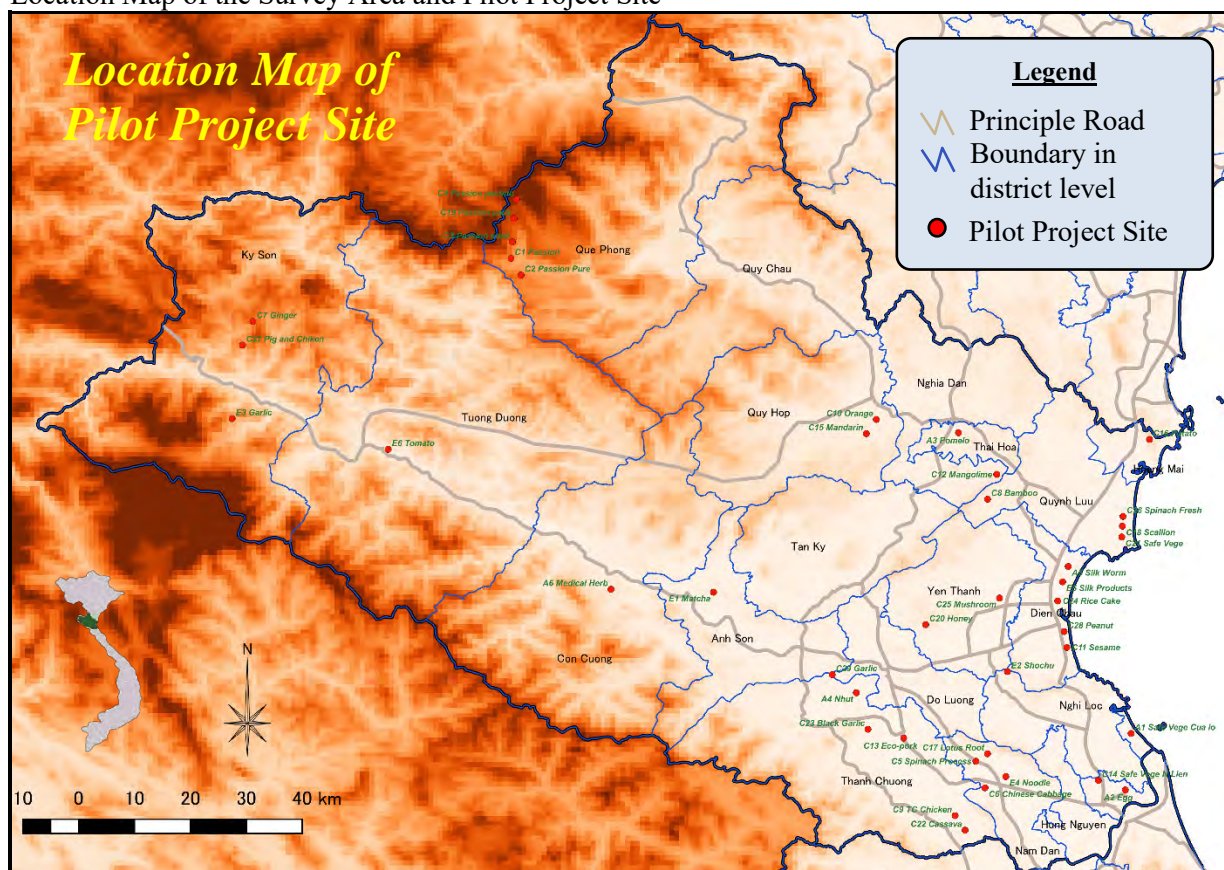
Socialist Republic of Vietnam

**Technical Cooperation Project
on Development Planning of Agriculture Sector
in Nghe An in the Socialist Republic of Vietnam**

Composition of Final Report

- 1. Main Report**
- 2. ANNEXES**

Location Map of the Survey Area and Pilot Project Site



ID	Title of Pilot Project	ID	Title of Pilot Project
C1	Production of competitive fresh passion fruit for domestic market	C22	Production and sales of cassava silage for dairy farms
C2	Improve processing yield of passion fruit for competitive marketing	C23	Sales Promotion of Black Garlic Products
C3	Value chain development of passion fruit seed as health functional supplement	C24	Rice production for processing of rice snack
C4	Production and marketing of pectin extracted from peel of passion fruits	C25	Promotion of Jew's ear mushroom for exportation to Japan
C5	Large size spinach production for IQF processing	C26	Trial cultivation of spinach for the demand of domestic fresh market
C6	Cultivation of cost-efficient Chinese cabbage for processing	C27	Production and Sales of H'mong Chicken and Local Black Pig
C7	Improvement of ginger production to meet international market demand	C28	Promotion and marketing of ground nuts for exportation to Japan
C8	Improving bamboo shoot production for export demand	C29	Improvement of garlic production and marketing
C9	Brand promotion and production improvement of Thanh Chuong chicken	A1	Vegetable Production in Cua Lo tourism town
C10	Improvement of value chain of oranges in Quy Hop	A2	Production and sales of eggs in urban areas
C11	Production of black sesame for oil extraction for Japanese market	A3	Improvement of quality of Quang Tien pomelo to satisfy the market needs
C12	Improvement of mango and lime specification for Japanese market	A4	Sales promotion of Nhut
C13	Production and marketing Improvement of Eco-Pork	A5	Improvement of production and competitive power of silk products
C14	Safe vegetable production and distribution in Vinh city	A6	Improvement of herbal trees production and marketing
C15	Improve cultivation technique for higher yield and quality of mandarin	E1	Production and sales of Matcha
C16	Production of potato for producing processed foods	E2	Sales of rice for brewing of Shochu
C17	Introduction of lotus root production	E3	Branding of rice noodles as a tourism resource
C18	Promotion of scallion for exportation to Japan	E4	Production of garlic seed for export to international market
C19	Improvement of fresh passion fruit conservation	E5	Production of endemic tomato as a special local product
C20	Promotion and marketing of honey produced in Nghe An province	E6	Development of silk products
C21	Contract farming for safe vegetable	E7	Production of endemic mango as a special local product

C: JICA Consultant Team, A: AMPF, E: JICA Expert Team

Pictures of the Project Site

Current Situation of Target Area



Rice cultivation in plain area. There is large-scale plain area, but there are many small farmers who have small farmland.



In mountainous area, people cultivate specialty agricultural products such as tea, ginger, etc.



A company produce and process tropical fruits products to export to USA, EU, Japan, etc.



Few corporations in Nghe An have succeeded in the large-scale business of agriculture and livestock.



A retail store is selling safe vegetables, safe meat, and infant food for middle and high-income class. (A company has eight stores in the province)



Local market in Vinh city. Many consumers purchase fresh vegetables, meat, fish, etc. at the local market.

Activities by AMPF and C/P



AMPF was officially established after discussion with PSC, PMU, etc.



Implemented seminar for AMPF and AES regarding the agriculture extension program in cooperation with C/P



C/P visited Center for Consulting and Support for Agriculture under DARD in Ho Chi Minh City that is precedent organization.



AMPF have planned and held several matching events between agricultural and livestock producers and buyers.



AMPF have planned and held several matching events between agricultural and livestock producers and buyers.



AMPF attend the several Trade Fairs in Vietnam

Pilot Projects



AMPF planned and implemented 'Improvement of quality of Quang Tien pomelo to satisfy the market needs' PP in cooperation with DPC, AES, agricultural cooperative in Thai Hoa



The Project promoted various safe certificates and target farmers/ Cooperatives acquired the certificates in many PP. The picture shows training of DARD certificate in egg PP.



In sesame PP, it is verified that there are several climate risks such as typhoon, flood, high temperature, etc.



In Thanh Chuong chicken PP, the farmers installed incubator utilizing the district subsidy.



In mandarin PP, held the training of selecting fruits for grading. The PP promotes branding of Vinh orange.



In fresh spinach PP, it is confirmed the demand of fresh spinach in the province. Contract farming has been started.

Summary of Main Report

1. Outline of Project

Background and Objective

The "Japan-Vietnam Agricultural Cooperation Dialogue" which is a framework between the governments of Japan and Vietnam, has started since June 2014. Through this dialogue, the governments materialize and promote the cooperation in line with the agreement for comprehensive development of agriculture sector in Vietnam signed in May 2013, and the establishment of food value chain with the involvement of private investment. It was mutually agreed that Nghe An province was selected as one of the model areas among 63 provinces for the promotion of food value chain to achieve the goal. The objective of this Project is to develop Master Plan (M/P) and Action Plan (A/P), which shows the roadmap of developing the basis of FVC in Nghe An province.

Target Area of the Project

The target area of the Project is the whole area of Nghe An province, and major consumption area such as Hanoi for marketing study.

Implementation Structure of the Project

Counterpart agencies of the Project are Nghe An Provincial People's Committee (PPC) including Department of Agriculture and Rural Development (DARD), Department of Planning and Investment (DPI), Department of Industry and Trade (DOIT), Department of Transport (DOT), Department of Health (DOH), Department of Natural Resources and Environment (DONRE), Department of Tourism (DT), Department of Science Technology (DOST), and Department of Finance (DOF), Nghe An Provincial Cooperative Alliance, International Cooperation Department of Ministry of Agriculture and Rural Development (MARD), Vietnam Academy of Social Science (VASS) and Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD).

Workflow of the Project

This 3-year Project, which was commenced in March 2016, has been implemented to prepare agricultural development plan through the basic study on the agriculture sector, the establishment of supporting system for agricultural value chain, and implementation of pilot projects (PP).

2. Current Situation of Target Area

Natural Condition

Nghe An province is located in the center of the North Central Part of Vietnam. Nghe An province can be broadly divided into three categories of areas, i.e. mountainous area, hilly area and coastal plain area. Mountainous area and hilly area account for approximately 83% of the total area of 16,490 km² of the Nghe An province. Nghe An is in the tropical monsoon region with two typical seasons of rainy summer (from May to October) and dry winter (from November to April). Annual average temperature ranges from 23 - 24 °C, from 19 °C in the coolest to 33 °C in the hottest month. However, strictly speaking, the climate differs in mountainous areas, hilly areas, and coastal plain areas and various agricultural and livestock products are produced according to this topographical difference. It should be noticed the adverse effect of natural disaster when it considers to agricultural production. Especially in coastal areas, the floods, coastal erosion and saltwater intrusion, etc. are occurring due to strong winds and storm surges caused by typhoons that land 2-3 times each year. Hence it also caused landslide damage frequently in the mountainous area.

Socio-Economic Condition

Nghe An province is located in the center of North Center of Vietnam and lies on a strategic point of transportation in east-west route. Nghe An has various transportation modes including seaport, airport, railway, and roads easily connecting to the other provinces and countries such as Laos. Nghe An province has abundant natural resources such as forest, sea, mineral, and thriving agriculture due to the presence of various topographic areas. Recently, large-scale investment in the dairy sector is deployed by the big dairy companies because the province has a good and potential environment for livestock production. The economic growth rate in Nghe An is 7.43 %, higher than the national rate of 6.5 %, which is derived from the increase of Foreign Direct Investment (FDI) as well as the increase of national population as mentioned below. Industrial structure in 2015 was composed of with the share of the agricultural sector, 28.06 %; industrial sector, 29.36 %; service sector, 41.98 %. However, the development plan of the province shows that ratio of the agricultural sector is expected to reduce by 20 % in 2020, in contradiction to the industrial sector and service sector which are expected to rise up to 40 %. As a basis for this, the average growth rate of the industry and construction sector was 16 ~ 16.5 % (2011 - 2015), service sector was 11 ~ 12 % (2011 - 2015) and the agricultural sector was 4 ~ 4.5% (2011 - 2015), which shows the fast-growing situation of industry and construction sector. Livestock production is an important industry in the province, and its growth rate is occupied 40 to 50 % of the whole production value of the agricultural sector.

The population of Nghe An province was 3,063,944 in 2015, which is the fourth largest population scale in the country and population growth rate is 1 %. According to a population projection by General Statistics Office¹, the population of Nghe An province is estimated to continuously increase at a relatively stable rate (about 1.15 % per year) and expected to be 3,789,000 in 2034, which is third largest population in the country. The population growth in Nghe An province during the upcoming 20 years is expected to be higher than the metropolitan area (116.1 % in Hanoi and 118.4 % in Ho Chi Minh) and agricultural area (121.6 % in Lam Don)

The current situation of social infrastructure is summarised in the table below.

Table 1 Current situation of social infrastructure in Nghe An province

Infrastructure	Current Situation
Road	There are eight (8) national routes running through the province of which three (3) North-South roads (highway 1A, national road 15 and Ho Chi Minh road), three (3) East-West roads linked to Lao PDR (national road 7, 46 and 48).
Railway	North-South railway covering a distance of 94 km runs through the province. Vinh railway station of grade 1 is the third largest station to transport passengers and goods in the country.
Seaport	Cua Lo seaport is the gateway to the Nghe An province and connects to West-East economic corridor linking Laos, Thailand, and Myanmar to West Sea through National Road 7. It is capable to receive ships of 10,000 DWT (deadweight tonnage) in and out with the four berths.
Airport	Vinh international airport is the main airport in the North Central region with a capacity of 3 million passengers per year. At present, there are daily flights connecting to Ho Chi Minh city, Hanoi, Da Nang, Lam Dong and Bun Ma Thuot. There are four flights to the Vientiane of Laos in a week.
Water and Sewage	Water supply system has been rapidly installed and operationalized in Nghe An province and rate of households with hygienic water supply reached at 95.3 % in 2015 while it was 83.5 % in 2010. Especially the rate in the urban area was 99.8 %.
Electricity	The electrification rate in the province reached at 99.8 % in 2015, and only 0.3 % of households in rural area were uncovered. The government has improved the transmission network for stable electric supply.
Irrigation	There was 122,415 ha of farmland equipped with irrigation facility in the Nghe An province in 2005 and water sources were mostly surface river flow (FAO). Deteriorated Nghe An North Irrigation System, which was constructed in the 1930s to irrigate 29,147 ha, is under rehabilitation work financed by Japan' ODA.

(3) Development Strategy and Plan

Socio-Economic Development Strategy (2011-2020): Major objectives of agriculture, forestry, and fishery development are; to change the structure of production and products and use high technology to increase their value to achieve an average growth rate of 4.0 - 4.5 % during 2011 - 2015 period, and afterward at a rate of 3.5 - 4.0 % during 2016 - 2020. To increase the production value of livestock

¹ Vietnam Population Projection 2014 - 2049; General Statistics Office; 2016

sector, accounting for 40 - 50 % of agricultural production value for the period 2011 - 2015, over 50 % for the period 2016 - 2020; production value of fishery sector accounts for over 15% of agricultural production during the period 2011-2020.

Socio-Economic Development Plan (2016-2020): The government encourages and facilitates economic actors to invest in agriculture and rural areas to achieve the goal. Agriculture, forestry, fishery sector is focused as one of the major sectors for socio-economic development. To reconstruct the structure of agriculture, forestry and fishery sector based on the application of science and high technology and investment of the processing industry to increase their value so as to achieve the development.

3. Current Situation of the Agricultural Sector in Nghe An Province

Outline of Major Agricultural Products

In Nghe An, many food crops are being cultivated owing to its diversified geographical and natural conditions. According to the latest statistical data prepared by DARD, 66 annual crops and 36 perennial crops were grown in 2016. Focusing on cultivation area by item, the specialization coefficient of maize, sugar cane, peanut, cassava and tea exceeds 1 which shows that those products have a comparative advantage, while rice is low as 0.86. As for vegetables and fruits, the specialization coefficients of banana, orange and lemon is high and the others are on the average scale. As for livestock, all kind of livestock occupy the high percentage in Nghe An; that is 8% in cattle, 12% in buffalo, 3% in pig and 5% in poultry as nationwide ratio. It should be noted that Nghe An province has the largest population of cattle and buffaloes among 63 provinces nationwide.

Outline of Agricultural Market

National Market: In Vietnam, the retail food market is largely dominated by traditional general trade, in which small independent stores ideal for small-quantity and high-frequency food purchases are main actors. There are many grocery stores all over the place and modern retail trade (supermarkets, hypermarkets, cash and carry wholesale centers, minimarts, and convenience stores) is still partially distributed only in urban areas. According to USDA Report, the traditional retailers account for 94% of sales while modern retailers only account for 6%. However, USDA reported that the modern food retail sector will account for around 20% of the retail food sales in Vietnam by 2025 because of (1) its strong economic growth, (2) growing middle class with higher disposable income, (3) rapid urbanization, and (4) concerns about hygiene and food safety.

International Market: According to the latest statistical data obtained from Nghe An Statistics Department, the export value of agricultural products from Nghe An recorded 160 million USD in 2017, which was over three times larger than the previous year, 50.7 million USD in 2016. The detailed data indicated that export of fresh fruit, which was not exported so far, suddenly emerged in 2017 (the whole amount was exported to China) and it reached USD 130 million representing 81% of the total export value in 2017. The import value data by country show that China is the largest importer of Nghe An agricultural product, occupying 61-90% of annual total value in all years. Particularly, it dominated 90% of the total export value in 2017. Hence its dominance is extending. Other countries below the top five (occupying 5-13%) include 21-26 countries, so the importers of Nghe An agricultural product recently range 26-31 countries in the world.

Outline of Actors Regarding Food Supply Chain

The table below shows the current situation and major issues of actors regarding food supply chain in Nghe An province.

Table 2 Outline of actors in food supply chain

Actor		Current Situation	Issue
Supplier of Agricultural	Seed and Seedling	There are 25 seed suppliers in Nghe An province, 16 are rice varieties, 7 are maize varieties, 1 is passion fruit varieties, 1 is	<ul style="list-style-type: none"> Spread of diseases caused by the

Actor		Current Situation	Issue
Material		dealing with fruit tree varieties such as mandarin and pomelo. Besides, the seedling and center in Nghe An province are growing and selling varieties such as rice, maize and peanut. On the other hand, most of the farmers grow seedling of sugar cane, peanut, cassava and orange by themselves.	<ul style="list-style-type: none"> distribution of self-planting seedlings, deterioration of quality Difficulties in procuring disease-free seedlings Lack of variety satisfying market needs
	Fertilizer	There are 13 fertilizer manufacturers in Nghe An province. 11 companies are using single fertilizer from domestic and overseas manufacturers to produce compounded fertilizers, and the remaining two companies are manufacturing compost from cow dung which was procured in the province. There are 23 wholesalers of fertilizer in Guan province as a whole. Technical services to farmers by fertilizer manufacturing and wholesalers are relatively substantial.	<ul style="list-style-type: none"> Sales of inadequate fertilizer products due to the excessive competition of the fertilizer industry Difficulty in procuring fertilizers in the mountainous area
	Agricultural Chemicals	There is a total of 576 shops handling agricultural chemicals in Nghe An province, of which 306 stores are within the valid period of store registration, and 274 shops are out of registration period. According to the notice, the registration is said to be updated for 5 years, and in the present situation, nearly half of the stores are unupdated. Some agricultural chemicals that are not approved domestically are still circulating. Technical services to farmers by agricultural chemical handlers are relatively substantial.	<ul style="list-style-type: none"> Distribution of unauthorized pesticide Sales promotion activities, which does not consider the cultivation environment Procurement access difficulties in mountainous areas
	Animal Medicine and Feed	There are 186 agencies of feed companies and 730 retailing shops that handle feeds in Nghe An province. Regarding veterinary medicines, 76 dealerships of manufacturers and 307 retail shops are registered.	<ul style="list-style-type: none"> Distribution of unauthorized feed and medicines Procurement access difficulties in mountainous areas
Agricultural Producer		The production scale of individual farmers is generally about 0.2 to 1 ha. Production by conventional agriculture is the main, and farmers working on agricultural machines use and cultivation in the greenhouse are limited. The major role of agricultural cooperatives is to procure agricultural input and sell them to the members. In the case of dealings with large-scale buyers, the role as negotiation window and production adjustment are also made by cooperative although the shipment of products is carried out by each member. There are 23 agricultural companies in Nghe An province and 16 of which has their own land to produce agricultural products.	<ul style="list-style-type: none"> Small production scale Lack of systematic agricultural production and shipping capacity. Financial access difficulties Difficulty in accessing market information and lack of marketing ability
Distributor		Most of the distribution of agricultural and livestock products is done by middleman. 52% of the agricultural and livestock products via middleman are supplied to the wholesale market, 21% to the retail market (Wet Market), 14% to the processing market and 13% to other (industrial park cafeteria, restaurants, etc.). Contract cultivation between middleman and producer is hardly implemented.	<ul style="list-style-type: none"> Middleman is responsible for the majority of agricultural and livestock distribution. There are very few logistics companies capable of handling cold chains.
Processor		The total number of processors existing in Nghe An province is 343 companies. As a breakdown, there were 154 meat processing companies, 94 marine product processing companies, 10 vegetable and fruit processing companies, 56 company craft crops (tea etc.) processing companies and 29 cereal (rice etc.) processing companies. Most of these processors are operated by processing facilities of a family-owned scale.	<ul style="list-style-type: none"> Slaughterhouse and some of the food processors do not meet food hygiene standards. Difficulty in procuring raw material stably
Seller		In addition to the four major supermarkets, there are 405 trading markets for agricultural and livestock products in Nghe An province. Besides, there are many small and medium-sized retailers dealing with agricultural products in the province. Many supermarkets and retailers require the acquisition of safety certification as transaction conditions as well as the product shipment condition such as multiple items, constant quality and shipment, etc.	<ul style="list-style-type: none"> Lack of information regarding the agricultural producing area that can supply agricultural and livestock products to be demanded

Current Situation and Issues Regarding Food Supply Chain of Major Crops

The table below shows the current situation and major issues regarding food supply chain of major crops in Nghe An province.

Table 3 Current Situation and Issues Regarding Food Supply Chain of Major Crops

Product	Current Situation	Issue
Rice	Many varieties, fertilizer and agricultural chemicals related to rice production are circulated in Market and that access is substantial. Production scale varies from small to large-scale cultivation, and the yield of lowland is around 3.5 - 6.3 t / ha. Collecting of rice except for rice for self-consumption is carried out by the middleman and the contracted company. Normally, rice is processed into noodles, shochu, and confectionery.	For Processing Rice : <ul style="list-style-type: none"> • Cultivation standardization • Lack of varieties suitable for processing • Farmland consolidation, agricultural mechanization and reduction in production cost are required
Maize	Contract farming of maize with dairy companies is widely conducted and input materials are usually supplied by these companies. The production scale ranges from self-sufficiency production to large scale feed cultivation. The contract companies collect and ship harvested maize directly to their farm. Major dairy companies in Nghe An province intend to expand dairy production. In the meantime, the demand for feed such as maize for feed will continue.	<ul style="list-style-type: none"> • Farmland consolidation, agricultural mechanization and reduction in production cost are required
Sugarcane	Sugarcane is cultivated at about 24,000 ha in the province, and the yield is around 28-91 t/ha. In contract farming of sugarcane, various kinds of support are generally carried out by sugar companies, and farming input materials (seedlings, fertilizer) are usually provided by these companies. The harvested sugarcane is processed into sugar and molasses at the sugar manufacturer and molasses factory in the province and sold inside and outside the province.	<ul style="list-style-type: none"> • Difficulty in procuring sugarcane stably due to the competition with animal feed demand • Farmland consolidation, agricultural mechanization and reduction in production cost are required
Tea	Contract cultivation with tea processing companies is widely conducted, and input materials are usually provided by these companies. Tea is cultivated in about 10,700 ha for both sprouts and tea leaves and the yield of sprouts is about 3.9 - 13.8 t / ha, the yield of tea leaves is about 3.9-13.8 t/ha respectively. It is processed into black tea and green tea by local tea companies and shipped to domestic and overseas.	<ul style="list-style-type: none"> • Side-selling by contract farmer • Unstable international market price and farmer's income
Cassava	Some farmers are growing without fertilization, but the other farmers are procuring input materials from retail stores and agricultural cooperatives. Cassava is cultivated at about 19,300 ha in the province and the yield is about 9 - 38 t/ha. Cassava is commonly traded in processing factory, and usually the middleman is responsible for transportation. Processing companies in the province focus on the manufacture of tapioca powder and the products are exported to China etc.	<ul style="list-style-type: none"> • Market price of tapioca powder depends highly on demand from China, which leads to unstable farmer's income • Operation rate of cassava processing factory is low due to the limitation of the cassava cultivation period
Peanut	Farmers procure farming materials (fertilizer, agricultural chemicals and multi-sheet) from retail stores and agricultural cooperatives. In the province, peanut is cultivated at about 15,700 ha, and the yield is about 1.2 - 3.2 t / ha. Peanut collected and shipped by a local middleman is distributed to exporters and processors (oil producer and confectionery manufacturer). Most of the export destinations of peanut is China.	<ul style="list-style-type: none"> • Inflow of cheap peanut from abroad due to the tax exemption • Lack of peanut variety for exporting • Market prices fluctuate greatly depending on China's demand.
Sesame	Sesame is cultivated in the province at about 3,200 ha, and more than half of it is cultivated in Dien Chau district. The yield is around 0.3-1.1 t/ha. Sesame collected and shipped by middleman is distributed to exporters and processors (oil extraction, confectionery manufacture). Most of the export destinations is China.	<ul style="list-style-type: none"> • The cultivation season overlaps with the typhoon season and it can be seriously damaged. • Market prices fluctuate greatly depending on China's demand.
Ginger	Ginger is grown at about 400 ha annually by shifting cultivation. Production scale of each farmer is about 0.1-0.5 ha. Yield is about 15-20 t / ha (large ginger). Among ginger collected by middleman, the small ginger is generally sold in wholesale markets inside and outside the province and retail market etc. while big ginger is exported to Bangladesh etc.	<ul style="list-style-type: none"> • Low cultivation technique of local farmers. • Farmland is scattered, which makes it difficult for cultivation management and products collection. • Difficulty in transporting in rainy season due to poor road condition
Vegetable	The production area is large especially in coastal and plain area although the production scale of each household is small. After harvesting, the producers sell crops to middleman or wholesale and	<ul style="list-style-type: none"> • Infrastructure such as irrigation and drainage facilities are not well developed. For this reason,

Product	Current Situation	Issue
	retail market. In addition, some farmers and cooperatives are producing raw materials for processing (cucumber, green onions, etc.). Generally, agricultural input materials are procured from local agricultural cooperatives and local material dealers.	<ul style="list-style-type: none"> it is difficult to produce and ship vegetables stably. Distribution and use of illegal agricultural input Less production area that can meet the fixed quantity, constant quality, regular shipment required by buyers
Orange	Orange is produced as a special product in Nghe An province, and it is mainly produced in the hill - mountainous areas. Orange is distributed by middleman in inside and outside the province to the consumers through wholesalers and retailers. Among the provinces, orange produced in Quy Hop district, in particular, is known nationwide as "Cam Vinh". There are several cooperatives and small agricultural companies that sell directly to retail stores in Hanoi and Ho Chi Minh cities.	<ul style="list-style-type: none"> Difficulty in accessing disease-free seedling of orange. Emergence of competitive orange supplier from other provinces The necessity of improving orange quality especially for sugar content and product appearance
Passion Fruit	Passion fruit has been introduced to Que Phong district on a large scale as a raw material for local food processing enterprises. Besides its own production by the company, it is cultivated through contract farming with local farmers. Currently, there is a demand as a processing material for juice, syrup, functional foods, etc. in international market while it also has strong demand from restaurants and major supermarkets in big cities of Vietnam.	<ul style="list-style-type: none"> Yield and quality of passion fruit produced by contracted farmers are low. Improvement of irrigation facilities and cultivation management skills are necessary Spread of diseases throughout the production area
Beef	The cattle have a population of 446 thousand (of which 62,000 dairy cattle), and the annual number of cattle sales is 109 thousand (15 thousand tons). 98.5% of cattle (other than dairy cattle) are owned by individual farmers. Cattle and buffalo are sold at 13 living livestock markets and about 300 livestock trading spots, and distribution infrastructure for beef cattle in living condition is substantial.	<ul style="list-style-type: none"> Circulation of illegal feed and animal medicine Illegal inflow of cattle from Laos cause an adverse effect such as the spread of animal disease and market price fluctuation Existence of slaughterhouse that does not satisfy the standard of hygiene management.
Pork	The pig has a population of 895 thousand heads (of which 18.5 thousand breeding pigs), and the number of sales of fattening pigs annually is 2.31 million heads (130 thousand tons). Many fattened meat pigs are shipped to slaughterhouses / wholesale markets through middleman and exported to Hong Kong, Macao and Malaysia.	<ul style="list-style-type: none"> Market prices fluctuate greatly depending on China's demand. Existence of slaughterhouse that does not satisfy the standard of hygiene management.
Chicken Meat	The number of chickens is 17.6 million heads (of which 1.358 million meat chickens and 4,030 thousand picking chickens), with annual sales of 25.58 million heads (36 thousand tons). It is a general distribution route that middleman visit poultry farmers to buy chickens and sell them to retailers as living condition. However, in recent years, large retailers such as supermarkets often request delivery in packed packages, reflecting consumer demand. As for broilers, farmers are becoming larger and more intensive.	<ul style="list-style-type: none"> Small farmers and cooperatives need branding and diversification of sales channels to ensure market competitiveness. Necessary to adapt to modern retail channels of chicken meat.

Current Situation and Issues Regarding Public and Private Service of Agriculture

The table below shows the current situation and major issues regarding public and private service of agriculture in Nghe An province.

Table 4 Current Situation and Issues Regarding Public and Private Service of Agriculture

Sector	Current Situation	Issue
Agricultural Extension	The agricultural extension service is being implemented by the Agriculture Extension Center (AEC) under the jurisdiction of DARD. As of 2015, the number of AEC staff is reported to be 220 people. Implement project to build extension model for 5 categories of agriculture, animal husbandry, forestry, fishery and industry development.	<ul style="list-style-type: none"> Insufficient project planning and implementation capacity of extension staffs Lack of cooperation with private company and local government Lack of ability to provide

Sector	Current Situation	Issue
		adequate cultivation plan and guidance based on market needs
Agricultural Research	ASINCV, DARD seedling center, Vinh University are responsible for research and development. ASINCV conducts development of new varieties such as rice, citrus fruits and peanuts, and development of production technology. The seedling center mainly focuses on seed research and dissemination of rice and peanut seed to the farmers. Vinh University conducts sponsored research from the private sector and evaluation of new seed varieties.	<ul style="list-style-type: none"> • Mismatch between market needs and research needs • Lack of technology transfer activities • Lack of seedling supply capacity • Lack of research equipment
Food Hygiene	Depending on the food category, DARD, DOIT and DOH are responsible for the management work regarding food hygiene. there are Viet GAP, Viet GHAP, compliance with safety regulations and participatory organic certification system, etc. for safety certification concerning production of agricultural and livestock products.	<ul style="list-style-type: none"> • Certificate acquisition fee is expensive for general farmers and cooperatives. However, it is indispensable for expanding sales channels. • Acquisition of safety certificate does not lead to an increase in added value
Veterinary Service	Veterinary services in the province are carried out by the Veterinary Livestock division under DARD as part of veterinary and animal husbandry administration. In addition to the headquarters office in Vinh city, the Veterinary and Livestock Production division has animal quarantine stations in two places in the province and livestock veterinary stations in 11 districts, and 181 staff (as of 2016) in total.	<ul style="list-style-type: none"> • Lack of personnel and budget compared with the work to be dealt with • The practical skills of veterinary technicians are not standardized.
Management of Agricultural Input	DARD has the authority as a supervisory for agricultural input material, and regularly conducts unannounced inspections with DPC and CPC. The periodic inspection is set to about four times a year, and seeds, fertilizers and agricultural chemicals are inspected. Inspections are targeted to agricultural input materials suspected of being false labels, differences in contents and so on.	<ul style="list-style-type: none"> • Changes in the roles of responsible organization, and regulations are frequent. • Lack of personnel and budget as compared with work to be handled. • Lack of inspection equipment
Plant Protection	Phytosanitary services related to the import and export of agricultural products are carried out by the plant quarantine center under the jurisdiction of MARD. The center has branch headquarters in Vinh city, and has jurisdiction over the four provinces of the North-central region. Nam Can plant quarantine stations are established along the Lao border.	<ul style="list-style-type: none"> • Insufficient inspection equipment and facility due to the budget shortage • Lack of personnel due to an increase in the amount of examination in recent years
Weather Information Service	NCHMF provides forecast up to 10 days ahead of weather, maximum and lowest temperatures and alarms such as typhoons, heavy rains, floods, heat waves and cold waves etc. The north-central hydrological weather center has set up weather observation stations at eight locations in the province.	<ul style="list-style-type: none"> • NCHMF's weather forecast remains at the provincial level. • Statistical data by each meteorological observation station is not well developed
Market Information Service	The service is conducted mainly by Vietnam Agriculture Trade Center (Agritrade), Trade Promotion Center under the jurisdiction of DOIT and Vietnam Chamber of Commerce and Industry (VCCI), etc. They hold exhibitions, market research, business matching and trademark registration support, etc., respectively.	<ul style="list-style-type: none"> • Both product exhibitions and business matching are targeted only to companies, and agricultural cooperatives and farmers are out of scope.
Agricultural Finance	Nghe An province has major agricultural financial institutions such as agricultural rural development bank, social policy bank, People's Credit Fund and Cooperative Bank.	<ul style="list-style-type: none"> • The lack of mortgage property has become an obstacle to financial access.
Investment Promotion	There are several incentive policies for private investors such as Decree No.26/2016/NQ-HDND, Decree No. 98/2018/NĐ-CP and Decree No.57/2018/NĐ-CP	<ul style="list-style-type: none"> • Rise in labor costs • Uncertain procedure for the application of those policies • Insufficient infrastructure
Infrastructure Development	With the "New Rural Development program (2016-2020)", infrastructure development related to rural development of 431 communes is underway. The program has development criteria regarding rural infrastructure such as farm road, irrigation facility and electricity status, etc., and calculate accomplishment rate every year.	<ul style="list-style-type: none"> • Lack of irrigation and drainage facilities for annual cultivation • Lack of infrastructure development plan • Insufficient infrastructure facilities to improve distribution efficiency

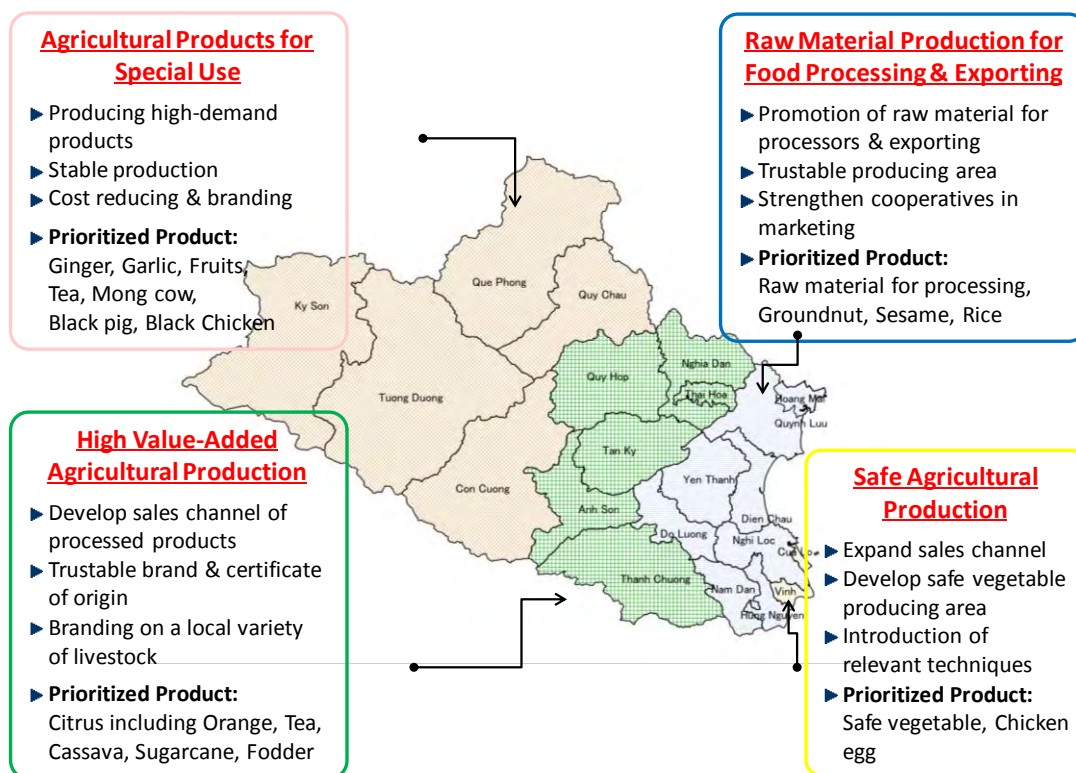


Figure 2 Strategy of FVC Development by Zone

Verification Method for the Hypothesis

The JICA Study Team carried out the following verification studies to evaluate the validity of above-mentioned development strategies.

- Establishment of Collection and Distribution System for the Market Information
- Pilot Project Regarding Contract Agriculture

5. Agricultural Marketing Platform (AMPF)

Objective of AMPF Establishment and Its Major Activity

JICA Project Team has supported PMU to establish Agricultural Marketing Platform (AMPF) providing administration service to create an opportunity for producers and buyers to match each other by referring in Ibaraki prefecture conducting similar activities. Through the project period, AMPF conducted 1) development of a database on actors of FVC, 2) Promotion activities regarding agricultural products in Nghe An province such as the participation of trade fair, organizing matching event and preparation of tools for sales promotion and 3) gathering and delivery of market information for actors of FVC. Besides, as one of OJT activities, JICA Project Team supported AMPF to plan and implement pilot projects. The detailed activities are described in Chapter 5 of the main report.

Results and Evaluation of AMPF Activities

The table below shows the results of AMPF activities.

Table 5 Results of AMPF Activities

Item	Results
Development of database	Sufficient amount of data was collected as a database. The database will not be renewed periodically, but rather renewed partially for the reduction of work burden.

Item	Results
Sales promotion in trade exhibition	There is a promotion effect, but limited. Because other institutions are carrying out similar activity, it is necessary to consider it as an activity of AMPF.
Organizing matching event	High effect for finding partners of both farmers and demanders. It is necessary to strengthen collaboration with VCCI. Since other institutions have not been implemented similar activity, this task would be major activity for AMPF.
Planning of pilot project	As local extension workers are responsible for planning, their commitment to subsequent project management will be strengthened. AMPF will conduct the selection of pilot project.
Implementation of pilot project	Management of pilot projects is carried out by local extension workers. AMPF mainly focuses on monitoring and evaluation work.

Issues and Lessons

The followings are the issues and lessons learned through the AMPF activities

- It is difficult to collect information especially in international markets under the current AMPF system. It is necessary to secure personnel suitable for information collection in international markets and to secure a budget for collecting information.
- There are few agricultural extension workers capable of choosing cultivation techniques necessary for meeting the standards and conditions of agricultural and livestock products that the market requires. There is a need to strengthen the capacity of agricultural extension workers who tend to present uniform solutions to the problems in production of agricultural and livestock products.
- It is desirable to facilitate communication between the producer and demanders in cooperation with private enterprises engaged in matching services and to organize matching event with VCCI.

6. Pilot Project

Objective of Pilot Project

The objective of pilot project is to obtain knowledge and lessons learned to verify the validity of the draft development strategy and to formulate M/P and A/P.

Outline and Results of pilot projects conducted in Strategic Region for Promotion of Safe Agricultural Production

ID	Title	Objective
SV1	Safe Vegetable Production and Distribution in Vinh City	To strengthen safety vegetable production and distribution in Vinh city through support for acquisition of safety certificate and production support of safety vegetables consistent with local wholesale retailer's needs.
SV2	Contract Farming for Safe Vegetable	To strengthen safety vegetable production and distribution in Vinh city through the support of contract farming between the agricultural cooperative which already acquired Viet Gap certificate and local retailers.
SV3	Production and Sales of Eggs in Urban Areas	To strengthen the distribution system of high quality and safe eggs through strengthening the sanitation management system and acquiring safety certificate.
SV4	Vegetable Production in Cua Lo Tourism Town	To develop fresh vegetable production model by introducing techniques for summer cultivation and strengthen the shipping system of fresh vegetables in the tourist season (May - September).
SV5	Trial Cultivation of Spinach for Demand of Domestic Fresh Market	PP derived from PE1 (described later). To verify to develop producing area of spinach not only for processing but also for flesh vegetable consumed in domestic market.
Lessons and Learned		<ul style="list-style-type: none"> • Expansion effect of farmer's sales destination by acquiring safety certificate • Increase and stabilization of farmer's income by the introduction of contract farming • Merits for buyers to introduce contract farming such as transport cost reduction • Importance to write down the contract condition as a contract document

	<ul style="list-style-type: none"> • Cultivation measures against typhoon damage and necessity to improve drainage facility to reduce the damage mitigation • Importance to facilitate the improvement of cultivation system by providing information on the market needs to producers • Importance to cooperate with local wholesaler for distributing agricultural products to the food service industry • Potential and issue to produce and ship vegetables in off-crop season • Expansion of this strategical zone (the zone covers not only Vinh and Cua Lo but also other districts in coastal plain area) • Necessity to construct distribution base of agricultural products including cold chain system.
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Outline and Results of pilot projects conducted in Strategic Region for Promotion of Raw Material Production for Food Processing and Exporting

ID	Title	Objective
PE1	Large Size Spinach Production for IQF Processing	To verify the development of production area of spinach for processing through the cultivation trial.
PE2	Large Size Chinese Cabbage Production for IQF Processing	To verify the development of production area of Chinese cabbage for processing through the cultivation trial.
PE3	Improving Bamboo Shoot Production for Export Demand	To verify the development of production area of bamboo for processing through the cultivation trial.
PE4	Production of Black Sesame for Oil Extraction for Japanese Market	To verify the development of production area of sesame for extracting oil and exporting Japan
PE5	Production of Potato for Producing Processed Foods	To verify the development of production area of potato for processing through the cultivation and sales trial.
PE6	Introduction of Lotus Root Production	To verify the development of production area of lotus root for processing through the cultivation and sales trial
PE7	Production of Scallion for Processing	To verify the development of production area of scallion for processing through the cultivation and sales trial
PE8	Promotion and Marketing of Honey	To verify the possibility of market diversification of honey through the sales trial to Japanese market
PE9	Rice Production for Processing of Rice Snack	To verify the possibility to expand cultivation area of rice for rice snack through the trial cultivation and sales.
PE10	Promotion of Jew's Ear Mushroom for Export to Japan	To verify the development of production area of Jew's ear for processing and exporting Japan
PE11	Production and Marketing of Groundnuts	To verify the potential and feasibility of peanuts for exporting through the trial cultivation designed based on the market needs of peanut exporting company.。
PE12	Promotion of rice for Shochu	To verify the potential and feasibility to expand the cultivation area of rice for Shochu through the trial cultivation and sales.
PE13	Development of Silk Products	To verify the potential and feasibility of expanding market of silk products through the development of products made from silk yarn produced in Dien Chau district
PE14	Develop Brand of Rice Noodle	To verify the potential to increase the farmer's income through the branding of rice noodle
PE15	Production of Silk yarn	To verify the potential to increase farmer's income through the introduction of an effective production system of silk yarn.
	Lessons and Learned	<ul style="list-style-type: none"> • Increase and stabilization of farmer's income by the introduction of proper cultivation technique regarding producing raw material for processing • Importance and difficulty in producing products that satisfy market needs • Importance to develop producing area of raw material for processing in long-term perspective, necessity to improve financial access and grand subsidies for agricultural cooperative for constructing necessary facilities • Importance in developing new varieties and cultivation techniques that reflects market needs • Necessity to strengthen cost-competitiveness in developing producing area of raw material for processing by farmland consolidation and organizational practice of agriculture. • Importance and difficulty in stabilizing quality of agricultural product

Outline and Results of pilot projects conducted in Strategic Region for Promotion of High Value-Added Agricultural Production

ID	Title	Objective
HV1	Brand Promotion and Production Improvement of Thanh Chuong Chicken	To improve the production system of local chicken and verify the possibility of improving farmer's income through development of local chicken brand.
HV2	Improvement of Value Chain of Oranges in Quy Hop	To verify the possibility of market expansion through the product diversification of orange.
HV3	Improvement of processed mango and lime products	To verify the possibility to export processed mango and lime to Japan through the improvement of product specification
HV4	Production and Marketing Improvement of Eco-Pork	To develop pork brand based on the feed improvement and verify its economic impact
HV5	Improve Cultivation Technique for Higher Yield and Quality of Mandarin	To verify the possibility to improve or standardize the quality of orange through the introduction of advanced technology.
HV6	Production and Sales of Cassava Silage for Dairy Farms	To verify the possibility to promote the farming contract of cassava silage with local daily enterprises
HV7	Sales Promotion of Black Garlic Products	To verify the possibility to develop FVC regarding black garlic products through the sales promotion and farming contract between farmers and black garlic processor
HV8	Improvement of Garlic Production and Marketing	To verify the possibility to develop FVC of garlic through the trial cultivation and sales of safe garlic
HV9	Improvement of production and sales of Matcha	To verify the possibility to improve farmer's income through the introduction of cultivation technique of Matcha
HV10	Improvement of production and sales of pomelo	To verify the possibility to improve farmer's income through the branding of Quang Tien pomelo and improvement of cultivation technique
HV11	Improvement of quality of Nhut	To verify the possibility to develop FVC of Nhut through the improvement of food safety management regarding Nhut production
Lessons and Learned		<ul style="list-style-type: none"> • Confirmation of strong demand for processed orange and fresh orange distributed in off-crop season, the necessity to develop cool storage and effect on improving farmer's income by adding value • Necessity to improve the access of disease-free seedling of orange • Confirmation of demand of Matcha • Importance in cooperating with local government such as district and commune in developing brand of agricultural product • Necessity to improve food hygiene management in developing brand related to livestock product • Importance in acquiring official certificate regarding collective mark and certificate of origin

Outline and Results of pilot projects conducted in Strategic Region for Promotion of Agricultural Products for Special Use

ID	Title	Objective
SU1	Production of Competitive Fresh Passion Fruit for Domestic Market	To verify the sales potential of fresh passion fruit to supermarket through the improvement of harvesting technique.
SU2	Improvement of processing of pure of passion fruit	To verify the possibility to expand the sales channel through the support of sales promotion
SU3	Value Chain Development of Passion Fruit Seed as Health Functional Supplement	To verify the sales potential of passion fruit seed to the Japanese health company through the support of sales promotion
SU4	Production and sales of pectin extracted from passion fruit internal skin	To verify the possibility of commercialization of the pectin extracted from passion fruit internal skin
SU5	Improvement of Ginger Production to Meet International Market Demand	To verify the possibility to develop producing area of ginger through the support of contract farming between local farmers and local processing company.

ID	Title	Objective
SU6	Improvement of Fresh Passion Fruit Conservation	To verify the possibility to export fresh passion fruit through the improvement of preservation technique.
SU7	Production and Sales of H'mong Chicken and Local Black Pig	To verify the possibility to develop FVC of minor livestock grazing in the mountainous area through the support of contract farming between local farmers and retail shop in Vinh city
SU8	Production of garlic seed for Japanese market	To verify the possibility to produce garlic seed for Japanese market
SU9	Production and sales of tomato with specific variety	To verify the possibility to increase farmer's income through the support of production and branding of specific tomato grown in the mountainous area.
SU10	Improvement of Herbal Trees Production and Marketing	To verify the possibility to increase the farmer's income through the support of contract farming regarding herbal trees.
	Lessons and Learned	<ul style="list-style-type: none"> • Confirmation of strong demand for ginger and garlic, effect on increasing farmer's income by contract farming and issues to develop competitive producing area in mountainous area • Importance of countermeasure against livestock disease and expansion of business scale of local farmers by reducing the risk of livestock disease • Issues regarding plant protection • Importance in utilizing unused resource in mountainous area for livestock production • Necessity to develop infrastructures such as farm road and distribution base

7. Master Plan

Statutory Position and Target Period

The M/P is assumed to be incorporated with the agriculture and rural development sector of the Social Economic and Development Plan (SEDP) in Nghe An province (2021-2025). Since A/P contains the component of basic infrastructure development, which requires a long-term perspective, the target year is set as 10 years (2021-2030).

Basic Development Vision

The agricultural superiority in Nghe An province is not high as compared to the provinces such as Lam Dong province, which possesses favorable natural condition for the production of highland vegetables, ornamental plants and coffee. If it can't easily express the agricultural superiority based on the natural condition, Nghe An products are obliged to be supplied to general consumer market which has many international and domestic competitors who can supply high-quality and reasonable products compared to the ones produced in Nghe An province. The current agricultural structure in Nghe An province is mainly sustained by the supplement of agricultural products to the general consumer market under the adverse condition in terms of the lack of production superiority. Therefore, the economic value of agricultural products in Nghe An hit its ceiling.

To grasp diversifying consumers' needs accurately and to strengthen the market competitiveness of Nghe An agricultural products, the agricultural sector in Nghe An province should change the sales target from general consumer market to specific one where the needs of consumers are not satisfied or over-satisfied (the case that where consumers pay the surplus cost to satisfy their needs). Moreover, it should acquire strong external creditworthiness of Nghe An agricultural products in the specific market by creating FVC to supply the required products stably.

Based on the present data analysis mentioned above, JICA Consultant Team proposes the agricultural development vision titled as “**Realization of Strong Development of Nghe An Agriculture by Proving Worthy of Market Trust and Needs**” and agricultural development strategy to realize its vision.

Structure of M/P

JICA Consultant Team proposes Nghe An agricultural development strategy that consists of 3 FVC development policies and 4 FVC development strategical regions.

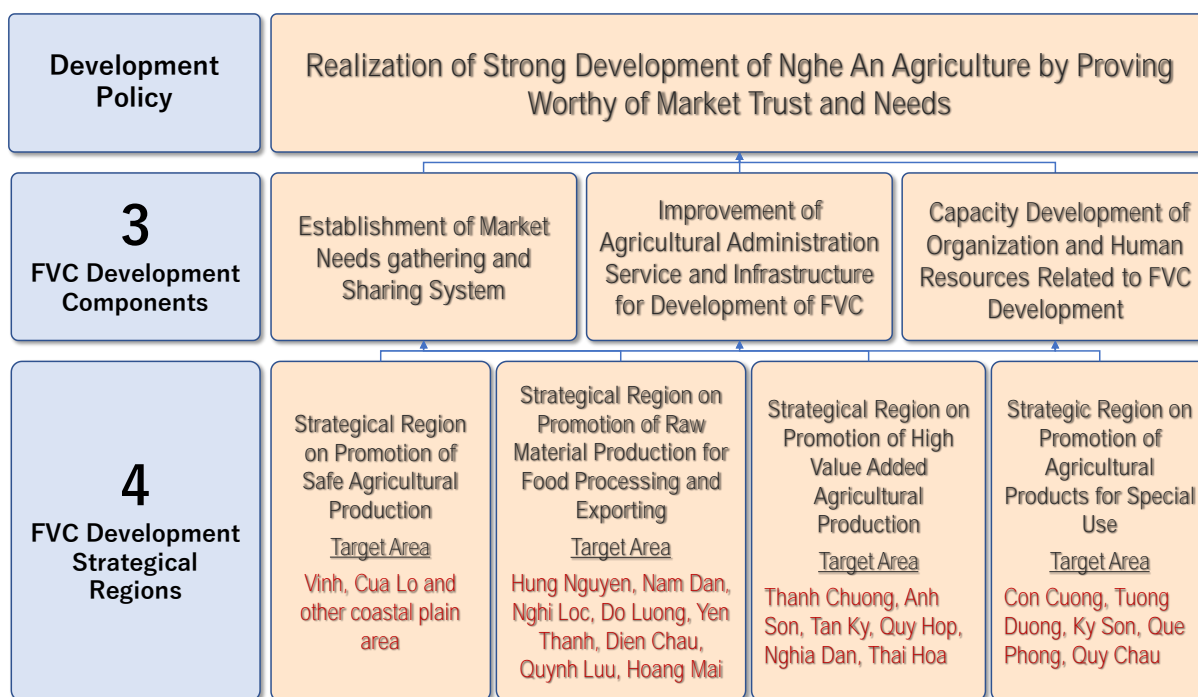


Figure 3 Overall Concept of the M/P

FVC Development Policy

FVC development policies are formulated based on the acquired experiences through AMPF activities and pilot project, and it shows the direction to promote FVC development of Nghe An agricultural products. FVC development policies comprise three (3) policies as shown below.

FVC Development Policy 1 : Establishment of Market Needs Gathering and Sharing System

Item		Contents
1	Institutionalization of AMPF Activities and Capacity Development of AMPF	Institutionalization of AMPF and allocation of necessary human resource and budget / Expanding activities on market survey conducted by AMPF / Holding periodical opinion exchange meeting/matching event and mediates transaction of agricultural products / Capacity development of AMPF staffs
2	Development of Human Resource regarding marketing	Develop and train marketing staffs in agricultural cooperatives and enterprises
3	Facilitation of collaboration with private enterprises	Collaboration with private companies providing matching service / Promotion of collaboration among agriculture, industry and commerce

FVC Development Policy 2 : Improvement of Agricultural Administration Service and Infrastructure for the Development of FVC

Item		Contents
1	Introduction of institutions to develop agricultural producing area having strong market competitiveness.	Promotion of farmland conservation, intensive agriculture and agricultural mechanization / Promotion of obtaining safety certificate and branding of agricultural products / Promotion of the development of small-scale irrigation facilities
2	Development of infrastructures on food distribution	Development of Farm to Market Road (FMR) in a mountainous area / Development of food storages and storage techniques / Development of slaughterhouse / Development of post-harvest facilities
3	Diversification of the domestic market and international market to be targeted	Promotion of food and gift development for a tourist area / Facilitation of investment from agri-business enterprises / Promotion of modern trade / Development of supporting system regarding plant quarantine

FVC Development Policy 3 : Capacity Development of Organization and Human Resources

Related to FVC Development

Item		Contents
1	Capacity development of agricultural cooperative and enterprise	Expansion of categorical assistance for a capital investment of agricultural cooperative and enterprise to develop necessary facilities / Capacity development of the business management of agricultural cooperative / Expansion of the institution for financial banking
2	Strengthen agricultural research	Selection and concentration of research theme / Promotion of collaboration among research organization and agency
3	Strengthen agricultural extension	Capacity development of agricultural extension staffs regarding skills on project planning / Reforming model development program / Development of supporting system on contract agriculture / Strengthen veterinary service

FVC Development Strategical Zone

Based on the collected statistical data, JICA Consultant Team conducted statistical analysis and specified following FVC development strategical regions. The modification part from the hypothesis that is described in Chapter 4 is as follows.

- Strategic Region for Promotion of Safe Agricultural Production was limited to Vinh city and Cua Lo town in the hypothesis stage. However, as a result of conducting and evaluating the pilot project, the districts located in the coastal plain areas also has sufficient potential to produce safe agricultural products. Therefore, it is modified that the target of the strategic area covers Vinh city, Cua Lo town and other districts in the coastal plains area.

8. Action Plan

Remarks in developing A/P

Remarks in developing A/P is as follows.

- A/P developed in this project consists of "Investment Plan" and "Capacity Development Plan". The role of "Public" and "Private" in implementing A/P is clarified. The cost of A/P is also estimated separately.
- Each A/P is developed in such a way that incentive policies regarding private investment in the agricultural sector in Nghe An province can be applied.

Structure of A/P

The total number of A/Ps proposed by the JICA consultant team is 20. Of these, "Investment Plan" corresponds to 12 cases, "Capacity Development Plan" to 8 cases. Details of A/P are described in Chapter 8 of the main report.

Table 6 List of A/P

ID	Classification	Title of A/P
AP1	Investment Plan	Development of Safe Vegetable Production and Supply System Project
AP2	Investment Plan	Development of Producing Area of Rice for Processing Project
AP3	Investment Plan	Development of Producing Area of Vegetable for Processing Project
AP4	Investment Plan	Development of Producing Area of Peanut for Exporting Project
AP5	Investment Plan	Development of Producing Area of Sesame for Exporting Project
AP6	Investment Plan	Orange Production Improvement Project
AP7	Investment Plan	Orange Distribution and Marketing Improvement Project
AP8	Investment Plan	Tea Production and Marketing Improvement Project
AP9	Investment Plan	Development of Cost Competitive Producing Area of Forage Crops Project
AP10	Investment Plan	Development of Cost Competitive Producing Area of Industrial Crops Project
AP11	Investment Plan	Improvement of Production and Supply System on Specialty Products Project
AP12	Investment Plan	Development of Infrastructure for Agricultural Products Distribution Project

ID	Classification	Title of A/P
AP13	Capacity Development Plan	Enhancement on the Food Safety Management Capacity of Local Producers and Traders Project
AP14	Capacity Development Plan	Branding Promotion by Application of Protection of Intellectual Property Project
AP15	Capacity Development Plan	Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production Project
AP16	Capacity Development Plan	Improvement of Veterinary Service Project
AP17	Capacity Development Plan	Capacity Development on Administration and Marketing of Agricultural Cooperatives Project
AP18	Capacity Development Plan	Improvement of agricultural financing project
AP19	Capacity Development Plan	Capacity Development of AMPF Project
AP20	Capacity Development Plan	Establishment of effective research system for the development of advanced technique project

Relationship among each A/P

The figure below shows the relationship among each A/P.

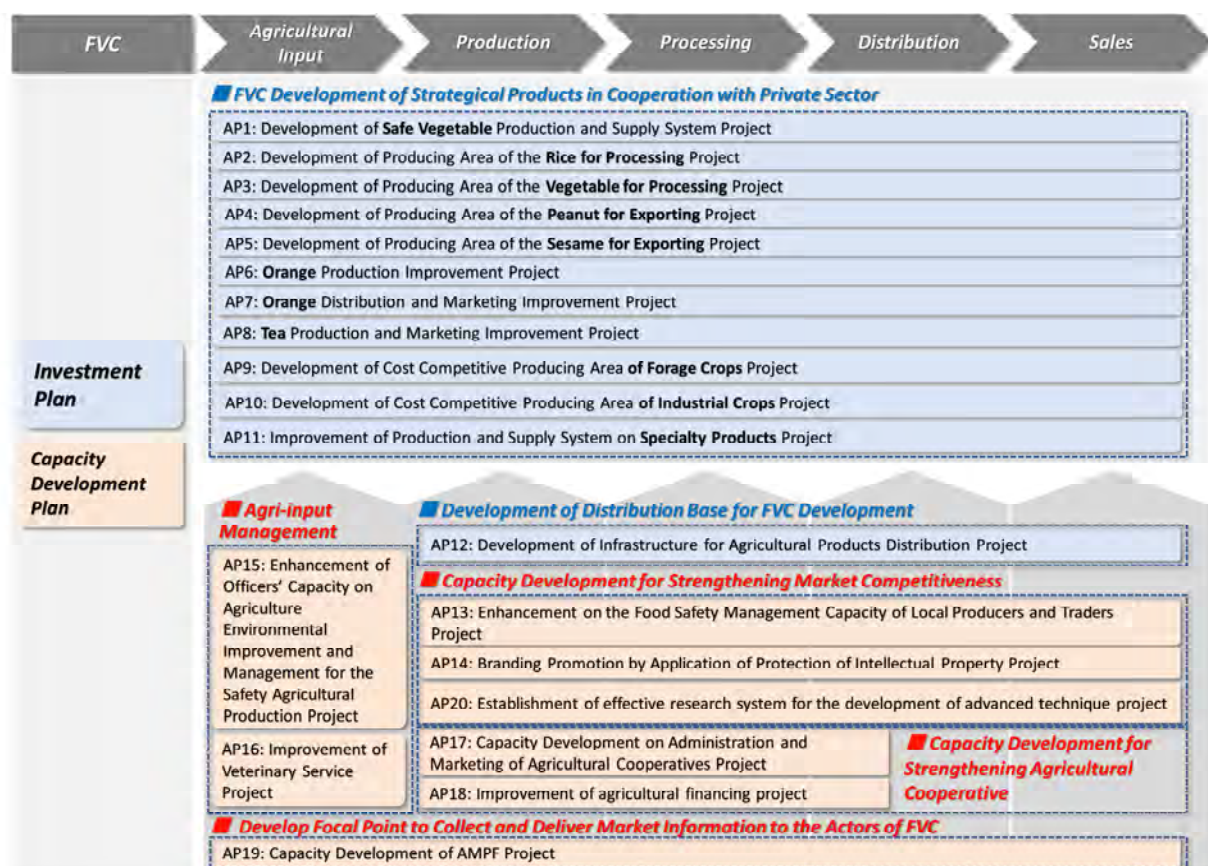


Figure 4 Relationship of Each A/P

Cost of A/P

The total cost of A/P from 2021 to 2030 is VND 1,099 billion of which VND 463 billion is borne by public and VND 636 billion is borne by private.

Priority of A/P

The priority of A/P is shown in the table below. Since the A/P developed in this project relates each other, it is desirable to implement all A/P regardless of the priority of A/P.

Table 7 Priority of Each A/P

Priority	Investment Plan	Priority	Capacity Development Plan
1st priority	AP1: Development of Safe Vegetable Production and Supply System Project	1st priority	AP19: Capacity Development of AMPF Project
1st priority	AP6: Orange Production Improvement Project	2nd priority	AP17: Capacity Development on Administration and Marketing of Agricultural Cooperative Project
3rd priority	AP12: Development of Infrastructure for Agricultural Products Distribution Project	2nd priority	AP18: Improvement of agricultural financing project
4th priority	AP7: Orange Distribution and Marketing Improvement Project	4th priority	AP9: Branding Promotion by Application of Protection of Intellectual Property Project
5th priority	AP2: Development of Producing Area of Rice for Processing Project	5th priority	AP20: Establishment of effective research system for the development of advanced technique project
5th priority	Development of Producing Area of Peanut for Exporting Project	6th priority	AP10: Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production Project
7th priority	AP11: Improvement of Production and Supply System on Specialty Products Project	6th priority	AP11: Improvement of Veterinary Service Project
8th priority	AP3: Development of Producing Area of Vegetable for Processing Project	7th priority	AP8: Enhancement on the Food Safety Management Capacity of Local Producers and Traders Project
8th priority	AP8: Tea Production and Marketing Improvement Project		
10th priority	AP5: Development of Producing Area of Sesame for Exporting Project		
10th priority	AP9: Development of Cost Competitive Producing Area of Forage Crops Project		
10th priority	AP10: Development of Cost Competitive Producing Area of Industrial Crops Project		

9. Conclusion and Recommendation

JICA Project Team proposes the following points as a conclusion of the project.

1. Incorporation of M/P and A/P Developed by this Project into Socio-Economic Development Plan (2021-2025)

The project expects that this M/P and A/P would be incorporated into socio-economic development plan (2021-2025) to ensure those plans to be actually implemented. Besides, it is recommended to consider the application of development assistance funds such as World Bank and ADB to implement A/P.

2. Facilitation of Private Investment

The project requests for further efforts to attract investment, such as explaining the outline of investment promotion policy and incentive measures as Nghe An province for investors by utilizing opportunities such as matching events planned and operated by AMPF.

3. Future Vision of AMPF

Currently, AMPF does not have sufficient capacity to collect market information in outside of province including international market. Consideration should be given to utilize the private sector which has strength in this point and external marketing specialist who is fluent in foreign languages. Besides, in the future, it is desirable to unify AMPF and other relevant departments and develop new platform functions directly under the PPC. By integrating the operation and management of platform function, it is beneficial for investors and FVC actors to simplify the administration procedure

4. Utilization of Guideline of Contract Farming

The guideline of contract farming (attached to Annex) was prepared based on knowledge and lessons learned from many pilot projects concerning contract farming. The project expects that administration staffs in Nghe An province will utilize this guideline positively for the facilitation of contract farming.

Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An

Final Report

Map of Project Site
 Pictures of the Project
 Summary of Main Report
 Index
 List of Figures and Tables
 Index of Annexes
 Units and Currency
 Abbreviation

INDEX

CHAPTER 1 INTRODUCTION	1-1
1.1 Background of the Project	1-1
1.2 Objective of the Project	1-1
1.3 Target Area of the Project.....	1-1
1.4 Implementation Structure of the Project.....	1-1
1.5 Workflow of the Project	1-2
1.6 Composition of the Report.....	1-3
CHAPTER 2 CURRENT SITUATION OF TARGET AREA	2-1
2.1 Natural Condition	2-1
2.1.1 Topography	2-1
2.1.2 Climate	2-1
2.1.3 Hydrology	2-2
2.1.4 Soil	2-2
2.1.5 Natural disaster	2-3
2.2 Socio-Economic Condition.....	2-3
2.2.1 Administration	2-3
2.2.2 Economy	2-4
2.2.3 Land Use	2-5
2.2.4 Population	2-5
2.2.5 Infrastructure.....	2-6
2.3 Administrative Service	2-8
2.3.1 Administrative Service Related to Agriculture	2-8
2.3.2 Department of Agriculture and Rural Development	2-9
2.3.3 Department of Industry and Trade	2-9
2.3.4 Department of Planning and Investment.....	2-10
2.3.5 Department of Science and Technology	2-11
2.3.6 Department of Natural Resource and Environment	2-11
2.3.7 Department of Tourism.....	2-12
2.4 Development Strategy and Plan.....	2-12
2.4.1 Strategy and Plan Structure.....	2-12
2.4.2 Socio-Economic Development Strategy (2011-2020) in Nghe An.....	2-13
2.4.3 Socio-Economic Development Plan (2016-2020) in Nghe An.....	2-13
2.4.4 Agriculture and Rural Development Plan in Nghe An	2-14
2.4.5 Industry and Trade Development Plan in Nghe An	2-16
2.5 Assistance by Japanese Government	2-17
2.6 Assistance from Other Donors.....	2-19
CHAPTER 3 CURRENT SITUATION OF AGRICULTURE SECTOR IN NGHE AN	3-1
3.1 Outline of Agriculture Sector in Nghe An Province.....	3-1

3.1.1	Outline of Major Agricultural Products	3-1
3.1.2	Present Situation of Agricultural Market	3-15
3.2	Outline of Actors Regarding Food Supply Chain.....	3-20
3.2.1	Seedlings and Agricultural Input Suppliers	3-20
3.2.2	Agricultural Producer.....	3-23
3.2.3	Distributor	3-29
3.2.4	Food Processor.....	3-30
3.2.5	Actors for Selling of Agricultural Products	3-31
3.3	Current Situation and Issues Regarding the Distribution of Agricultural Products.....	3-33
3.3.1	Market Channel of Food Crop and Industrial Crop	3-33
3.3.2	Horticulture Crops (Vegetables and Fruits)	3-41
3.3.3	Livestock Products.....	3-48
3.4	Current Situation and Issues Regarding the Public and Private Service in the Field of Agriculture.....	3-55
3.4.1	Agricultural Extension	3-55
3.4.2	Research and Development.....	3-58
3.4.3	Food Sanitation Management	3-59
3.4.4	Veterinary Service	3-62
3.4.5	Plant Quarantine.....	3-63
3.4.6	Management and Control of Agricultural Input.....	3-64
3.4.7	Weather Information Service	3-66
3.4.8	Agricultural Finance	3-67
3.4.9	Trade and Sales Promotion	3-70
3.4.10	Investment Promotion.....	3-71
3.4.11	Infrastructure Development	3-73
3.5	Current Situation of Contract Agriculture	3-75
3.5.1	Present Contract Agriculture.....	3-75
3.5.2	Conditions in the Preceding Contracts in Vietnam	3-76
CHAPTER 4 DEVELOPMENT POTENTIAL, OBSTACLES AND VISIONS OF AGRICULTURE IN NGHE AN PROVINCE.....		4-1
4.1	Determination of Potential Zone for Agricultural Development.....	4-1
4.1.1	Background for the Determination of Potential Development Zone	4-1
4.1.2	Data Applied for Analysis.....	4-1
4.1.3	Principle Component Analysis.....	4-1
4.1.4	Cluster Analysis.....	4-3
4.1.5	Potential Development Zone.....	4-4
4.2	Development Potential and Constraints.....	4-5
4.2.1	Development Potential and Constraints for Each Zone	4-5
4.2.2	General Constraints across Zones	4-6
4.3	Development Strategy for each Zone	4-7
4.3.1	Strategic Region for Promotion of Raw Material Production for Food Processing and Exporting	4-7
4.3.2	Strategic Region for Promotion of Safe Agricultural Production	4-7
4.3.3	Strategic Region for Promotion of High-Value Added Agricultural Production.....	4-8
4.3.4	Strategic Region for Promotion of Agricultural Products for Special Use	4-9
4.3.5	Whole Region of the Nghe An Province.....	4-10
4.4	Verification Method for the Hypothesis	4-12
4.4.1	Establishment of Collection and Distribution System for the Market Information ...	4-12
4.4.2	Pilot Project Regarding Contract Agriculture.....	4-12
CHAPTER 5 AGRICULTURAL MARKETING PLATFORM.....		5-1
5.1	Objective of AMPF Establishment.....	5-1
5.2	Organization Structure and Responsibilities of AMPF	5-1
5.3	AMPF Activities and Outcomes.....	5-2

5.3.1 Development of Database on Actors of FVC	5-2
5.3.2 Promotion of Nghe An Agricultural Products	5-3
5.3.3 Collection and Delivery of Market Information	5-4
5.4 Capacity Development of AMPF and Extension Staffs	5-5
5.4.1 Training for AMPF and Extension Staffs.....	5-5
5.4.2 Implementation of Pilot Project	5-5
5.5 Evaluation of AMPF Activities and Issues to be Solved.....	5-5
5.5.1 Evaluation	5-5
5.5.2 Issues.....	5-6
CHAPTER 6 PILOT PROJECTS.....	6-1
6.1 Purpose of Pilot Project.....	6-1
6.2 Concept of Pilot Project.....	6-1
6.3 Results and Lessons through the Implementation of Pilot Projects.....	6-1
6.3.1 Promotion Zone for Safe Vegetable Production	6-1
6.3.2 Promotion Zone for Raw Material and Exporting Products Production.....	6-4
6.3.3 Promotion Zone for High-Value Products Production.....	6-6
6.3.4 Promotion Zone for Minor and Specific Products Production.....	6-10
CHAPTER 7 FVC DEVELOPMENT STRATEGY IN NGHE AN PROVINCE.....	7-1
7.1 Statutory Position of Master Plan.....	7-1
7.2 Structure and Target Year of Master Plan	7-1
7.3 Basic Development Vision	7-1
7.4 Structure of Nghe An Agricultural Development Strategy.....	7-2
7.4.1 FVC Development Policies.....	7-3
7.4.2 FVC Development Strategic Region.....	7-4
CHAPTER 8 ACTION PLAN	8-1
8.1 Structure and Remarks of Action Plan	8-1
8.1.1 Incorporation of the A/P into Socio-Economic Development Plan (2021-2025) in Nghe An Province	8-1
8.1.2 Application of Incentive Policy Regarding Private Investment and Agricultural Development.....	8-1
8.1.3 Structure of A/P	8-2
8.2 Outline of A/P.....	8-2
8.3 Relationship among A/Ps	8-47
8.4 Implementation Plan.....	8-47
8.5 Target Area of A/P	8-48
8.6 Implementation Schedule and Project Cost.....	8-50
8.7 Priority of Action Plan.....	8-0
8.7.1 Process to Determine the Priority of A/P	8-0
8.7.2 Evaluation Criteria	8-0
8.7.3 Weighting of Each Evaluation Criteria	8-0
8.7.4 Priority of Each A/P.....	8-1
CHAPTER 9 CONCLUSION AND RECOMMENDATION.....	9-1
9.1 Conclusion	9-1
9.2 Recommendation	9-2

List of Figure

Figure 1.1	Organization Chart for Project Implementation.....	1-2
Figure 1.2	Workflow of the Project.....	1-3
Figure 2.1	Geographical Classification of Nghe An Province (left figure) and the Proportion of Each Geographical Classification to the Total Area (right figure).....	2-1
Figure 2.2	Climate in Nghe An Province (Rainfall, temperature, humidity, sunshine duration).....	2-2
Figure 2.3	Water System in Nghe An Province	2-2
Figure 2.4	Population Projection by Province (2014 - 2034).....	2-6
Figure 2.5	Population Distribution by Age Group and Sex in Nghe An Province in 2014 and 2034.....	2-6
Figure 2.6	Structure of Administrative Service in Nghe An	2-8
Figure 2.7	DARD Organization Chart.....	2-9
Figure 2.8	DOIT Organization Chart	2-10
Figure 2.9	DPI Organization Chart	2-10
Figure 2.10	DOST Organization Chart	2-11
Figure 2.11	DONRE Organization Chart	2-11
Figure 2.12	DT Organization Chart.....	2-12
Figure 2.13	Strategy and Plan Structure.....	2-12
Figure 3.1	Comparison of Area Distribution by Crop in Vietnam and Nghe An.....	3-2
Figure 3.2	Specialization Coefficient of Cropped Area in Nghe An (2016).....	3-2
Figure 3.3	Cropping Area Distribution by District for Lowland Rice (2016).....	3-3
Figure 3.4	Cropping Area Distribution by District for Maize (2016)	3-3
Figure 3.5	Cropping Area Distribution by District for Tea (leaf+buds) (2016).....	3-4
Figure 3.6	Cropping Area Distribution by District for Sugarcane (2016).....	3-4
Figure 3.7	Cropping Area Distribution by District for Cassava (2016)	3-5
Figure 3.8	Cropping Area Distribution by District for Groundnut (2016).....	3-5
Figure 3.9	Cropping Area Distribution by District for Sesame (2016).....	3-6
Figure 3.10	Cropping Area Distribution by District for Vegetable (2016)	3-6
Figure 3.11	Cropping Area Distribution by District for Fruit (2016).....	3-8
Figure 3.12	Production Area Distribution by District for Pig (2016).....	3-10
Figure 3.13	Production Area Distribution by District for Cattle and Buffalo (2016)	3-11
Figure 3.14	Production Area Distribution by District for Chicken (2016).....	3-12
Figure 3.15	Cropping Area Distribution by District for Corn and Cassava (2016)	3-14
Figure 3.16	Current Situation of Agricultural Producer.....	3-25
Figure 3.17	Number of Members, Capital and the Composition of Administration Board in Cooperative	3-25
Figure 3.18	Holding Situation of Equipment and Facilities of Cooperative	3-26
Figure 3.19	Current Situation of Cooperative Service	3-27
Figure 3.20	Management Situation of Cooperative.....	3-28
Figure 3.21	Issues Regarding Cooperative Management.....	3-28
Figure 3.22	Situation of Contract Farming by Cooperative	3-29
Figure 3.23	Current Situation of Actors Regarding Food Distribution.....	3-30
Figure 3.24	Main Marketing Channels of Rice	3-33
Figure 3.25	Main Marketing Channels of Maize	3-35
Figure 3.26	Main Marketing Channels of Tea	3-36
Figure 3.27	Main Marketing Channels of Sugarcane.....	3-37
Figure 3.28	Main Marketing Channels of Cassava	3-38
Figure 3.29	Main Marketing Channels of Groundnut.....	3-39
Figure 3.30	Main Marketing Channels of Sesame	3-40
Figure 3.31	General Marketing Channel of Fresh Horticultural Crop	3-42
Figure 3.32	Value Chain and Actors of Horticultural Crop in Nghe An.....	3-43
Figure 3.33	General Marketing Channels of Meat (Beef and Pork).....	3-48
Figure 3.34	General Marketing Channels of Chicken and Egg.....	3-52

Figure 3.35	General Marketing Channels of Milk Product	3-53
Figure 3.36	General Marketing Channels of Fodder Crop (Maize)	3-54
Figure 3.37	Location of Weather Stations in Nghe An	3-66
Figure 3.38	Average Rate of Legal Minimum Wage in Vietnam	3-73
Figure 4.1	Dendrogram Obtained by Cluster Analysis	4-3
Figure 4.2	Geographical Distribution of each Cluster.....	4-4
Figure 4.3	Strategy of FVC Development by Zone.....	4-12
Figure 5.1	Organization Structure and Role of AMPF.....	5-2
Figure 5.2	Evaluation of AMPF Activities.....	5-6
Figure 7.1	Overall Concept of the M/P	7-3
Figure 7.2	Overall Concept of FVC Development Strategical Region	7-6
Figure 8.1	Relationship among A/Ps.....	8-47

List of Table

Table 1.1	Outline of JCC Meetings.....	1-2
Table 2.1	Administrative Division in Nghe An Province	2-3
Table 2.2	GDP Growth Index by Sector of Vietnam and Nghe An Province.....	2-4
Table 2.3	Export and Import Value in Nghe An Province from 2010 to 2015	2-4
Table 2.4	Land Use in Nghe An Province.....	2-5
Table 2.5	Target of Major Agricultural Commodities in 2020	2-13
Table 2.6	Priority Projects in Agriculture Sector (2016-2020)	2-14
Table 2.7	Target of Major Agricultural Commodities in 2020	2-15
Table 2.8	Plan of Major Agricultural Products by District	2-15
Table 2.9	Activities and Further Implementation Plan of Related JICA Projects.....	2-17
Table 2.10	Coordination Plan with On-Going JICA Projects	2-18
Table 2.11	List of Major Projects related Agriculture Sector	2-19
Table 3.1	Cropped Area by Crop	3-1
Table 3.2	Cropping Calendar of Main Vegetable in Nghe An.....	3-7
Table 3.3	Livestock Population (2016)	3-9
Table 3.4	Comparison of Food Retail Sector of Some ASEAN Countries by Trade Channel (2012).....	3-15
Table 3.5	Forecast of Gross Domestic Product per Capita of the 10 ASEAN Nations (2016-2023).....	3-16
Table 3.6	Existing and Planned Public Markets by District, Town and City.....	3-17
Table 3.7	Number of Markets per 10,000 Residents in 2013 and 2025 by District, Town and City.....	3-18
Table 3.8	Export Value (USD) of Agricultural Product by Item in 2010, 2014-2017	3-18
Table 3.9	Export Amount (ton) of Agricultural Product by Item in 2010, 2014-2017	3-19
Table 3.10	The Top Five Importers of Nghe An Agricultural Product by Country in 2010, 2014-2017.....	3-19
Table 3.11	Procurement Route of Seeds and Seedlings of Each Agricultural Product.....	3-20
Table 3.12	Current Situation of Technical Services to Farmers by Fertilizer Manufacturing and Distributors.....	3-21
Table 3.13	Current Situation of the Number of Agricultural Chemicals Handling Stores in Nghe An Province.....	3-22
Table 3.14	Items Handled by Pesticide Wholesalers and Retailers of Nghe An Province.....	3-22
Table 3.15	Current Situation of Technical Services to Farmers by Pesticide Distributors	3-23
Table 3.16	Role of Agri-business Enterprise in Supply Chain of Each Agricultural Product	3-29
Table 3.17	Number of Hotels in Nghe An listed by DOT Nghe An	3-32
Table 3.18	Number of Big and Medium Restaurant in Nghe An Listed by DOT Nghe An ...	3-33
Table 3.19	Current Situations and Issues on Rice Supply Chain	3-34
Table 3.20	Current Situations and Issues on Maize Supply Chain	3-35
Table 3.21	Current Situations and Issues on Tea Supply Chain	3-36
Table 3.22	Current Situations and Issues on Sugarcane Supply Chain.....	3-37

Table 3.23	Current Situations and Issues on Cassava Supply Chain	3-38
Table 3.24	Current Situations and Issues on Groundnut Supply Chain	3-39
Table 3.25	Current Situations and Issues on Sesame Supply Chain	3-40
Table 3.26	Current Situations and Issues on Ginger Supply Chain	3-41
Table 3.27	Characteristics of Marketing Channel in Nghe An	3-42
Table 3.28	Challenges of Vegetables Value Chain Development.....	3-44
Table 3.29	Challenges in the Value Chain Development of Orange.....	3-46
Table 3.30	Challenges in the Value Chain Development of Passion Fruit	3-47
Table 3.31	Distribution Flow of Beef Cattle and Buffalo	3-49
Table 3.32	Current Situation and Issues in Supply Chain of Pork	3-50
Table 3.33	Current Situation and Issues in Supply Chain of Beef	3-51
Table 3.34	Current Situation and Issues of Supply Chain on Chicken and Egg	3-52
Table 3.35	Current Situation and Issues in Supply Chain of Milk.....	3-54
Table 3.36	Main Operations of Each Department of AEC.....	3-56
Table 3.37	Outline of the Agricultural Extension Program.....	3-57
Table 3.38	Role of Related Ministry in Food Safety Law.....	3-59
Table 3.39	Major Tasks of Sub-Department of Veterinary and Animal Husbandry.....	3-62
Table 3.40	Number of Staffs at Plant Quarantine Center (Area IV)	3-63
Table 3.41	Decrees and Decisions for Management and Control of Agriculture Inputs and Governmental Authorities in Charge.....	3-64
Table 3.42	Main Loan Sources for Agriculture Available in Nghe An.....	3-67
Table 3.43	List of Banks Providing Loans for Agricultural and Rural Development in Nghe An	3-69
Table 3.44	Recent Loan Performance Data in Nghe An by Program	3-70
Table 3.45	Investment Incentives for Agriculture Sector.....	3-72
Table 3.46	Legal Minimum Wage of Nghe An and Cities in Southeast Asia.....	3-73
Table 3.47	Status of Rural Infrastructure Development and Achievement (among 431 communes)	3-74
Table 4.1	Data Applied for Analysis.....	4-1
Table 4.2	Results of Principle Component Analysis.....	4-2
Table 4.3	Principle Component Scores of each City, District and Town.....	4-3
Table 4.4	Average Value of Principal Component Scores of Each Cluster	4-4
Table 4.5	Features of each Cluster	4-4
Table 4.6	SWOT Analysis for Coastal Plain Zone.....	4-7
Table 4.7	SWOT Analysis for Sub-Urban Zone	4-8
Table 4.8	SWOT Analysis for Hilly Zone.....	4-9
Table 4.9	SWOT Analysis for Mountainous Zone.....	4-10
Table 4.10	SWOT Analysis for the Whole Area of Nghe An Province.....	4-11
Table 5.1	Staff List of AMPF	5-1
Table 5.2	Status of AMPF Database Prepared	5-2
Table 5.3	Trade Exhibitions that AMPF Participated	5-3
Table 5.4	Matching Event and Opinion Exchange Meeting Organized by AMPF	5-3
Table 5.5	AMPF Activities to Collect and Deliver Market Information.....	5-4
Table 5.6	Details of Training Conducted for AMPF and Extension Staffs.....	5-5
Table 5.7	Progress of Pilot Project Conducted by AMPF Members.....	5-5
Table 6.1	Outline of Pilot Projects Conducted in Promotion Zone for Safe Vegetable Production	6-1
Table 6.2	Outline of Pilot Projects Conducted in Promotion Zone for Raw Material and Exporting Products Production	6-4
Table 6.3	Outline of Pilot Projects Conducted in Promotion Zone for High-Value Products Production	6-6
Table 6.4	Outline of Pilot Projects Conducted in Promotion Zone for Minor and Specific Products Production	6-10
Table 7.1	Directions on the Activities Regarding the Establishment of Market Needs Gathering and Sharing System.....	7-3

Table 7.2	Directions on the Activities Regarding the Improvement of Agricultural Administration Service and Infrastructure for the Development of FVC	7-4
Table 7.3	Directions for the Activities Regarding the Capacity Development of Organization and Human Resources Related to FVC Development.....	7-4
Table 8.1	Incentive Policies for Private Investment Promotion and Agricultural Support	8-1
Table 8.2	List of A/P	8-2
Table 8.3	Implementation System of Each A/P	8-47
Table 8.4	Target Area of Each A/P	8-49
Table 8.5	Implementation Schedule and Project Cost of Each A/P (Billion VND)	8-0
Table 8.6	Evaluation Criteria of each A/P.....	8-0
Table 8.7	Result of Pair Evaluation.....	8-1
Table 8.8	Priority of A/P	8-1
Table 9.1	Priority of Each A/P	9-2

Index of Annexes

ANNEX 1	Minutes of Joint Coordinating Committee (JCC) Meeting
ANNEX 2	Report on Pilot Projects
ANNEX 3	Guideline of Contract Agriculture
ANNEX 4	Report on Training in Japan
ANNEX 5	Data for Zoning
ANNEX 6	List of Collected Documents

Units and Currency

kg	kilogram
t, MT	Metric tones = 1,000 kg
h	hour
mm	millimeter
cm	meter
km	kilometer
ha	hectare
JPY	Japanese Yen
HP	horsepower
km ² , sq.km	square kilometer
m ³	cubic meter
MCM	million cubic meter
MSL	mean sea level
MW	mega watt
LPS, l/s	litters per second
mm/mon	millimeter per month
mm/d	millimeter per day
m/s	meter per second
m ³ /s	meter per second
°C	degrees centigrade
%	percent
US\$	United States of America Dollar
EUR	EURO
VND	Viet Nam Dong

Exchange Rates (as of January 2019)

	VND	US\$	JPY
VND		0.000043	0.0049
US\$	23222.06		113.39
JPY	204.92	0.0088	

Abbreviations

Abbreviation	English
ADB	Asian Development Bank
AEC	Agricultural Extension Center
AES	Agricultural Extension Station
AGRIBANK	Bank for Agriculture and Rural Development
AGRITRADE	Viet Nam Trade Promotion Center for Agriculture
AI	Artificial Insemination
AMPF	Agricultural Marketing Platform
A/P	Action Plan
ASEAN	Association of South - East Asian Nations
ASINCV	Agricultural Science Institute of Northern Central Vietnam
CIDA	Canadian International Development Agency
CIS	Center for Informatics and Statistics
COOP BANK	Cooperative Bank
C/P	Counterpart
CPC	Commune People's Committee
DARD	Department of Agriculture and Rural Development
DOET	Department of Education and Training
DOF	Department of Finance
DOFA	Department of Foreign Affairs
DOH	Department of Health
DOIT	Department of Industry and Trade
DONRE	Department of Natural Resources and Environment
DOST	Department of Science Technology
DOT	Department of Transport
DPC	District People's Committee
DPI	Department of Planning and Investment
DWT	Dead Weight Tonnage
DT	Department of Tourism
EPA	Economic Partnership Agreement
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FG	Farmers Group
FTA	Free Trade Agreement
FVC	Food Value Chain
GAP	Good Agricultural Practices
GAHP	Good Animal Husbandry Practices
IC	Industrial Clusters
IQF	Individual Quick Freezing
IPSARD	Institute of Policy and Strategy for Agriculture and Rural Development
IZ	Industrial Zones
JCC	Joint Coordinating Committee
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
MARD	Ministry of Agriculture and Rural Development
M/M	Minutes of Meeting
MOH	Ministry of Health
MOIT	Ministry of Industry and Trade
MOST	Ministry of Science and Technology
MOU	Memorandum of Understanding
M/P	Master Plan
NCHMF	National Centre for Hydro-Meteorological Forecasting
ODA	Official Development Assistance
OJT	On-the-Job Training
PIM	Participatory Irrigation Management
PF	Platform
PMU	Project Management Unit

Abbreviation	English
PP	Pilot Projects
PPC	Provincial People's Committee
PSC	Project Steering Committee
R/D	Record of Discussions
SEDP	Social Economic and Development Plan
SEDS	Social Economic and Development Strategy
SV	Safe Vegetable
SVFG	Safe Vegetable Farmers Group
TPC	Trade Promotion Center
TOT	Training of Trainers
USDA	United States Department of Agriculture
VAAS	Vietnam Academy of Agricultural Science
VAPCF	Vietnam Association of People's Credit Fund
VASS	Vietnam Academy of Social Science
VBSP	Vietnam Bank for Social Policies
VCCI	Vietnam Chamber of Commerce and Industry
VMHA	Vietnam Meteorological Hydrological Administration
VND	Viet Nam Dong
VSIP	Vietnam Singapore Industrial Park
WB	World Bank

Chapter 1 Introduction

1.1 Background of the Project

The "Japan-Vietnam Agricultural Cooperation Dialogue" which is a framework of cooperation between the governments of Japan and Vietnam, has started since June 2014. Through this dialogue, the governments strive to materialize and promote the cooperation in line with the agreement for comprehensive development of agriculture sector in Vietnam signed in May 2013, and establishment of food value chain with involvement of private investment. It was mutually agreed upon the selection of Nghe An province as one of the model areas among 63 provinces for promotion of food value chain to achieve the goal.

This project aims that the governments drive for improvement of transparency and security of agricultural products in post-harvest period, transportation and sales and establish effective food value chain based on market needs. It is important to establish the food value chain with participation of private sector to enable to stable and sustainable production of food based on market needs.

With an awareness of this issue, the government of Vietnam requested the government of Japan to implement "Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An" aiming at promotion of sustainable contract agriculture, in which public and private sectors will establish the system sharing market needs and businesses among producers, transporters, processors, and sellers perform well. The JICA dispatched the Detailed Planning Survey mission to discuss the contents of the Project with the Ministry of Agriculture and Rural Development and the Government of Nghe An province in August-September 2015, and the record of discussions (R/D) was signed by the JICA and Nghe An Provincial People's Committee.

1.2 Objective of the Project

This Project will develop "The Agriculture Development Master Plan (M/P) for Nghe An Province" and "Action Plan (A/P)" to achieve the goals of the M/P, through introduction of "Contract Agriculture" which will enhance food value chain in Nghe An province.

1.3 Target Area of the Project

The target area of the Project is whole area of Nghe An province, and major consumption area such as Hanoi for marketing study.

1.4 Implementation Structure of the Project

Counterpart agencies of the Project are Nghe An Provincial People's Committee (PPC) including Department of Agriculture and Rural Development (DARD), Department of Planning and Investment (DPI), Department of Industry and Trade (DOIT), Department of Transport (DOT), Department of Health (DOH), Department of Natural Resources and Environment (DONRE), Department of Tourism (DT), Department of Science Technology (DOST), and Department of Finance (DOF), Nghe An Provincial Cooperative Alliance, International Cooperation Department of Ministry of Agriculture and Rural Development (MARD), Vietnam Academy of Social Science (VASS) and Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD). The structure of Project implementation system was established in hierarchal order of Joint Coordinating Committee (JCC), Project Steering Committee (PSC) and Project Management Unit (PMU), as shown in the following chart.

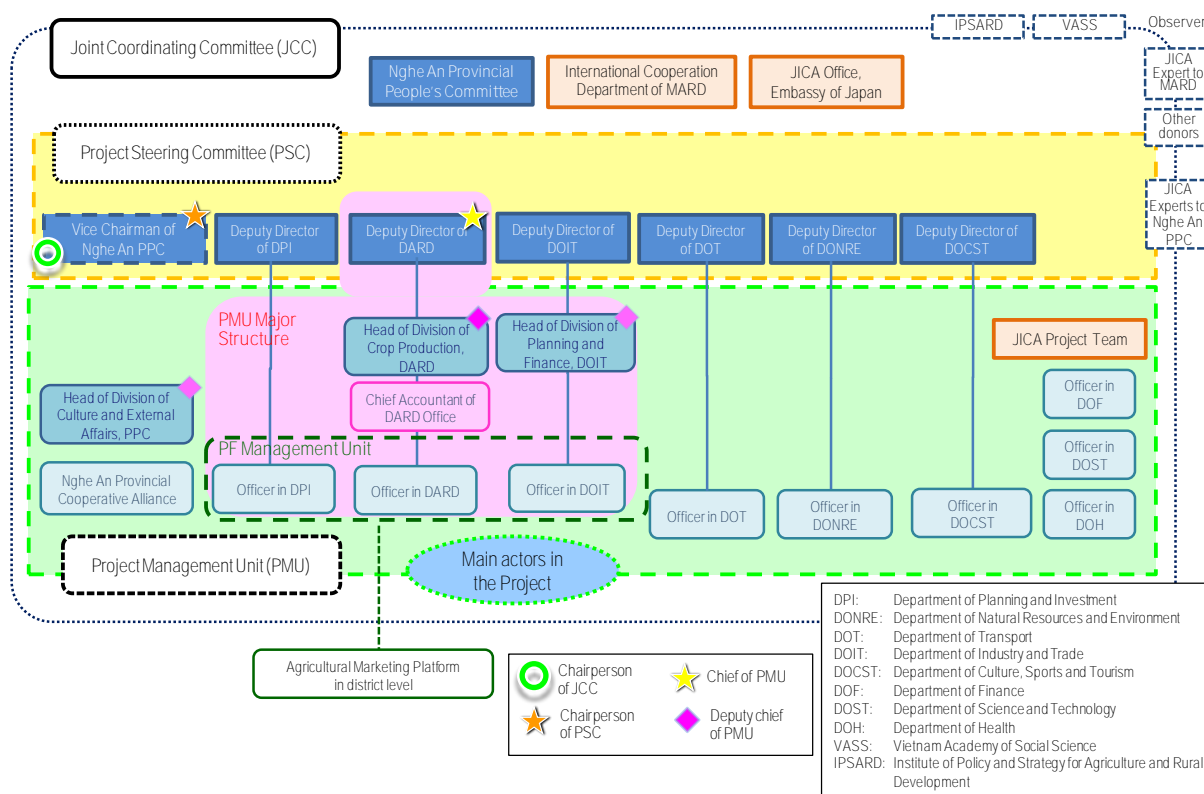


Figure 1.1 Organization Chart for Project Implementation

Project has been managed by the conduction of following six (6) JCC meetings. The minutes of the meetings are attached in the Annex.

Table 1.1 Outline of JCC Meetings

No.	Date	Major Issue
1	May 2016	Explanation and discussion on Inception Report
2	Oct. 2016	Confirmation of progress of the Project
3	Sept. 2017	Confirmation of progress of the Project
4	Mar. 2018	Confirmation of progress of the Project
5	Sept. 2018	Discussion on direction of Nghe An agricultural development plan
6	Jan. 2019	Explanation and discussion on Draft Final Report

PMU was organized by encompassing sixteen (16) members assigned from relevant Nghe An government organizations. Monthly PUM meetings have been held for information sharing and discussion on various matters related to the Project.

1.5 Workflow of the Project

This 3-year Project, which was commenced in March 2016, has been implemented to prepare agricultural development plan through basic study on agriculture sector, establishment of supporting system for agricultural value chain, and implementation of pilot projects (PP). The initial work schedule was modified at the several points; for example, 1) to fully use previous study results to shorten basic study of agriculture sector, 2) to implement many pilot projects to obtain useful results, and 3) to start the pilot projects early, and 4) to prepare draft M/P reflecting the results of the pilot project in the middle of 2017. The revised flowchart shown herein below was accepted by JCC held in October 2016.

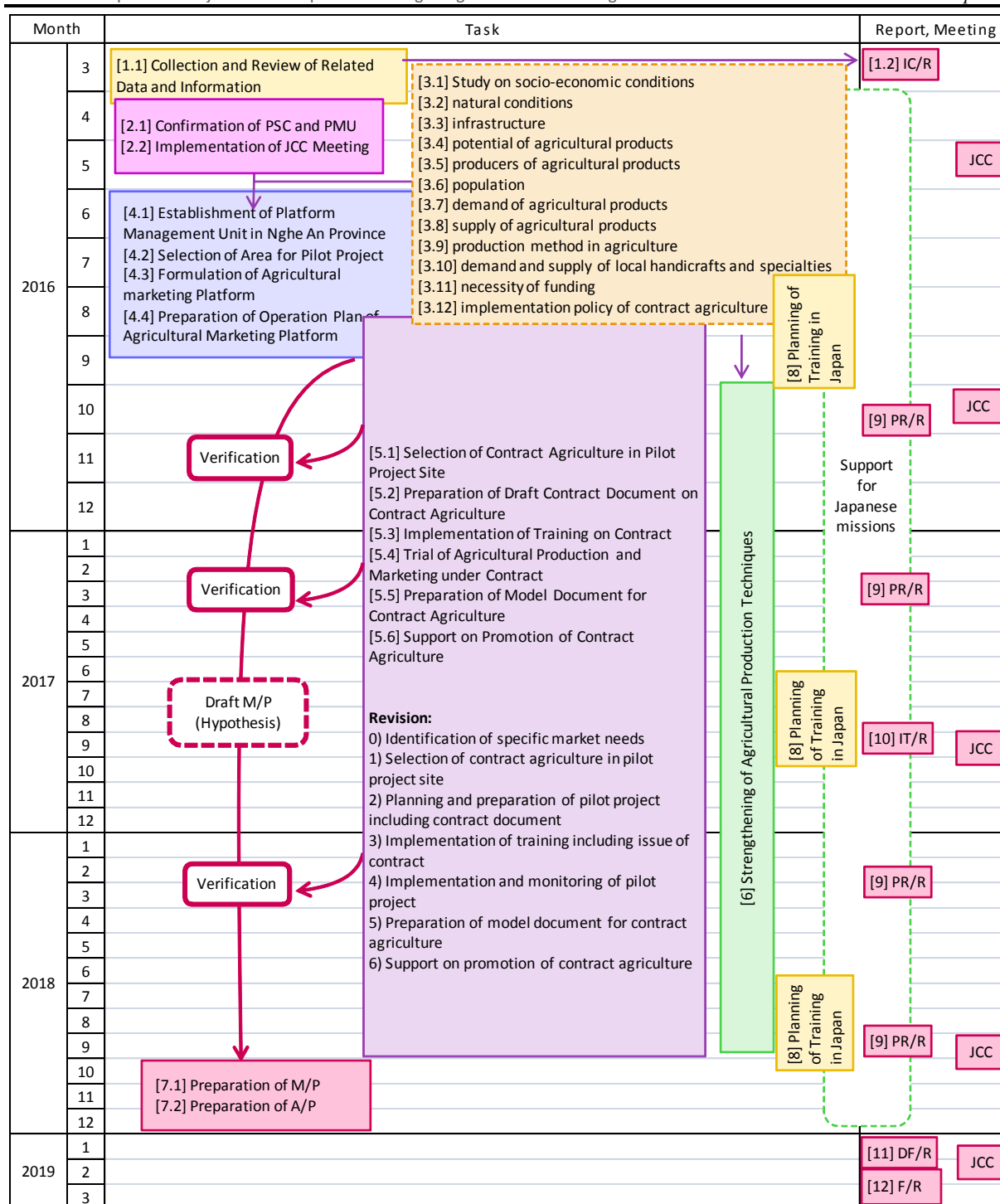


Figure 1.2 Workflow of the Project

1.6 Composition of the Report

This Report consists of present main report and separate volume of annex. In Chapter 2 of the main report, general information of Nghe An province, such as natural and socio-economic conditions, government organizations, and development plan, is organized. Chapter 3 covers the constraints in agriculture sector development derived through analyses of the current situation. In Chapter 4, development potential and constraints are identified by zone and ideas on pilot projects are proposed. In Chapter 5 and 6, processes and results of trial operation of Agricultural Marketing Platform (AMPF) and various pilot projects on FVC development are described. Examining all results of the

pilot projects, Master Plan and Action Plans for agricultural development in Nghe An province are proposed in Chapter 7 and 8, respectively. Finally, conclusion and recommendations toward the implementation of the development plans are described in Chapter 9.

Chapter 2 Current Situation of Target Area

2.1 Natural Condition

2.1.1 Topography

Nghe An province is located in the center of the North Central Part of Vietnam. The province is adjacent to Thanh Hoa province to the north, Ha Tinh province to the south, shares 419 km long borderline with Lao PDR to the west, and owns an 82 km of coastal line in the east. Nghe An province can be broadly divided into three categories of areas i.e. mountainous area, hilly area and coastal plain area. Mountainous area and hilly area account for approximately 83% of the total area of 16,490 km² of the Nghe An province. The former consists of four (4) districts while the latter consists of six (6) districts and one (1) town. On the other hand, the coastal plain areas consist of Vinh City, seven (7) districts and two (2) towns.

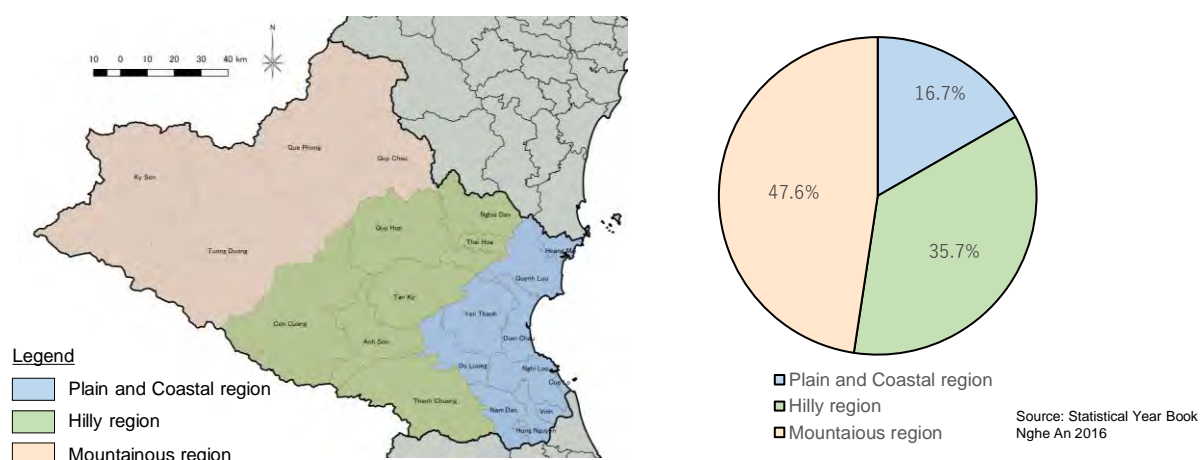
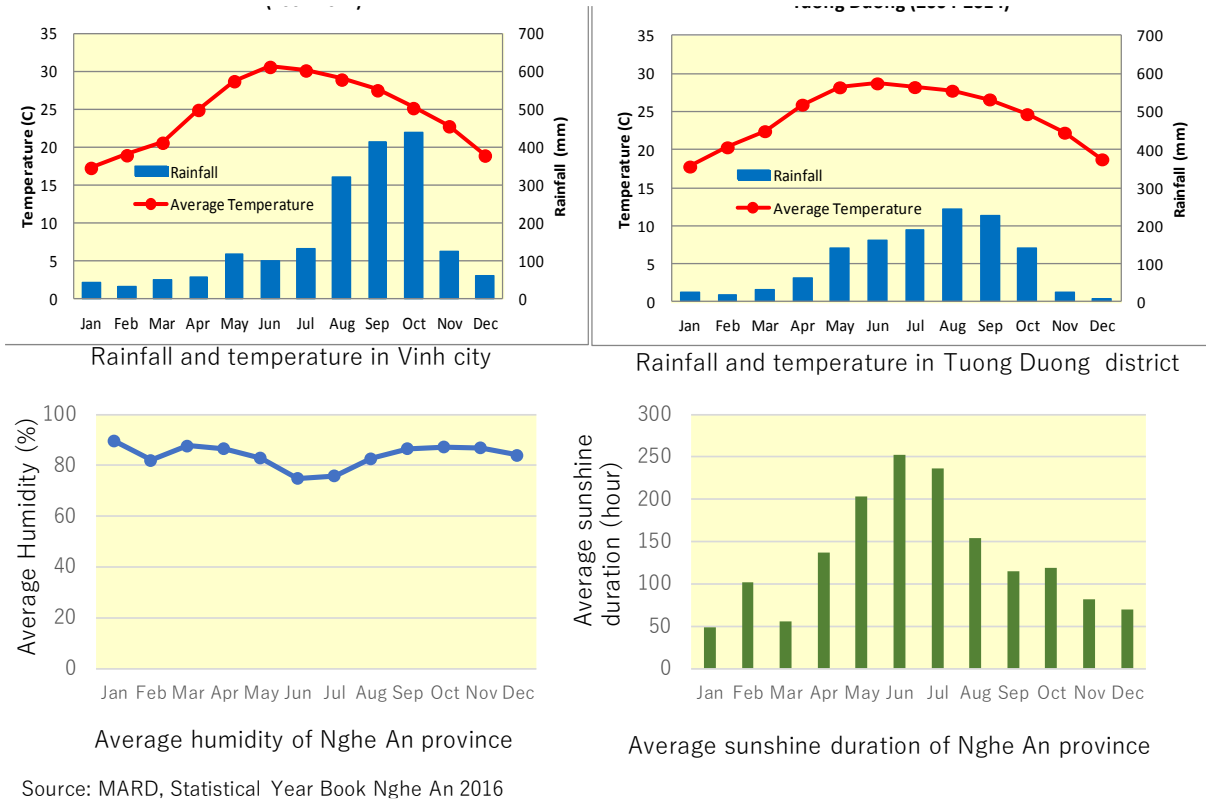


Figure 2.1 Geographical Classification of Nghe An Province (left figure) and the Proportion of Each Geographical Classification to the Total Area (right figure)

2.1.2 Climate

Nghe An is in the tropical monsoon region with two typical seasons of rainy summer (from May to October) and dry winter (from November to April). Annual average temperature ranges from 23 - 24 °C, from 19 °C in the coolest to 33 °C in the hottest month. Annual rainfall in Nghe An is around 1,200 - 2,000 mm/year. Weather is different between coastal area and inland area, according to the meteorological data of eight (8) stations in Nghe An. The average annual rainfall from 2004 to 2014 was 1,884 mm in the coastal Vinh city, while 1,280 mm in the inland Tuong Duong town. Generally, the rainy season is around August - October every year, and the dry season is December - March. Regarding the temperature, the temperature in Thuong Duong district tends to be lower than the temperature in Vinh City, reflecting the height of the altitude, especially in the summer. Humidity is high throughout the year and the annual average humidity in 2016 was about 84%, slightly lower in summer and slightly higher in winter. The amount of solar radiation increases from May to July and tends to decrease in the dry season (December – March).



Source: MARĐ, Statistical Year Book Nghe An 2016

Figure 2.2 Climate in Nghe An Province (Rainfall, temperature, humidity, sunshine duration)

2.1.3 Hydrology

There are seven watersheds in Nghe An province with total extension of 9,828 km, and the water density of 0.7 km / km². The water source of Ca River, which has the largest catchment area with 522 km of extension, 27,200 km² (of which Nghe An province occupies 15,346 km²) of catchment area and 28,109 m³ of annual flow is Xieng Khoang province in Laos. The main tributaries of the Ca River include the Hieu River (228 km of extension and 5,340 km² of catchment area), Nam Mo River (173 km of extension and 3,970 km² of catchment area) and others.

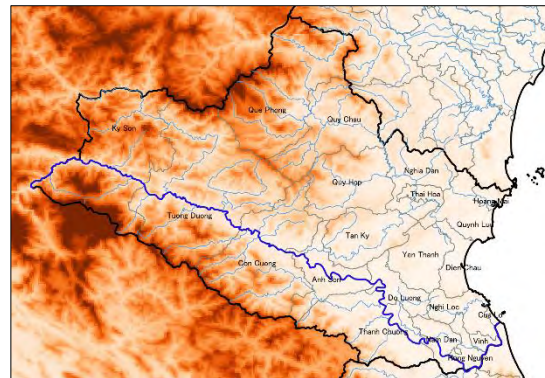


Figure 2.3 Water System in Nghe An Province

2.1.4 Soil

Based on soil forming factors, the soils are classified into several groups.

- Water-formed soils: the majority of it distributed in the districts of the plain and coastal regions and include five sub-types namely sandy soil, alluvium, saline soil, alkaline soil, and degraded and transformed soil due to cultivation. Two important groups are fluxions and sandy soil/aerosols with a total area of 189,000 ha as they are substantial factors for agricultural production in the province.
- Earth-formed soil: Such soil type is found mainly in the mountainous areas (accounting for 74.4 %) including the following sub-types: Ferralic/yellow red soil on shale (433,357 ha), Ferralic/yellowish soil on sandstone and conglomerate (315,055 ha), Ferralic/red yellow soil on acid rocks (217,101 ha), Ferralic/brown red soil in limestone (34,064 ha), Ferralic soil on basalt

(14,711 ha), Ferralic soil on mountains and humus on high mountains.

2.1.5 Natural disaster

Nghe An province is vulnerable to natural disasters in Vietnam. Especially in coastal areas, the floods, coastal erosion and salt water intrusion, etc. are occurring due to strong winds and storm surges caused by typhoons that land 2-3 times each year. In addition, landslide damage etc. occurred frequently in mountainous areas. According to The Committee for foreign non-governmental organization affair, the amount of damage caused by natural disasters occurred in the province of Nghe An in 2010 - 2013 amounts to 9,402 billion VND.

2.2 Socio-Economic Condition

2.2.1 Administration

The administrative division of Nghe An province consists of one (1) city, three (3) towns and seventeen (17) districts. There are four (4) districts (Ky Son, Tuong Duong, Que Phong, Quy Chau) in the mountains area, five (5) districts and one (1) town (Con Cuong, Thanh Chuong, Quy Hop, Nghia Dan, Tan Ky, Thai Hoa) in the hilly area and Vinh city; two (2) towns and four (4) districts (Do Luong, Nam Dan, Hung Nguyen, Nghi Loc, Dien Chau, Quynh Luu, Yen Thanh, Cua Lo, Hoang Mai, Vinh) in the coastal plain areas. As the smallest administrative unit, there are administrative divisions of wards (only in urban areas), towns (Thị trấn: only the center of district) and commune which is responsible for multiple villages. There are thirty-two (32) wards, seventeen (17) towns and 431 communes in the province.

Table 2.1 Administrative Division in Nghe An Province

Topography	Name	Administration Level	Total Administrative Unit	Wards	Town under District	Commune	Village
Plain and Coastal region	Vinh	City	25	16	-	9	374
	Cua Lo	Town	7	7	-	-	71
	Hoang Mai	Town	10	5	-	5	132
	Quynh Luu	District	33	-	1	32	406
	Dien Chau	District	39	-	1	38	458
	Yen Thanh	District	39	-	1	38	496
	Nghi Loc	District	30	-	1	29	446
	Nam Dan	District	24	-	1	23	332
	Hung Nguyen	District	23	-	1	22	252
Do Luong	District	33	-	1	32	369	
Hilly region	Thai Hoa	Town	10	4	-	6	126
	Nghia Dan	District	25	-	1	24	311
	Quy Hop	District	21	-	1	20	287
	Con Cuong	District	13	-	1	12	127
	Tan Ky	District	22	-	1	21	269
	Anh Son	District	21	-	1	20	252
	Thanh Chuong	District	40	-	1	39	523
Mountainous region	Que Phong	District	14	-	1	13	194
	Quy Chau	District	12	-	1	11	146
	Ky Son	District	21	-	1	20	193
	Tuong Duong	District	18	-	1	17	154
Total			480	32	17	431	5 918

Source: Statistical Yearbook Nghe An 2016

2.2.2 Economy

Nghe An province is located in the center of North Center of Vietnam and lies on a strategic point of transportation in east-west route. Nghe An has various transportation modes including seaport, airport, railway, and roads easily connecting to the other provinces and countries. Therefore, the provincial capital of Vinh city is an important economic region in the North center.

Nghe An province has abundant natural resources such as forest, sea, mineral, and thriving agriculture due to the presence of various topographic areas. For this reason, food, beverage, mineral, construction material/stone carving, and handy craft, etc. are developed. Recently, large-scale investment in the dairy sector is deployed by the big dairy companies because the province has a good and potential environment for livestock production.

The economic growth rate in Nghe An is 7.43 %, higher than national rate of 6.5 %. It means that the economic activities in Nghe An are very active especially due to deployment of investment and other market-oriented activities.

Industrial structure in 2015 was composed of with the share of agricultural sector, 28.06 %; industrial sector, 29.36 %; service sector, 41.98 %. The development plan of the province shows that ratio of agricultural sector is expected to reduce by 20 % in 2020, in contradiction to industrial sector and service sector which are expected to rise up to 40 %.

The production value of each sector in 2015 was increased compared to the year 2014. Especially, industrial sector has achieved a high growth of 14 %. Moreover, the average growth rate of industry and construction sector was 16 ~ 16.5 % (2011 - 2015), service sector was 11 ~ 12 % (2011 - 2015), agricultural sector was 4 ~ 4.5% (2011 - 2015). Livestock production is an important industry in the province, and its growth rate is occupied 40 to 50 % of whole production value of agricultural sector.

GDP Growth Index of Vietnam and Nghe An province is shown the table below. Overall GDP growth index in Nghe An is higher than that of the country. The growth of agriculture, forestry and fishery sector is relatively low to the other sectors in the country and the province, both.

Table 2.2 GDP Growth Index by Sector of Vietnam and Nghe An Province

Category/Sector	2011	2012	2013	2014	2015
National	106.24	105.25	105.42	105.98	106.68
Agriculture, Forestry, Fishery	104.23	102.92	102.63	103.44	102.41
Construction industry	107.60	107.12	105.35	106.42	109.64
Private industry	109.46	107.87	105.25	106.32	109.39
Service	107.47	106.94	106.49	106.16	106.33
Nghe An	108.72	105.12	105.98	107.11	107.31
Agriculture, Forestry, Fishery	104.86	103.27	103.81	103.73	103.98
Construction industry	120.61	104.26	108.02	108.28	108.95
Private industry	138.44	109.72	111.39	112.81	107.88
Service	104.48	105.69	107.31	107.29	108.08

Source: DPI

The international trade of Nghe An province has grown year by year. The export value reached US\$ 463 million in 2015, which was 258 % of the value in 2010. The export value in 2015 was US\$ 384 million and the trade balance was US\$ 79 million surplus. Major export items in agriculture sector are tea, rice, coffee, cassava and rubber, and major import items in the sector are fertilizer, timber and cotton.

Table 2.3 Export and Import Value in Nghe An Province from 2010 to 2015

(Unit: USD '000)

Year	2010	2011	2012	2013	2014	2015
Export	179,819	253,476	342,142	376,952	414,159	463,275
Import	206,699	213,985	202,471	327,590	363,050	384,034
Balance (Export - Import)	-26,880	39,491	139,671	49,362	51,109	79,241

Source: DPI

Regarding foreign direct investment (FDI), Nghe An province has received 52 projects with a total registered investment capital of US\$ 1,568 million by the end of 2015. Out of that, 16 FDI projects are categorized under agriculture sector with a total registered investment capital of US\$ 231.4 million. During 2011 to 2015, nine (9) agricultural projects with a cost of US\$ 126.46 million were certified in Nghe An province.

2.2.3 Land Use

Nghe An province has plentiful and diverse topography including sea, plain, midland and mountains. The total agricultural land area is 1,238,315 ha or 75.1 % of total land area, with cultivated land of 256,834 ha or 15.6 % of total land area, as shown in the following table.

Table 2.4 Land Use in Nghe An Province

Land Use Type	Area (ha)	Share
Agricultural land	1,238,315	75.1%
Cultivated land	256,834	15.6%
Forest area	972,910	59.0%
Aquaculture land	7,457	0.5%
Salt farm land	837	0.1%
Other agricultural land	265	0.0%
Non-Agricultural land	124,653	7.6%
Not used land	286,056	17.3%

Source: DARD

Regarding the management of land use plan and planning, the province has prepared the plan for the period of 2006 to 2020 and was approved in 2007 by the government resolution No. 50/2007NG-CP. Additionally, sixteen (16) out of the twenty-one (21) districts and 313 out of the 479 communes were prepared the plan as well. Contents of the land use plan are land use arrangement, land allocation, land lease, land use purpose, and land use management in compliance with law.

2.2.4 Population

The population of Nghe An province was 3,063,944 in 2015, which is the fourth largest population scale in the country and population growth rate is 1 %. Vinh city has the biggest population with 315,000 people, followed by Dien Chau district with 279,000, and Yen Thanh district with 270,000. Cua Lo city has the smallest population with 55,000 people. Population in urban area is about 463,000, whereas population in the rural area including mountainous area is about 2,601,000. Major ethnic groups i.e. Viet, Muon, Thai groups live in the province.

According to a population projection by General Statistics Office, the population of Nghe An province is estimated to continuously increase at a relatively stable rate (about 1.15 % per year) and expected to be 3,789,000 in 2034, which is third largest population in the country. It will become to 125.5 %, compared with a population in 2014. The population growth in Nghe An province during the upcoming 20 years is expected to be higher than the metropolitan area (116.1 % in Hanoi and 118.4 % in Ho Chi Minh) and agricultural area (121.6 % in Lam Don) (refer to Figure 2.4).

Comparing population distribution by age group and sex in Nghe An province in 2014 and 2034, share of aged population will generally increase in such span of 20 years. There was a peak in 20-24 age group in 2014 in both categories of male and female, whereas there will be two peaks in this age group and 15-19 age group in the year 2034 (refer to Figure 2.5).

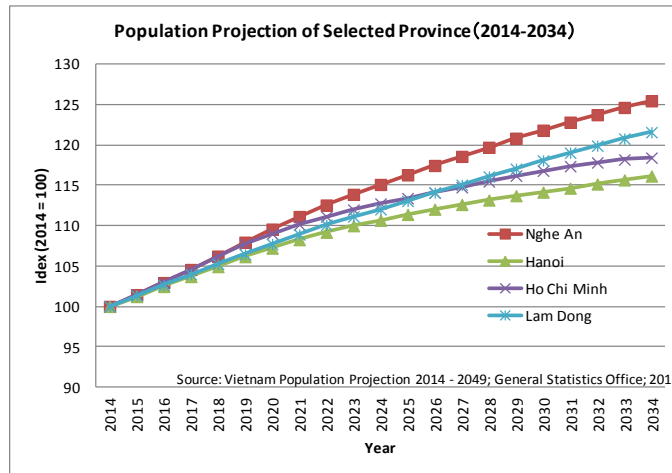


Figure 2.4 Population Projection by Province (2014 - 2034)

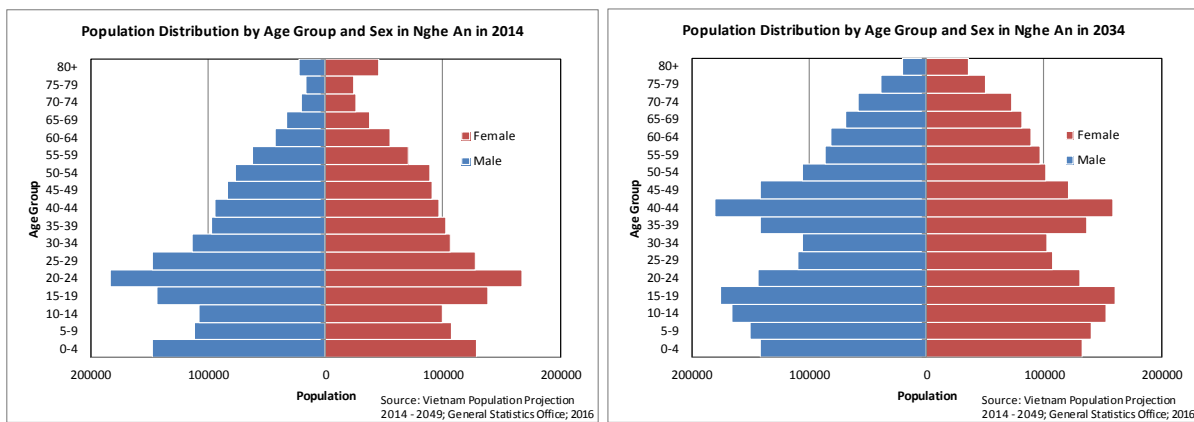


Figure 2.5 Population Distribution by Age Group and Sex in Nghe An Province in 2014 and 2034

2.2.5 Infrastructure

(1) Transportation

There are eight (8) national routes running through the province of which three (3) North-South roads (highway 1A, national road 15 and Ho Chi Minh road), three (3) East-West roads linked to Lao PDR (national road 7, 46 and 48).

Vinh international airport is the main airport in the North Central region with a capacity of 3 million passengers per year. At present, there are daily flights connecting to Ho Chi Minh city, Hanoi, Da Nang, Lam Dong and Bun Ma Thuot. There are four flights to the Vientiane of Laos in a week.

Cua Lo seaport is the gateway to the Nghe An province and connects to West-East economic corridor linking Laos, Thailand, and Myanmar to West Sea through National Road 7. It is a potential port of Nghe An and North Central region with a loading capacity of 13 million tons per year. It is capable to receive ships of 10,000 dead weight tonnage (DWT) in and out with the four berths. The deep seaport is under development targeting at a total length of 3,020 meters and port logistics area of 110 ha for receiving ships of 30,000 to 50,000 DWT.

North-South railway covering a distance of 94 km runs through the province. Vinh railway station of grade 1 is the third largest station to transport passengers and goods in the country.

(2) Water Supply, Electricity and Communication

Water supply system has been rapidly installed and operationalized in Nghe An province and rate of

households with hygienic water supply reached at 95.3 % in 2015 while it was 83.5 % in 2010. Especially the rate in urban area was 99.8 %. The rate of households with hygienic toilet increased to 70.4 % in 2015 from 47.1 % in 2010.

The electrification rate in the province reached 99.8 % in 2015, and only 0.3 % of households in rural area were uncovered. The government has improved transmission network for stable electric supply.

The number of telephone subscribers, which was 142 per 100 persons in 2015, exceeded the population, and subscriptions to mobile telephone were quite dominant. The number of internet subscribers rapidly grew up from 2.62 per 100 persons in 2010 to 39.40 per 100 persons in 2015.

(3) Irrigation

There was 122,415 ha of farmland equipped with irrigation facility in the Nghe An province in 2005 and water sources were mostly surface river flow (FAO). The provincial government has continuously managed, improved and constructed dams and irrigation facilities with support of donors such as Asian Development Bank (ADB), aiming at to achieve a stable and incremental agricultural production as well as flood control. Large-scale North and South irrigation systems have been rehabilitated by canal lining, replacement of headwork and so on, to recover or enlarge their function. Deteriorated Nghe An North Irrigation System, which was constructed in 1930s to irrigate 29,147 ha, is under rehabilitation work financed by Japan's official assistant development (ODA).

(4) Industrial Zone

Nghe An is one of early localities to implement the policy of planning, constructing and attracting investment into industrial zones (IZ) and industrial clusters (IC). Presently, 41 ICs located in 20 districts, city and towns with total area of 899.59 ha are planned, out of which 10 ICs with 181.21 ha are invested in construction and are under operation.

In 2010, production value of enterprises in ICs reached nearly VND 1,000 billion, accounting for 12 % of the total industrial production value of the province. Revenue of enterprises in ICs reaches to about VND 75 billion.

(5) Tourism

Nghe An province has 132 historical and cultural monuments classified as national grade. Especially, Kim Lien historical monument - Hometown of the President Ho Chi Minh is a special national historical monument. There are many attractive tourist destinations such as the Ho Chi Minh Square (Vinh city), the Kim Lien - Nam Dan (Nam Dan district) relic, the Hoang Thi Loan (the mother of President Ho Chi Minh) Tomb, the Temple of Emperor Quang Trung, Ngu Island Pagoda, etc. Annual festivals of Con Temple, Cuong Temple, Emperor Mai Temple and Hoang Muoi Temple attract thousands of visitors. Vi Giam folk songs of Nghe Tinh were officially recognized by United Nations Educational, Scientific and Cultural Organization (UNESCO) as Intangible Cultural Heritage of Humanity.

There are many natural resources sites available for tourism in Nghe An province. A range of natural reserves extends to Pu Hoat, Pu Huong and Pu Mat National Park covering approximately 1,303,278 ha. Archeological findings of system of natural caves created uniquely and unspoiled are Tham Om cave, Bua cave, Tham Chang cave. A system and sequence of waterfalls are Khe Kem, Xao Va, Bay Tang, the hot spring Giang Son (Do Luong district), mineral springs Ban Khang, Ban Bo and Ban Lang (Quy Hop district). Cua Lo Town is recognized as the first marine tourism urban of the country by the Prime Minister. There are many beautiful beaches with white sands and clean seawater, such as Cua Lo, Nghi Thiet, Dien Thanh, Quynh Phuong, Bai Lu and two big islands of Ngu and Mat.

Due to the presence of such rich tourism resources, about 3 million tourists visit Nghe An province every year. Current major destinations are Hometown of President Ho Chi Minh and Cua Lo beach. Tourism development effort focusing on other tourist attractions is going on. In relation to the agriculture sector, it is expected to promote wide range of souvenirs and food items for tourists as well

as to develop agro-tourism in rural area.

2.3 Administrative Service

2.3.1 Administrative Service Related to Agriculture

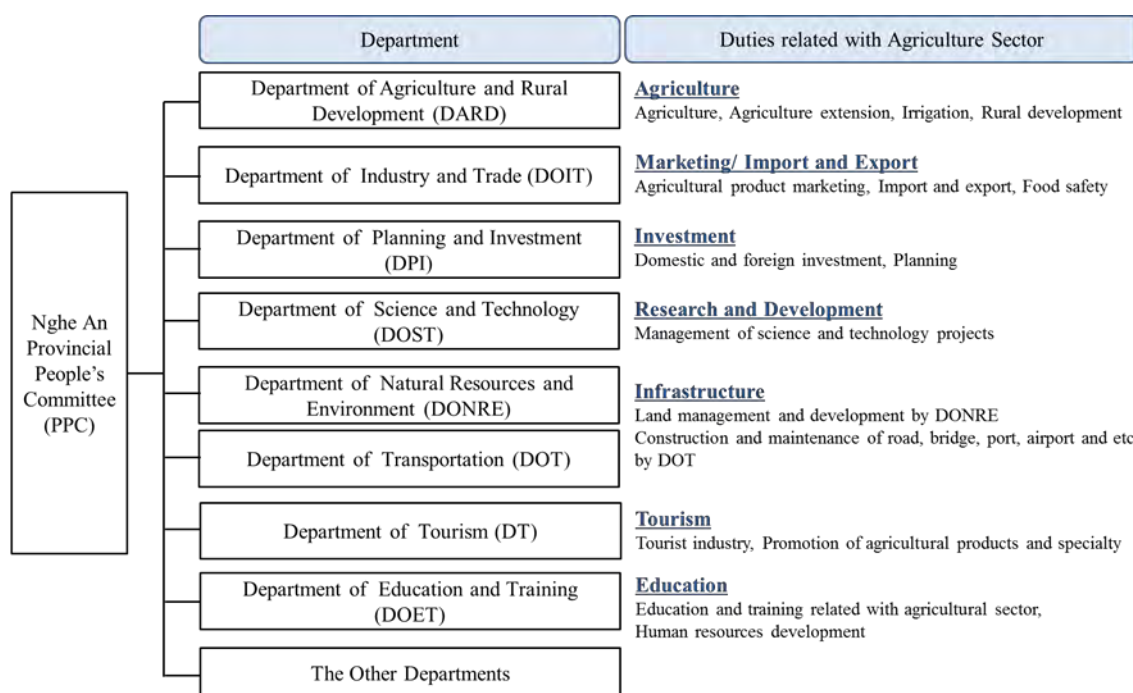


Figure 2.6 Structure of Administrative Service in Nghe An

Above figure shows the administrative organization structure related to agriculture sector in Nghe An province. We summarize the organizations responsible for administrative services in Nghe An province in the following. In addition, we describe the duties and structure of each organization in the next part.

- **Agriculture:** DARD has responsibility for agriculture, agricultural extension, irrigation, and rural development.
- **Marketing/ Import and Export:** DOIT has responsibility for domestic agricultural product marketing, import and export, and food safety.
- **Investment:** DPI has responsibility for domestic and foreign investment and planning.
- **Research and Development:** DOST has responsibility for management of scientific research and projects at provincial level. Whereas, Agriculture Science Institute of Northern Central Vietnam (ASINCV) under Vietnam Academy of Agriculture Science (VAAS) is a national institute.
- **Infrastructure:** DONRE has responsibility for land management and water resource management. DOT has responsibility for construction and maintenance of road, bridge, port, airport, etc.
- **Tourism:** DT has responsibility for tourist industry, rural tourism, and promotion of agricultural products and specialty.
- **Education:** DOET has responsibility for education and training related to agriculture sector and human resource development. However, national university such as Vinh University is under the jurisdiction of national government. The budget allocation of Vinh University is from the Ministry

of Education and Training (MOET), MARD, and Nghe An province.

2.3.2 Department of Agriculture and Rural Development

DARD has responsibility for agriculture and fishery, irrigation, rural development, and natural disaster prevention, etc. as an organization under PPC. Currently, DARD is undertaking the restructuring of the organization, tasks and duties, etc. provided by the Decision 44/2015/QĐ-UBND announced in August 2015. According to the Decision, organization structure was restructured as follows.

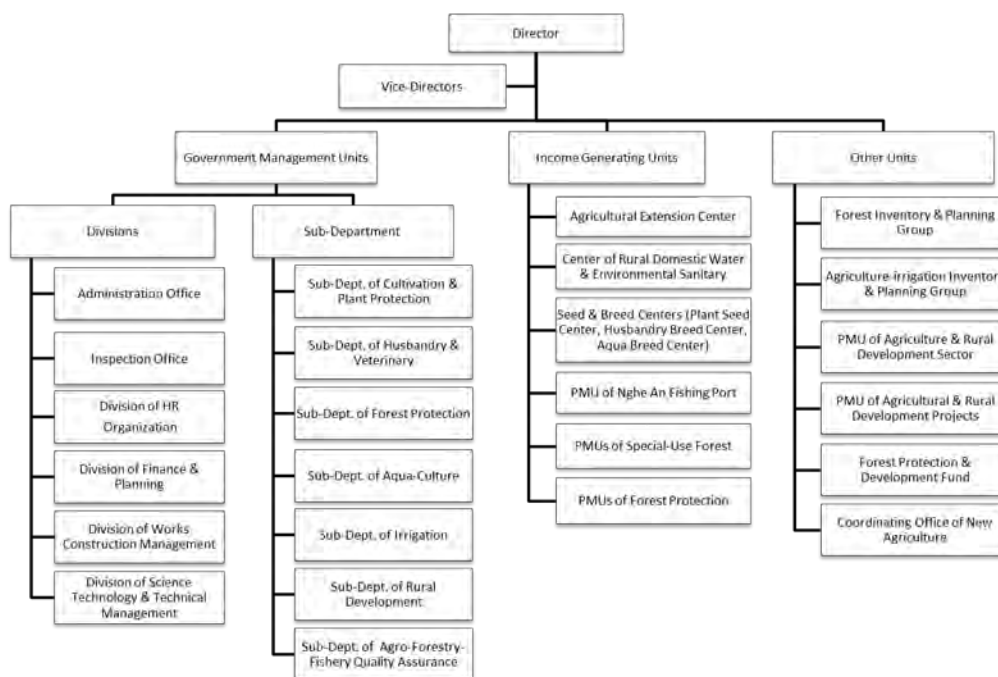


Figure 2.7 DARD Organization Chart

2.3.3 Department of Industry and Trade

DOIT has responsibility for industry and trade including mechanics, metallurgy, electricity, new energy and renewable energy, oil and gas, chemistry, industrial explosives, mining and processing industry, food safety, goods transportation in the province, import and export, border trade, market management, protection of consumer rights, etc. DOIT is an organization under PPC. Currently, DOIT is undertaking the tasks and duties based on the Decision 16/2016/QĐ-UBND announced in February 2016. According to the Decision, organization structure is as follows.

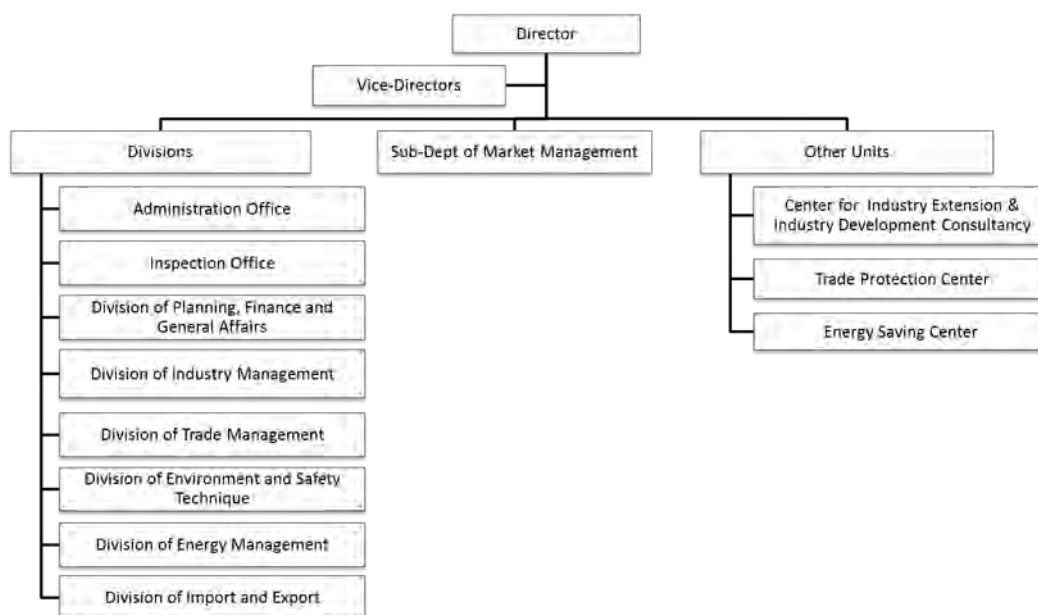


Figure 2.8 DOIT Organization Chart

2.3.4 Department of Planning and Investment

DPI has responsibility for provincial planning and investment, including;

To synthesize socio-economic development planning; To organize the implementation and propose mechanism and policies for socio-economic development; To invest in domestic and foreign, to manage ODA and non-governmental organization (NGO) aid, to bid business registration, to synthesize and uniformly manage the affairs of enterprises, collective economy, private economy, public service provision organizations, etc. National government and the Ministry of Planning and Investment (MPI) have responsibility for national planning and investment. DPI is an organization under PPC. Currently, DPI is undertaking the tasks and duties provided by the Decision 68/2017/QD-UBND announced in November 2017. According to the Decision, organization structure is as follows.

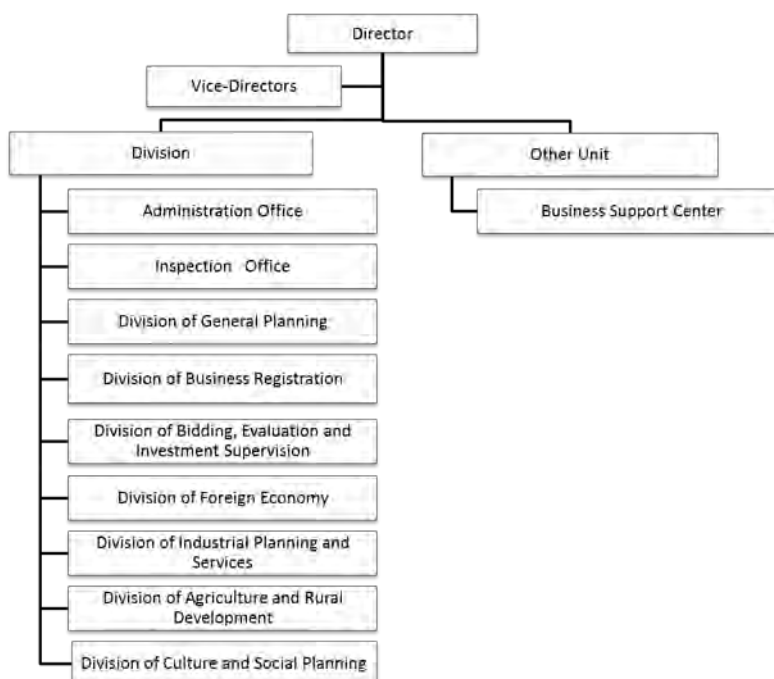


Figure 2.9 DPI Organization Chart

2.3.5 Department of Science and Technology

DOST has responsibility for state management of science and technology, including scientific and technological sectors such as the development of scientific and technological potential, standard, measurement, quality; intellectual property; application of radiation and radioactive isotopes; radiation and nuclear safety. Currently, DOST is undertaking the tasks and duties provided by the Decision 03/2016/QD-UBND announced in January 2016. According to the Decision, organization structure is as follows.

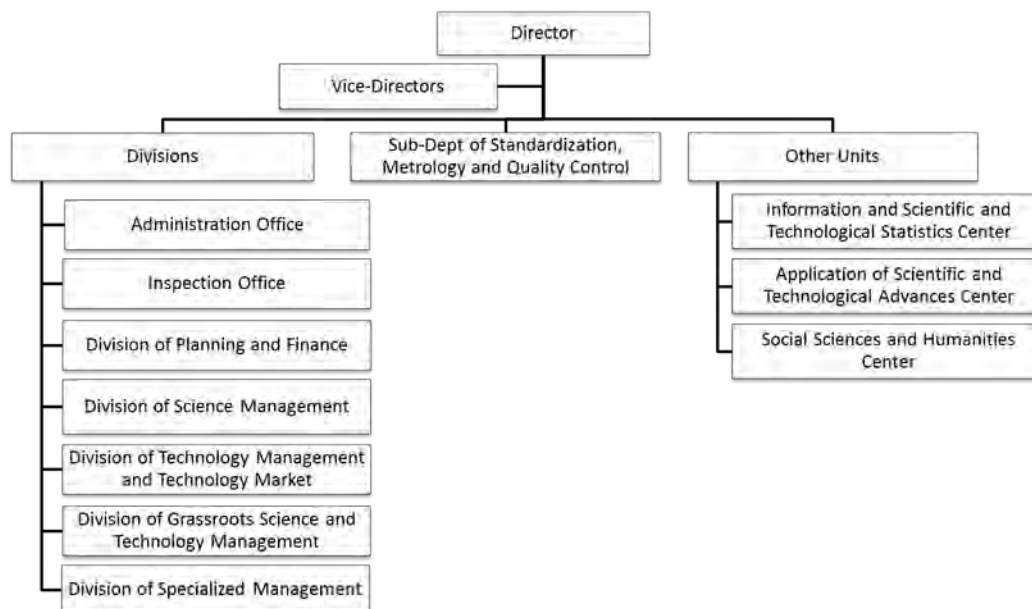


Figure 2.10 DOST Organization Chart

2.3.6 Department of Natural Resource and Environment

DONRE has responsibility for natural resources and environment sector including; land, water resources, Mineral resources, geology environment, hydro-meteorology, climate change, surveying and mapping, general and integrated management of the sea and island. Currently, DONRE is undertaking the tasks and duties provided by the decision 38/2015/QD-UBND announced in July 2015. According to the decision, organization structure is as follows.

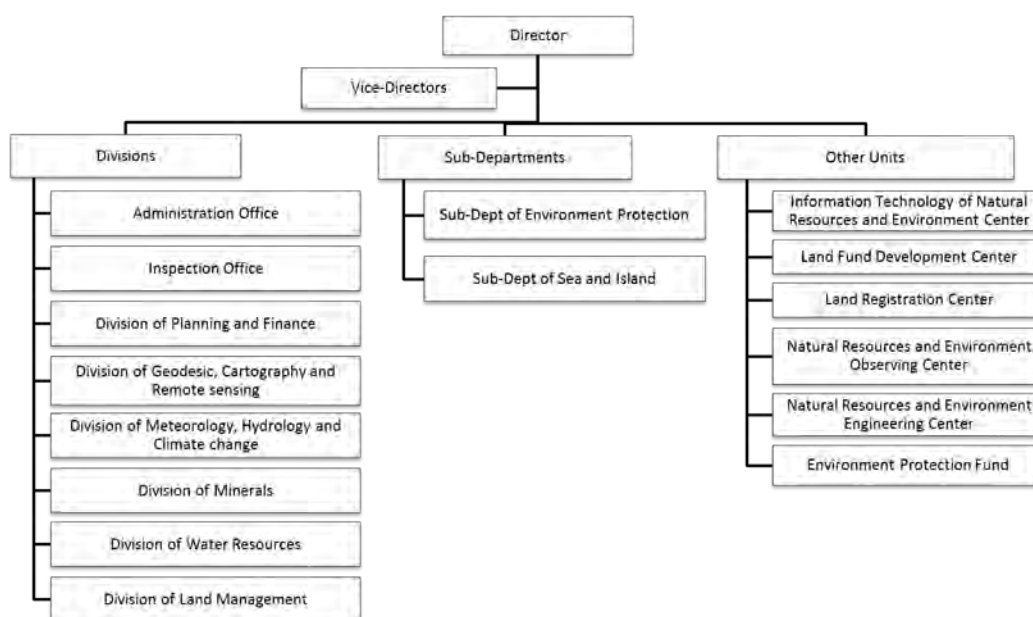


Figure 2.11 DONRE Organization Chart

2.3.7 Department of Tourism

DT has responsibility for culture, family, fitness, sport and tourism sector including; Investigate and set up database of tourist resources; Implement measures to protect and develop rationally the tourist resources, tourist environment, tourist spots; Rating of one, two, three, four or five stars for hotels; Evaluate and announce the quality of services of tourism business; Implement the international cooperation in the fields of culture, family, fitness, sports and tourism; and related issues. Currently, DT is undertaking the tasks and duties provided by the Decision 01/2017/QD-UBND announced in January 2017. As per to the said decision, DT name was changed from the Department of Culture, Sports and Tourism (DOCST) and organization structure are as follows.



Figure 2.12 DT Organization Chart

2.4 Development Strategy and Plan

2.4.1 Strategy and Plan Structure

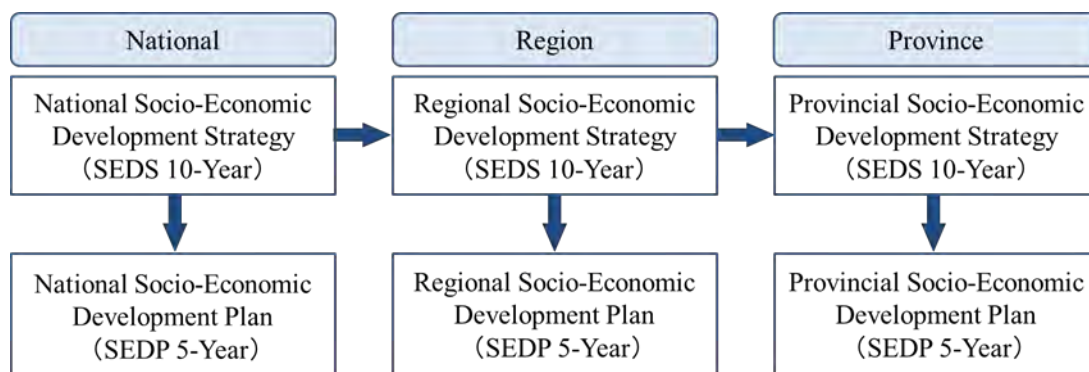


Figure 2.13 Strategy and Plan Structure

Vietnamese government makes the SEDS 10-year and the SEDP 5-year as basic policies to guide the direction of development of socio-economy. The Government and the Communist Party approve and decide the strategy and plan is prepared by the MPI through official council.

As shown in the figure above, Regional SEDS is prepared based on the national SEDS and Provincial

SEDS is prepared based on the regional SEDS. In addition, the national SEDP is prepared based on the national SEDS, regional SEDP is prepared based on the regional SEDS, and provincial and each department's SEDP are prepared based on the provincial SEDP. At the provincial level, DPI makes the provincial SEDS and SEDP.

The 10-year Socio-economic Development Strategy, 5-year Socio-economic Development Plan, Agriculture and Rural Development Plan, and Industry and Trade Development Plan in Nghe An province are summarized in the following sub-sections.

2.4.2 Socio-Economic Development Strategy (2011-2020) in Nghe An

The 10-year Socio-economic Development Plan for Nghe An province (2011 - 2020) was prepared by Nghe An PPC. Major objectives of agriculture, forestry, and fishery development are; to change the structure of production and products and use high technology to increase their value to achieve an average growth rate of 4.0 - 4.5 % during 2011 - 2015 period, and afterward at a rate of 3.5 - 4.0 % during 2016 - 2020. To increase the production value of livestock sector, accounting for 40 - 50 % of agricultural production value for the period 2011 - 2015, over 50 % for the period 2016 - 2020; production value of fishery sector accounts for over 15% of agricultural production during the period 2011-2020. By 2020, food grain yield will have been about 1.25 million tons per year, of which rice accounts for 940,000 tons, the total herd of water buffaloes and cows shall increase to 1.3 million heads; total fishery catching and farming shall be 106,000 tons. The target of individual commodity production is summarized in the following table.

Table 2.5 Target of Major Agricultural Commodities in 2020

Commodity	Target 2015	Target 2020	Remarks
Paddy	180,000 ha	165,000 ha	Major districts: Yen Thanh, Dien Chau, Quynh Luu, Hung Nguyen, Nam Dan, Do Luong.
Maize	60,000 ha	60,000 ha	
Vegetables			Intensive farming areas (about 30,000 ha) in urban and suburban areas, economic zones, industrial zones and coastal communes to satisfy the local needs.
Ornamental plants			Intensive farming with high technology for local use.
Peanuts	25,000 ha	25,000 ha	Major districts: Dien Chau and Nghi Loc
Sesame	6,000 ha	6,000 ha	Intensive farming, Yield 700 kg per ha or more
Sugarcane	30,000 ha	29,000 ha	Major districts: Nghia Dan, Quy Hop, Quy Chau, Que Phong, Tan Ky, Anh Son, Con Cuong, Quynh Luu.
Cassava		4,000 ha	Thanh Chuong, Nam Dan, Tan Ky, Do Luong, Nghi Loc and Yen Thanh
Tea	12,000 ha	13,000 ha	Modern technology for processing, Intensive farming Major districts: Thanh Chuong, Anh Son, Con Cuong, Que Phong, Ky Son
Rubber	22,700 ha	33,000 ha	Major districts: Nghia Dan, Quy Hop, Tan Ky, Anh Son
Pineapples		2,000 ha	Major districts: Quynh Luu, Yen Thanh, and Nghia Dan
Oranges	2,000 ha	10,000 ha	Technologies for disease control, post-harvest, processing Major districts: Nghia Dan, Tan Ky, Quy Hop, Con Cuong, Anh Son, Thanh Chuong
Cattle		842,000	Including 60,000 milk cows
Buffalo		362,000	
Pig		2,000,000	

Source: SEDS (2011-2020)

2.4.3 Socio-Economic Development Plan (2016-2020) in Nghe An

The 5-year Socio-economic Development Plan in Nghe An Province (2016-2020) was prepared by Nghe An PPC. Major objectives of Socio-economic are; to achieve average growth rate of total Gross Regional Domestic Product (GRDP) of 11.0-12.0% during 2016-2020 period and Per capita GDRP of

approximately 70-75 million dong/year. Therefore, economic structure is expected to cover the broad sectors as follows agriculture-forestry-fishery: 18-20%, industry-construction: 40-41%, services: 40-41%. Total provincial state budget revenue will reach 25,000-30,000 billion VND and total social investment capital in the period of 2016-2020 will be about 400,000 billion VND.

The government encourages and facilitates economic actors to invest in agriculture and rural areas to achieve the objectives. Agriculture, forestry, fishery sector is focused as one of major sector for the socio-economic development. To reconstruct the structure of agriculture, forestry and fishery sector based on application of science and high technology and investment of processing industry to increase their value to achieve the development. The priority projects (2016-2020) in agriculture sector are summarized in the following table.

Table 2.6 Priority Projects in Agriculture Sector (2016-2020)

Project Name	Place / District	Scale / Capacity
Rubber plantation project in Nghe An province	Que Phong, Anh Son, Thanh Chuong, other districts according to plan	7,000 ha
Growing and Processing Tea (Processing High-Quality Tea in Con Cuong, Producing Tea Bags in Anh Son)	Thanh Chuong, Anh Son, Con Cuong	5,000 tons of high-quality tea/year
Breeding and Processing Beef	Dong Nam economic zone	1,500 tons /year
Meat Processing, Frozen Meat Plant	Dong Nam economic zone	5,000 tons/year
High-Quality Seafood Processing Factory	Dien Chau, Hoang Mai	10,000 tons/year
Fruit Processing and Preserving Factory	Dong Nam economic zone	10,000 tons/year
Grow Vegetables in a Greenhouse and Net House	Nghia Dan	520 ha
High-Tech Agriculture Area Project	Nghia Dan	200 ha
Factory Processing Products from Peanuts	Dong Nam economic zone	40,000 tons/year
Factory Processing Products from Rubber	Phu Quy economic zone	10 million tons/year
Cassava Starch Factory	Anh Son, Que Phong	30,000 tons/year
Construction of Medium-Density Fiber Board Factory (MDF) in Nghe An Province (2 nd Phase)	Nghia Dan	300,000 m ³ /year
Afforestation Associated with the Processing of Products from Planted Forest Wood (Wood Chipboard, Wood Products, etc.)	Western of Nghe An	100,000 m ³
Planting and Processing Herbal Plants	Mountainous districts	5,000 tons/year
Timber Slab Bar and Charcoal Factory	Anh Son, Thanh Chuong, Mountainous districts	62,000 tons/year

Source: DARD

The 5-year Socio-economic Development Plan in Nghe An Province (2016-2020) was prepared by Nghe An PPC. Major objectives of Socio-economic are as follows.

2.4.4 Agriculture and Rural Development Plan in Nghe An

(1) Development Plan at Provincial Level

The 5-year Agriculture and Rural Development Plan (2016 - 2020) stated the development policy based on the review of the results of the previous 5-year plan. The overall development objective include followings-

- to build a comprehensive agricultural development towards a modern, sustainable, large-scale commodity production on the basis of promoting the comparative advantages and reorganization of production;
- apply science and technology to improve productivity, quality, efficiency and competitiveness, ensuring food security firm, meets the diverse needs of the province and for export;

- improve the efficiency of land use, water resources, labor and capital; improve incomes and livelihoods of farmers, fishermen, salt and forest workers.

The target growth rate of agriculture sector is 4.0 to 4.5 % per annum. Production target in 2020 of major commodities is as follows.

Table 2.7 Target of Major Agricultural Commodities in 2020

Commodity	Target Area, Number	Remarks
Paddy	17,000 ha	Target production 63,600 ton
Maize	60,000 ha	Target production 259,000 ton
Groundnut	20,000 ha	Target production 52,000 ton, Introduction of new varieties
Cassava	8,000 - 10,000 ha	
Tea	10,000 - 12,000 ha	
Rubber	16,000 - 17,000 ha	14,000 - 15,000 ton of dry latex
Citrus	2,000 - 2,500 ha	Viet GAP and food safety
Pineapple	1,500 ha	
Passionfruit	900 ha	
Vegetables	28,000 ha	High-tech, Viet GAP and food safety
Flowers		High-tech, mainly for local market
Medical plants	14,000 - 15,000 ha	Gac, Ginger, Turmeric, etc., Introduction of processing plans
Cattle	780,000 heads	Cow 450,000, Buffalo 330,000, Development of dairy farms
Pig	1,800,000 heads	High quality, artificial insemination
Poultry	18,000,000 heads	

Source: Nghe An Agriculture and Rural Development Plan (2016-2020)

(2) Development Plan at District Level

Local governments of city/town/district have prepared their 5-year socio-economic development plan, and some of them prepared 5-year agriculture and rural development plan. According to the development plans 2016-2020, the baselines and targets of major agricultural products are summarized in the following table.

Table 2.8 Plan of Major Agricultural Products by District

District	Plan of Major Agricultural Products (Area in ha/Heads, 2015⇒2020)
Dien Chau	Rice (18,400⇒18,000), Maize (7,010⇒10,000), Vegetables (3,050⇒4,000), Groundnut (3,550⇒4,000), Sesame (2,150⇒2,000); Cattle (26,260⇒35,000), Pig (70,200⇒100,000), Poultry (1,330,000⇒2,000,000 heads)
Yen Thanh	Rice (25,292⇒25,000), Maize (3,369⇒3,500), Sweet potato (886⇒1,300), Cassava (867⇒1,000), Sugarcane (158⇒300), Groundnut (468⇒600), Sesame (86⇒220), Vegetables (3,319⇒3,500 ha), Mushroom (** ⇒700-800 ton); Cattle (25,572⇒27,500), Pig (102,761⇒190,000), Poultry (** ⇒3,600,000 heads)
Quynh Luu	Rice (7,712⇒7,686), Maize (3,200⇒3,200), Vegetables (3,300⇒4,000), Groundnut (1,300⇒1,300), Sugarcane (830⇒830), Pineapple (550⇒550 ha); Pig (80,000⇒80,800), Deer (13,300⇒14,000), Chicken (1,250,000⇒1,356,000), Duck (495,000⇒537,000 heads)
Nghi Loc	Rice (15,200⇒14,000), Maize (5,000⇒4,000), Groundnut (3,300⇒2,500 ha); Cattle (27,000⇒30,500), Pig (50,000⇒65,000), Poultry (1,300,000⇒1,600,000 heads)
Hung Nguyen	Rice (11,500⇒11,000), Maize (800⇒900), Vegetables (1,400⇒1,500), Groundnut (500⇒500 ha); Cattle (14,642⇒17,106), Buffalo (6,632⇒7,748 heads)
Nam Dan	Rice (12,783⇒12,000), Maize (4,329⇒4,000), Vegetables (3,116⇒3,500 ha); Cattle (23,541⇒25,000), Pig (37,400⇒45,000), Poultry (1,200,000⇒1,600,000 heads)
Do Luong	Rice (14,500⇒13,500), Groundnut (1,500⇒2,500), Maize (3,500⇒4,000), Vegetables (2,600⇒2,800 ha); Buffalo/Cattle (60,030⇒80,000), Pig (150,260⇒191,000), Poultry (1,806,380⇒2,350,000 heads); Aquaculture (1,612⇒2,000 ha)

District	Plan of Major Agricultural Products (Area in ha/Heads, 2015⇒2020)
Vinh	Safe vegetables (38⇒370), Flower/ornamental plants (86⇒92), Quality Rice (547⇒543 ha) Poultry (267,101⇒300,000), Pig (7,797⇒20,000), Buffalo/Cattle (4,864⇒5,750 heads)
Cua Lo	Rice (315⇒285 ha), Maize (328⇒335 ha), Groundnut (313⇒310 ha); Pig (3,500⇒2,600), Poultry (96,000⇒110,000 heads)
Hoang Mai	Rice (2,770⇒2,680), Maize (852⇒870), Peanut (658⇒624), Vegetable (1,696⇒1,700 ha); Cow (6,987⇒7,870), Pig (21,005⇒23,000), Poultry (295,000⇒310,000 heads),
Thanh Chuong	Rice (14,032⇒13,000), Maize (3,444⇒6,500), Groundnut (1,397⇒2,000), Cassava (3,200⇒2,500); Buffalo (35,545⇒39,000), Cattle (40,360⇒45,000), Pig (115,874⇒130,000), Poultry (1,590,000⇒3,500,000 heads)
Anh Son	Rice (6,000*⇒5,800), Maize (7,600*⇒7,000), Sugarcane (1,600⇒1,800), Tea (1,200⇒3,000), Rubber (1,500⇒4,000), Cassava (900⇒1,200 ha) Cattle/buffalo (29,458⇒43,000), Pig (44,494⇒56,000), Poultry (800,000⇒900,000 heads)
Nghia Dan	Rice (6,130⇒4,900), Maize (3,000⇒2,000), Sugarcane (7,000⇒10,100), Fodder crop (2,150⇒3,000), Rubber (2,420⇒4,770), Orange (430⇒700 ha); Cattle (109,000⇒120,000), Buffalo (28,980⇒36,800), Pig (58,000⇒85,000 heads)
Thai Hoa	Rice (1,500⇒1,500), Maize (630⇒570), Sugarcane (1,000⇒978), Rubber (1,647⇒1,647), Fodder crop (300⇒340 ha); Cattle (5,000⇒5,350), Pig (13,000⇒14,000), Poultry (233,700⇒270,000 heads)
Tan Ky	Rice (8,871⇒9,000), Maize (3,935⇒4,000), Rubber (2,567⇒2,817), Orange (65⇒200), Sugarcane (7,000⇒7,000 ha); Pig (53,588⇒55,752), Chicken (639,000⇒672,000), Buffalo (29,500⇒32,570), Cattle (17,742⇒18,647 heads)
Quy Chau	Rice (3,832⇒3,521), Maize (768⇒630), Sugarcane (1,714⇒1,500 ha) Buffalo (18,815 ⇒20,484), Pig (26,500⇒27,000), Poultry (273,000⇒276,330 heads)
Quy Hop	Rice (2,504⇒2,879.6), Maize (1,150⇒2,500), Groundnut (106⇒150), Sweet potato (275⇒300), Vegetables (929⇒1,000), Sugarcane (5,472⇒5,500), Orange/Tangerine (2.045⇒3,000), Rubber (1,422⇒1,500), Tea (163⇒165 ha); Buffalo (21,868⇒25,150), Cattle (14,256⇒16,400), Pig (53,620⇒61,660), Poultry (615,000⇒708,000 heads)
Que Phong	Rice (4,400⇒4,400), Passion fruit (128⇒180), Sugarcane (250⇒250), Acacia (4,707⇒5,700 ha); Buffalo (23,916⇒27,474), Cattle (14,655⇒16,143 heads)
Con Cuong	Rice (4,058⇒4,058), Maize (2,770⇒2,547), Vegetables (600⇒650), Orange (120⇒200), Tea (373⇒500 ha); Cattle (16,750⇒20,254), Pig (30,500⇒35,214), Poultry (380,000⇒800,000 heads)
Tuong Duong	Rice (1,280⇒1,400), Maize (3,500⇒3,500), Cassava (900⇒1,000 ha) Buffalo (10,885⇒12,000), Cattle (23,345⇒25,800), Pig (32,000⇒32,350 heads), Forest cultivation (1,754⇒4,000 ha)
Ky Son	Total area of food crops (14,015⇒15,600 ha); Buffalo (5,926⇒7,203), Cattle (58,797⇒79,992), Pig (31,500⇒50,732), Poultry (130,500⇒180,456), Goat (6,880⇒9,238 heads)

Remarks: These data were collected from Agricultural Extension Stations at district level.

Bold letters show crop/livestock planned to be increased significantly.

* Production area of rice and maize in Anh Son in 2015 is estimated by DARD statistics.

2.4.5 Industry and Trade Development Plan in Nghe An

The 5-year Industry and Trade Development Plan (2016-2020) stated the development policy based on the review of the results of the previous 5-year plan. The overall development objective is to develop Nghe An province as trading and hi-tech industry center of North Central Region by 2020. Overall development goal is that the share of industry and construction in GDP will increase from 34-35% in 2015 to 42-43% in 2020, contributing to the economic restructuring of the province in the direction of industrialization and modernization. The target growth rate of each sector is 14 to 15 % from 2016 to 2020 per annum, and the target of industrial production will reach 66 trillion VND by 2020. The policy of the development of the agriculture sector is as follows.

- Invest in the construction and development of the processing industry for key products in association with the concentrated raw materials areas, with the aim of creating a large and high-quality volume of commodities for export such as: tea, rubber, sugar cane, pineapple,

cassava, poultry and cattle meat, paper materials, forest products, aquatic products, and expanding consumption market.

- Develop the sugarcane industry up to 180,000 tons per year by 2020, calling for investment to focus on the development of the post-sugar processing industry.
- Concentrate on attracting investment in the manufacturing factories for household wood products, meeting high domestic and export demand, having production scale and high specialization capability. By 2020, Nghe An province develops a major supplier of timber and forest products in the country.
- Diversify seafood processing products, improve product quality for international markets, focus on the domestic market with ready-to-eat foods and dried food for urban areas.
- Regarding the dairy products, beer, wine and cigarettes: focus on post-investment support and diversification of products to meet domestic and export demands. Strive to gain productivity of 250 million liters of beer per year, 500 million liters of milk per year by 2020.
- Regarding the animal feed, target production is 500,000 tons per year by 2020.

2.5 Assistance by Japanese Government

The JICA has implemented technical assistance to the counterparts (C/P) in Nghe An government and undertook the selection and implementation of various pilot projects. The list of the related JICA projects with activities and further implementation plan is summarized in the following table. The lessons obtained through these activities in Nghe An are deeply considered in the formulation of the development plan in this Project.

Table 2.9 Activities and Further Implementation Plan of Related JICA Projects

	Project Title	Activity (2014.6 -)	Implementation Plan
1	Project for the Development of Crop Genotypes for the Midlands and Mountain Areas of North Vietnam (until 2015.11)	<ul style="list-style-type: none"> • Adaptability test to introduce very early-maturing variety of rice 	<ul style="list-style-type: none"> • Continuation of adaptability test
2	Project for Enhancing Functions of Agricultural Cooperatives in Vietnam Phase II (until 2015.7)	<ul style="list-style-type: none"> • Training courses and on-the-job training on mid-term planning, joint marketing, joint purchasing and internal credit 	<ul style="list-style-type: none"> • Assistance for implementation of contract agriculture
3	Project for Promotion of Participatory Irrigation Management for Sustainable Small-Scale Pro Poor Infrastructure Development (until 2014.6)	<ul style="list-style-type: none"> • Basic study, Training of trainers (TOT), field training of participatory irrigation management (PIM) 	<ul style="list-style-type: none"> • Monitoring on PIM of irrigation management company for South Nghe An Irrigation System • Extension of PIM in North Nghe An Irrigation System under the Loan Project
4	Strengthening the Capacities for the Field of Management of Vietnam's Crop Production Sector for Improving the Productivity and Quality of Crop's Products (until 2013.11)	<ul style="list-style-type: none"> • Training on introduction of Basic GAP for 4 pilot sites 	<ul style="list-style-type: none"> • Assistance for safety food production
5	Project for Strengthening Capacity of Inspection System for Ensuring Safety of Agro-Fishery Foods (until 2014.11)	<ul style="list-style-type: none"> • Inspection of residual agricultural chemicals in agricultural products distributed in the province 	<ul style="list-style-type: none"> • Discussion on further action

	Project Title	Activity (2014.6 -)	Implementation Plan
6	Improvement of Extension System for Applying Better Farming System and Cultivation Techniques for Poor Farmers in the Mekong Delta (until 2014.10)	<ul style="list-style-type: none"> • Training on IPM against Citrus Greening Disease 	<ul style="list-style-type: none"> • Suspension of the IPM because of less economic viability • Study on the possibility of products development
7	Project for Northwest Region Rural Development Project for Sustainable Forest Management in the Northwest Watershed Area (until 2015.7)	<ul style="list-style-type: none"> • Field inspection on agriculture development and forest management methods • Provision of "Guideline/Manual" 	<ul style="list-style-type: none"> • Trial for establishment of revolving fund and introduction of livestock • Dissemination of "Guideline/Manual" to mountainous area
8	Tourism Development (until 2013.12)	<ul style="list-style-type: none"> • Provision of advice on rural tourism development methods and priority areas by ex-expert 	<ul style="list-style-type: none"> • Coordination with the Project for Income Diversification in Remote Areas through Heritage Tourism
9	Project for Agriculture Development in Phan Ri - Phan Thiet Phase II (until 2019.9)	<ul style="list-style-type: none"> • Establishment of efficient development of water management system 	<ul style="list-style-type: none"> • Discussion of further action

Source: JICA Project Team

In addition, the Project is carried out in concurrence to the on-going JICA projects, which are listed in the following table.

Table 2.10 Coordination Plan with On-Going JICA Projects

	Project Title	Activity	Implementation Plan
1	Project for Reliability Improvement on Safety Crops in North Vietnam	<ul style="list-style-type: none"> • Start from March 2016 or later • Further dissemination and expansion of "Basic GAP" to promote safety agricultural products 	<ul style="list-style-type: none"> • Assistance for introduction and expansion of Basic GAP to promote safety crop production • Incorporation of safety crop promotion in the M/P
2	Project for Income Diversification in Remote Areas through Heritage Tourism	<ul style="list-style-type: none"> • 3 years from January 2016 • Promotion of human communication and local income through tourism development, using potential cultural, natural and human resources in rural areas in Nghe An 	<ul style="list-style-type: none"> • Development and promotion of local handiworks and specialties in relation to tourism development • Incorporation of coordination with tourism sector in the M/P
3	North Nghe An Irrigation System Upgrading Project	<ul style="list-style-type: none"> • On-going from March 2013 • Improvement of irrigation facilities in North Nghe An Irrigation System and establishment of research center of operation and maintenance 	<ul style="list-style-type: none"> • Incorporation of promotion of irrigated agriculture in the M/P, focusing on agricultural marketing aspects after infrastructure development
4	Feasibility Survey for Constructing of Value-Chain for Garlic (Crops) in Nghe An Province in Vietnam	<ul style="list-style-type: none"> • 1 year from September 2017 • Produce safe and quality garlic and other crops, and processed products and make Ky Son district known for highland vegetable basket for Hanoi. 	<ul style="list-style-type: none"> • Incorporation of promotion of garlic and other crops production in the mountainous area in the M/P.

	Project Title	Activity	Implementation Plan
5	Verification Survey with the Private Sector for Disseminating Japanese Technologies for the Extension of Cultivation Technologies of Safe Agricultural Products with “Safe and Secure Farming System (IC-MOCS) in Vietnam	<ul style="list-style-type: none"> On-going from November 2016 Introduction of IC Bordeaux 66D and cognizant through safe and secure farming system (IC-MOCS) to promote safe agriculture products. 	<ul style="list-style-type: none"> Incorporation of safety agricultural products promotion with appropriate use of pesticides in the M/P.

Source: JICA Project Team

2.6 Assistance from Other Donors

Several donors including Asia Development Bank (ADB), Food and Agriculture Organization (FAO), World Bank (WB), Canadian International Development Agency (CIDA), and New Zealand Aid, have been working in Nghe An province. One of the major donor, Asian Development Bank (ADB) has implemented the projects of rural development related to the infrastructure, improvement of science and technology, food safety, and natural disaster prevention based on the national strategy. The World Bank (WB) has focused on the agri-business sector, smallholder farmers, natural disaster prevention, and implemented the project related to the value chain.

Table 2.11 List of Major Projects related Agriculture Sector

No	Donor	Name of project	Year	Location	Content
1	ADB	Piloting Integrated Non Revenue Water and Asset Management Software for Nghe An Water Supply Company in Viet Nam	Sep 2015 - Dec 2016	Vinh city	To test innovative information technology (IT) solution for NRW reduction, through hydraulic modeling of the water distribution system.
2	ADB	Basic Infrastructure for Inclusive Growth in Nghe An, Ha Tinh, Quang Binh and Quang Tri Provinces Sector Project	Oct 2018 - Sep 2019	Nghe An, Ha Tinh, Quang Binh, Quang Tri provinces	(i) Improved connectivity within value chains and their supporting infrastructure; (ii) Improved business development infrastructure; and (iii) Strengthened Sub-regional infrastructure planning and management.
3	ADB	Central Region Rural Water Supply and Sanitation Sector Project	Dec 2009 - May 2018	Nghe An, Ha Tinh, Thanh Hoa, Quang Nam, Binh Dinh, Quang Binh provinces	Construct piped water supply systems; build or rehabilitate hygienic toilets in homes, schools, and health centers; conduct hygiene awareness activities; and strengthen water supply management.
4	ADB	Water Sector Investment Program - Tranche 3	Mar 2015 - Dec 2020	Bac Giang, Nghe An, Thanh Hoa, Quang Nam, Thai Nguyen provinces	(i) Promoting technical and financial sustainability by enforcing water tariff (ii) Providing access to finance for second-ranked WSCs willing to secure their debt through water tariff; (iii) Promotion of engineering, procurement, and construction (EPC) contracts.
5	ADB	Quality and Safety Enhancement of Agricultural Products and Biogas Development Project	Aug 2009 - Nov 2017	Ho Chi Minh City, Ha Noi, Da Nang, and the other 14 provinces	ADB is supporting Viet Nam’s drive to promote food safety in the agricultural sector. The project helps improvement of food regulations and quality control systems to meet both domestic and export standards. It will put up facilities to support safe food products and biogas plants to reduce health hazards from livestock waste. The project covers 17 provinces that produce fruit, vegetable, and tea.

No	Donor	Name of project	Year	Location	Content
6	FAO	Green Production and Trade to Increase Income and Employment Opportunities for Rural Poor	2010-2012	Nghe An, Thanh Hoa, Hoa Bin, Phu Tho provinces	a) Improving understanding of the handicrafts and small furniture value chains; b) Increasing sustainable income of poor crafts and small furniture raw materials growers/collectors; c) Increasing sustainable income of rural poor crafts and small furniture producing households and enterprises; and, d) Improving policies and regulatory frameworks
7	WB	Coastal Resources For Sustainable Development Project	May 2012 - Jan 2019	Thanh Hoa, Nghe An, Ha Tinh, Binh Dinh, Phu Yen, Khanh Hoa, Soc Trang and Ca Mau provinces	(i) Strengthened capacity building in sustainable management of resources; (ii) Enhanced good practices in sustainable aquaculture; and (iii) Good practices for sustainable coastal capture fisheries.
8	WB	Medium Cities Development Project	Dec 2011 - Dec 2020	Ha Nam Nghe An, Lao Cai provinces	Improved urban infrastructure services in Lao Cai City, Phu Ly City, and Vinh City in a sustainable and efficient manner.
9	WB	Central North Region Health Support Project	Apr 2010 - Aug 2016	Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, Thua Thien Hue provinces	(i) Increasing health insurance coverage among the near poor population; (ii) Upgrading capacities of district hospitals and DPHCs; (iii) Improving supply and quality of health care personnel
10	WB	VN - Agriculture Competitiveness Project	Sep 2008 - Jun 2014	Nghe An, Ninh Thuan, Lam Dong, Thanh Hoa, Gia Lai, Binh Thuan, Dak Lak, Binh Dinh provinces	The development objective of the project for Vietnam is to strengthen the competitiveness of smallholder farmers, with a focus on eight provinces in central Vietnam, in collaboration with the agri-business sector.
11	CIDA	Sustainable Livelihoods Project for Women in North Vietnam		Nghe An, Dien Bien, Ha Noi, Hoa Binh, Thai Nguyen, Phu Tho provinces	Supporting poor and ethnic minority women in Vietnam to improve their living conditions as well as their right and voice.
12	New Zealand Aid	New Zealand Dam Safety Project	2016-2021	Nghe An, Ha Tinh provinces	Sharing its expertise in water engineering and natural hazard management, help Viet Nam effectively assess dams most in need of repair, coordinate dam owners with officials and communities, and upgrade the training curriculum for future water managers

Source: JICA Project Team

Chapter 3 Current Situation of Agriculture Sector in Nghe An

3.1 Outline of Agriculture Sector in Nghe An Province

3.1.1 Outline of Major Agricultural Products

(1) Food Crops and Industrial Crops

Firstly, an overview of food and industrial crops are summarized and afterward followed by some more explanations on six major foods and industrial crops.

1) Overview

In Nghe An, many food crops are being cultivated owing to its diversified geographical and natural conditions. According to the latest statistical data prepared by DARD, 66 annual crops and 36 perennial crops were grown in 2016. Among them, rice (including both lowland and upland rice) is the most widely cultivated crop (about 186,000 ha) followed by maize (59,000 ha). The maize in Nghe An is mainly cultivated for fodder because several large dairy companies are operating their factories there. Other major foods and industrial crops are sugarcane (24,000 ha), cassava (19,000 ha), groundnut (16,000 ha) and tea (11,000 ha).

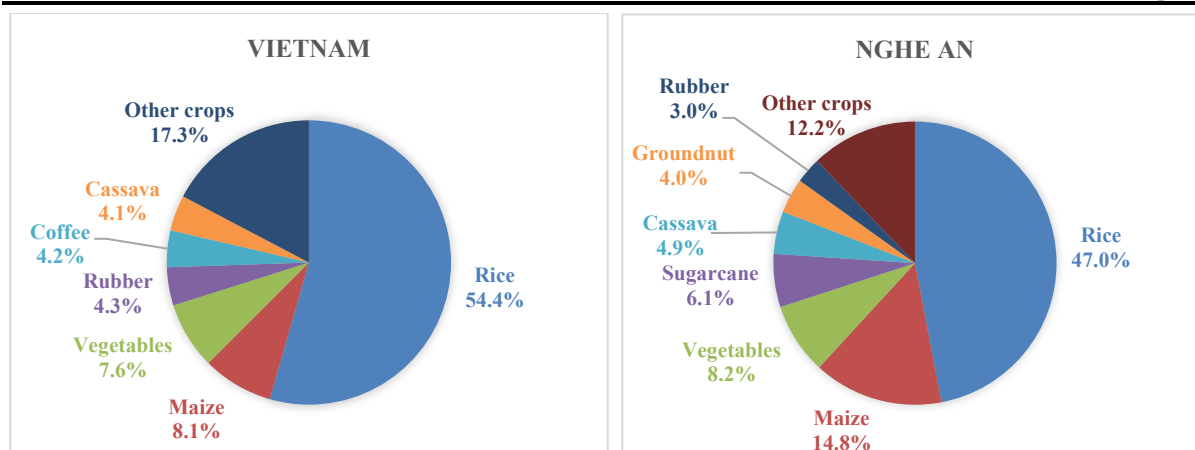
In comparison with the national data in 2016, the top two crops, rice, and maize are the same status. Coffee and rubber are more popular at the national level than in Nghe An. These two industrial crops occupy 4.1 % and 3.9 % of the national production area, while they represent only 0.1 % and 1.2 % in Nghe An (refer to the table and figures below).

Table 3.1 Cropped Area by Crop

Crop	Vietnam (ha) (2016)	Nghe An (ha) (2016)
Rice	7,783,113	186,050.8
Maize	1,151,830	58,678.3
Vegetables	1,088,539	32,288.2
Rubber	621,370	11,685.0
Coffee	597,597	260.0
Cassava	579,898	19,259.9
Beans/Peas	305,454	4,519.7
Sugarcane	256,322	24,019.8
Other fruits	250,365	3,760.0
Mangoes, etc.*	229,182	6,787.0
Groundnut	184,792	15,741.2
Coconuts	146,835	110.0
Sweet potatoes	120,635	5,261.4
Tea	118,824	10,720.0
Soybeans	99,578	266.7
Oranges and citrus fruits	92,981	8,246.0
Pepper	81,790	244.0
Chilli peppers	65,686	272.1
Sesame	50,546	3,201.3
Potatoes	21,173	1,638.1
Other crops	449,098	2,816.0
Total	14,295,608	395,825.5

Note: * including mangosteens, guavas, bananas and pineapples

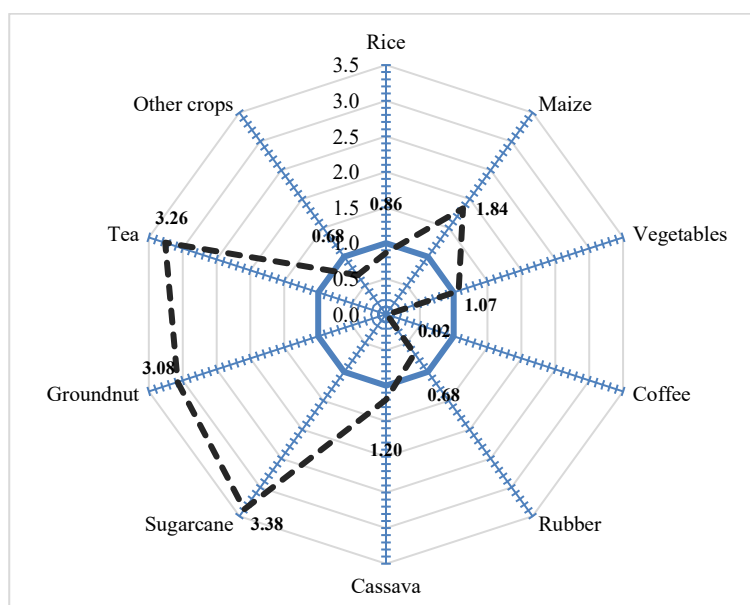
Source: FAOSTAT for Vietnam and statistics prepared by DARD for Nghe An



Source: FAOSTAT and statistics prepared by DARD

Figure 3.1 Comparison of Area Distribution by Crop in Vietnam and Nghe An

From the data of area distribution by crop, specialization coefficient is calculated for 10 major crops and shown in the radar chart below.



Source: FAOSTAT and statistics prepared by DARD

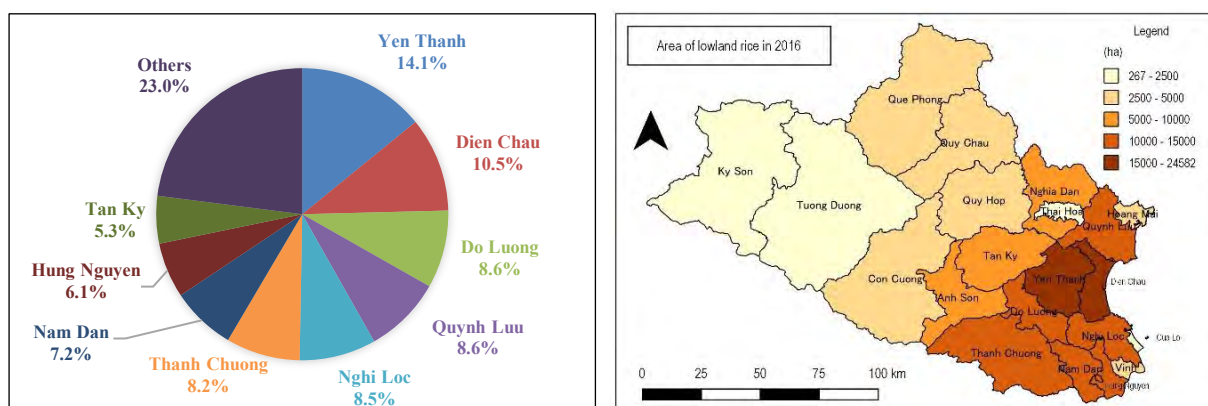
Figure 3.2 Specialization Coefficient of Cropped Area in Nghe An (2016)

In Nghe An, there are three main specialized food and industrial crops, namely sugarcane, tea and groundnut. Though the coefficients of rice, coffee and rubber are lower than 1.0, those of maize and cassava are higher than 1.0. As for sesame, its production area is not so large as compared with the above-mentioned three food and industrial crops, but the coefficient of sesame is high, 2.29. The sesame production area in Nghe An was 3,200 ha in 2016, which is only 0.81 % of the provincial production area, but it represents 6% of the national production area (50,500 ha) in 2016.

2) Rice

Lowland rice is widely cultivated all over the province, but upland rice is partly cultivated in the two mountainous districts, i.e. Ky Son and Tuong Duong. In 2016, major lowland rice producing districts with more than 14,000 ha were: (1) Yen Thanh (24,600 ha), (2) Dien Chau (18,200 ha), (3) Quynh Luu (15,000 ha), (4) Do Luong (15,000 ha) and (5) Thanh Chuong (14,300 ha) as shown

below.



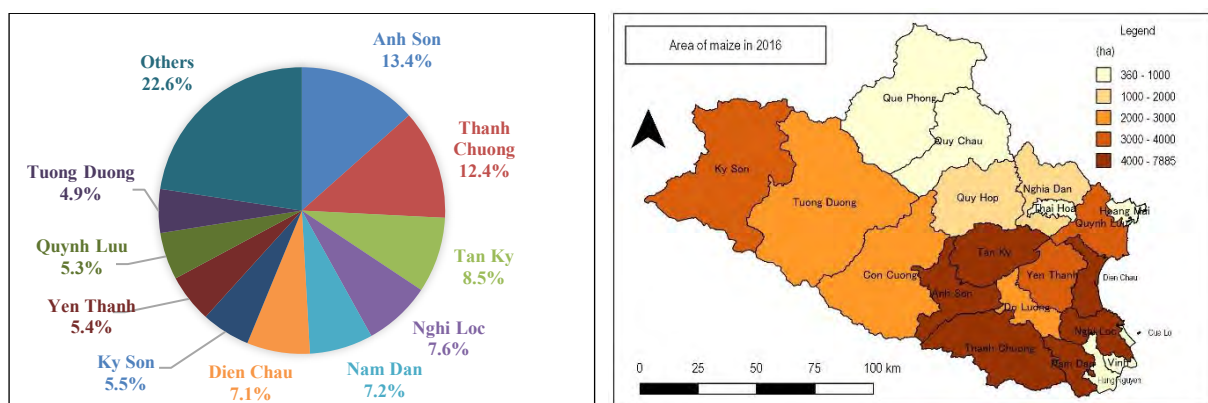
Source: Statistical data, DARD Nghe An

Figure 3.3 Cropping Area Distribution by District for Lowland Rice (2016)

Considering the facts that the latest development plan of DARD (2016-2020) mentions (1) decrease in cultivated areas and production amount of rice in 2020 and (2) conversion of paddy rice land that can not access to active irrigation water into other crops for animal feed, there seems to be no serious and urgent issues to be solved in rice production. The plan mentions that seven districts (Yen Thanh, Dien Chau, Quynh Luu, Do Luong, Thanh Chuong, Nam Dan and Hung Nguyen) are focused on for high-quality rice production. In addition, there have been no critical supply-demand gaps within the province nor abrupt rise in rice price.

3) Maize

Maize has the second largest cropping area in Nghe An with 58,700 ha in 2016. Among the 17 districts, 3 towns and one city, Anh Son and Thanh Chuong districts are the top two ones with more than 7,000 ha followed by Tan Ky (5,010 ha), Nghi Loc (4,500 ha), Nam Dan (4,200 ha) and Dien Chau (4,200 ha) (see **Figure 3.4 C**). As mentioned above, maize is popularly produced as a fodder crop because the demand for fodder by major dairy farms such as TH Milk and Vina Milk is very high.

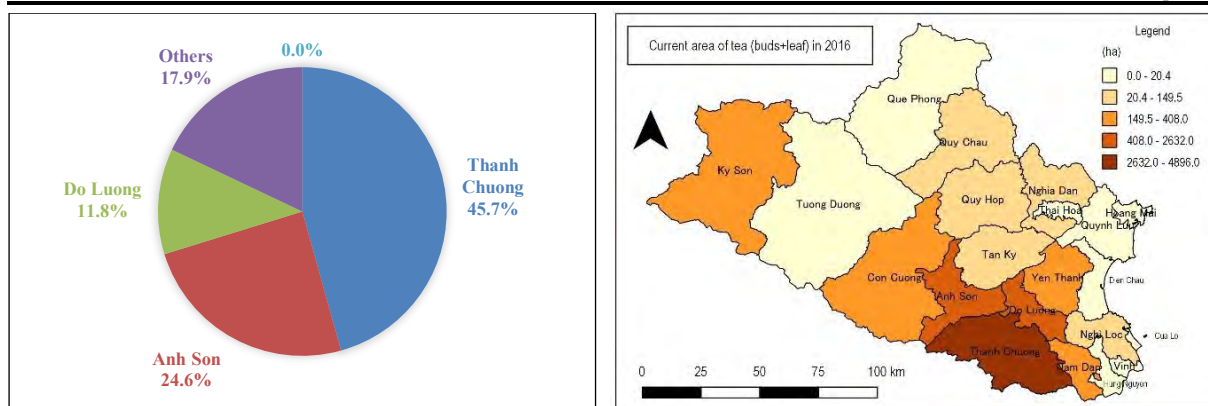


Source: Statistical data, DARD Nghe An

Figure 3.4 Cropping Area Distribution by District for Maize (2016)

4) Tea

Tea is an important export crop for Nghe An and its annual exportation amounts to USD 6-8 million according to DARD. Tea production is concentrated in three districts, namely Thanh Chuong (4,900 ha), Anh Son (2,600 ha) and Do Luong (1,300 ha), which represent 82 % of the total provincial tea production area as shown below.

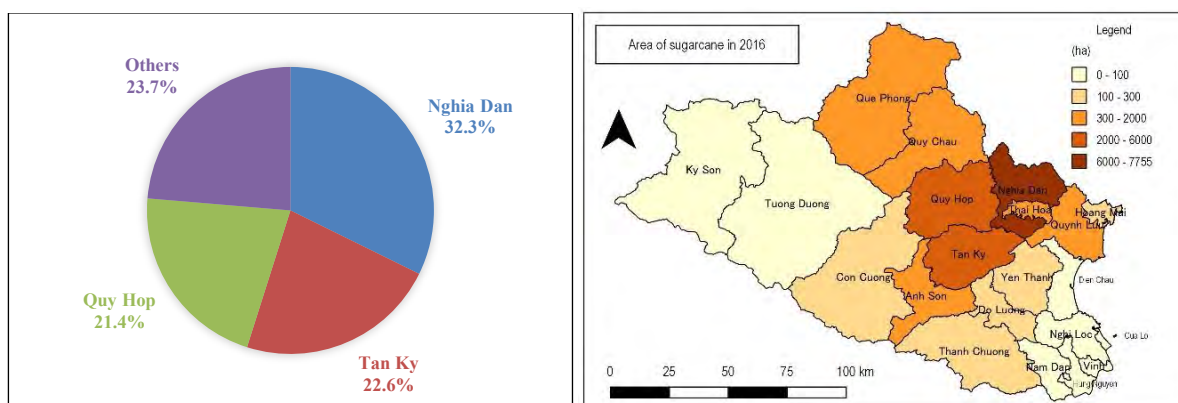


Source: Statistical data, DARD Nghe An

Figure 3.5 Cropping Area Distribution by District for Tea (leaf+buds) (2016)

5) Sugarcane

In Nghe An, sugarcane has the fourth largest cropping area (24,000 ha) after rice, maize, and vegetables. Sugarcane production is concentrated in three districts, namely Nghia Dan (7,800 ha), Tan Ky (5,400 ha) and Quy Hop (5,200 ha), comprising 76% of the total provincial sugarcane production area (see **Figure 3.6**).

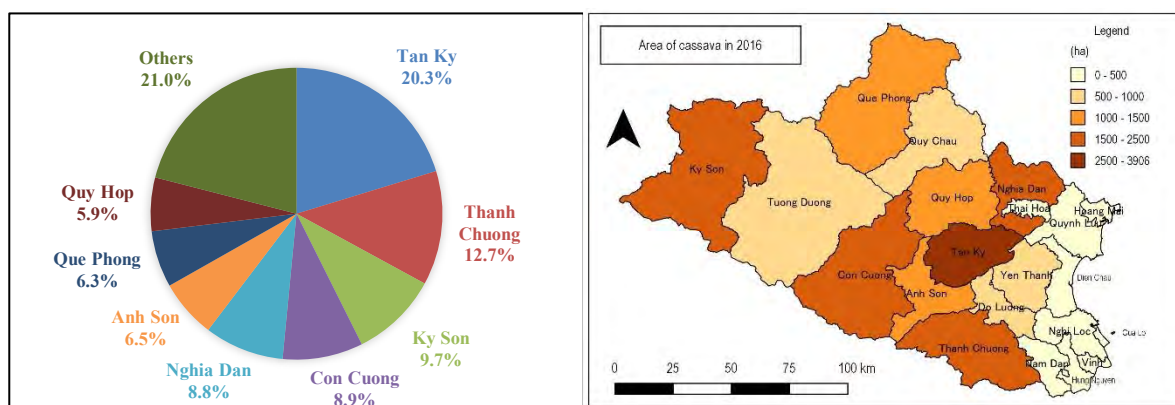


Source: Statistical data, DARD Nghe An

Figure 3.6 Cropping Area Distribution by District for Sugarcane (2016)

6) Cassava

In Nghe An, cassava has the fifth largest cropping area (19,300 ha) after rice, maize, vegetables, and sugarcane. Cassava production is widely cultivated in the province, namely Tan Ky (3,900 ha), Thanh Chuong (2,400 ha), Ky Son (1,900 ha), Con Cuong (1,700 ha) and Nghia Dan (1,700 ha), comprising approximately 60% of the total provincial cassava production area



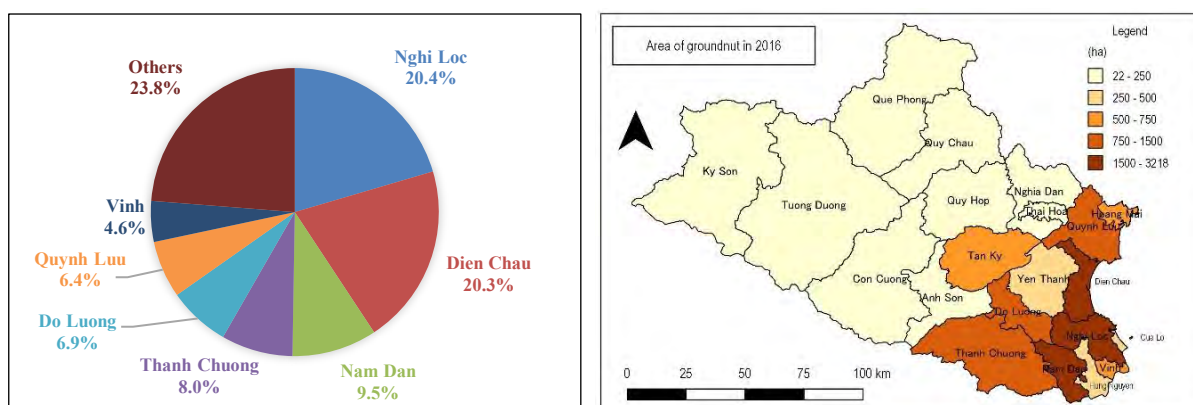
Source: Statistical data, DARD Nghe An

Figure 3.7 Cropping Area Distribution by District for Cassava (2016)

7) Groundnut

Groundnut is one of the famous specialties of Nghe An and its cropping area reaches 15,700 ha in 2016 though the cropping area had been decreasing in the last six years from 21,900 ha in 2010. The cropping area in Nghe An in 2016 still occupied 8.5 % of the national cropping area, 185,000 ha, and was the largest area among all the provinces in Vietnam.

There are two main producing districts, Nghi Loc (3,200 ha) and Dien Chau (3,200 ha). The unit yield in Dien Chau (3.2 ton/ha) was higher than that in Nghi Loc (2.6 ton/ha), so production amount in Dien Chau, 10,200 ton, was more than that in Nghi Loc, 8,300 ton. These two districts represent over 40 % of the provincial groundnut production amount and cropping area (see **Figure 3.8**).

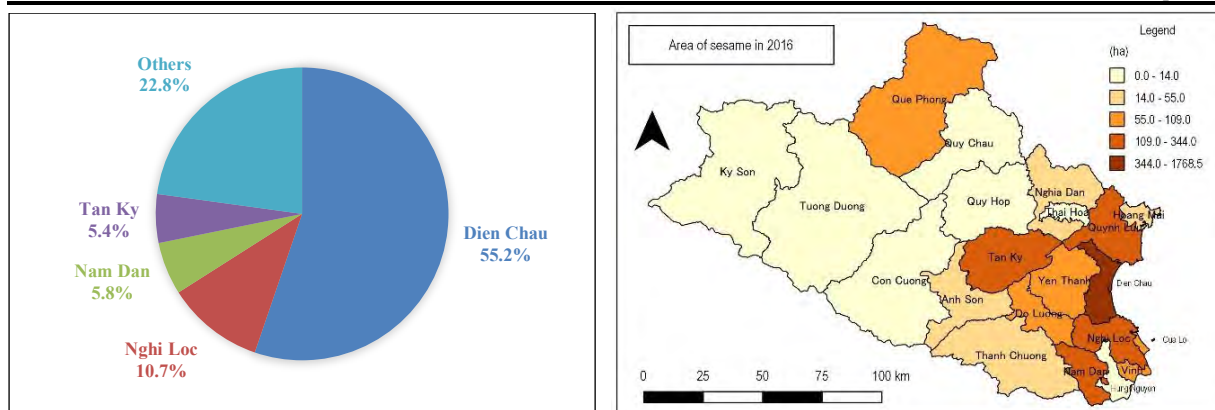


Source: Statistical data, DARD Nghe An

Figure 3.8 Cropping Area Distribution by District for Groundnut (2016)

8) Sesame

Sesame is widely planted in the eastern districts in Nghe An, but its cropping area is merely 3,200 ha in 2016, which represents only 0.8% of the total provincial cropping area, 395,800 ha. Among the districts, Dien Chau occupies more than half of the cropping area (1,770 ha). Other three districts such as Nghi Loc, Nam Dan and Tan Ky have cropping areas between 170 and 340 ha (see **Figure 3.9**).



Source: Statistical data, DARD Nghe An

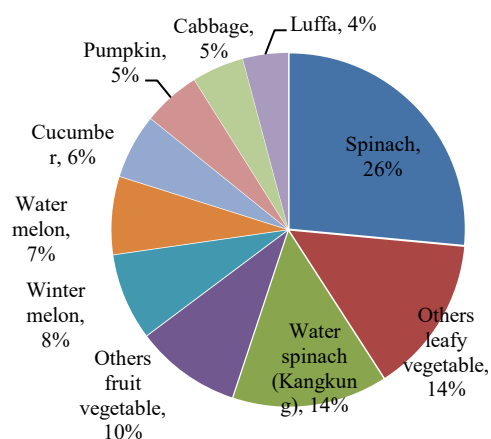
Figure 3.9 Cropping Area Distribution by District for Sesame (2016)

(2) Horticulture

More than 50 different kinds of vegetables and fruits are grown in Nghe An province. However, most of those are limited in production and are less competitive compared to other areas and countries. The details are described below.

1) Vegetables

Vegetables are widely produced in the whole province mainly for self-consumption. The production in 2016 was 436,000 tons and its area was 32,300 ha in the province which was slightly increased by 16 % and 9 % respectively from 2013. In 2016, about 50 % of production area was occupied by leaf vegetables; Chinese mustard, water spinach (Kangkung) and other leafy vegetables. The remaining ones are leafy and fruit vegetables as shown in the figure below.



Source: Statistical data, DARD Nghe An

Figure 3.10 Cropping Area Distribution by District for Vegetable (2016)

Main production districts where vegetables are grown for cash are located in eastern area, Quynh Luu (4,100 ha), Nam Dan (3,500 ha), Yen Thanh (3,400 ha). Some districts have specialized products such as Chinese mustard in Quynh Luu and watermelon in Dien Chau, etc. Cropping calendar of main vegetables in Nghe An is shown below. The main vegetable production season is from November to April, in relatively cool season. Leafy vegetables can be grown and harvest several times from November to February, while fruit vegetables can be produced once or twice a year. Only spring onion can be produced in the summer season from May to August with high temperature and dry condition.

Table 3.2 Cropping Calendar of Main Vegetable in Nghe An

crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Spinach				→					→	→	→	→
Water spinach (Kangkong)	→	→	→	→	→	→	→	→	→	→	→	→
Water melon			→	→	→	→	→					
Pumpkin	→	→	→	→							→	→
Cabbage	→	→	→	→						→	→	→
Luffa	→	→	→	→	→							
Spring onion					→	→	→	→				

The temperature is relatively high through the year in Nghe An province and it is hard to grow vegetables from June to August due to occurrence of pest and disease led by high temperature and humidity and also flood led by heavy rain. Farmers cannot produce vegetables under open-field in Nghe An province are not suitable in terms of quantity and quality. Therefore, their products are less competitive compared to Lam Dong, Mekong or China where vegetables can be grown throughout the year. Most of vegetables which are appearing throughout the year on the big market chains in the province are produced other provinces and countries, while the ones produced in the province are sold mainly in the local 'Wet markets'.

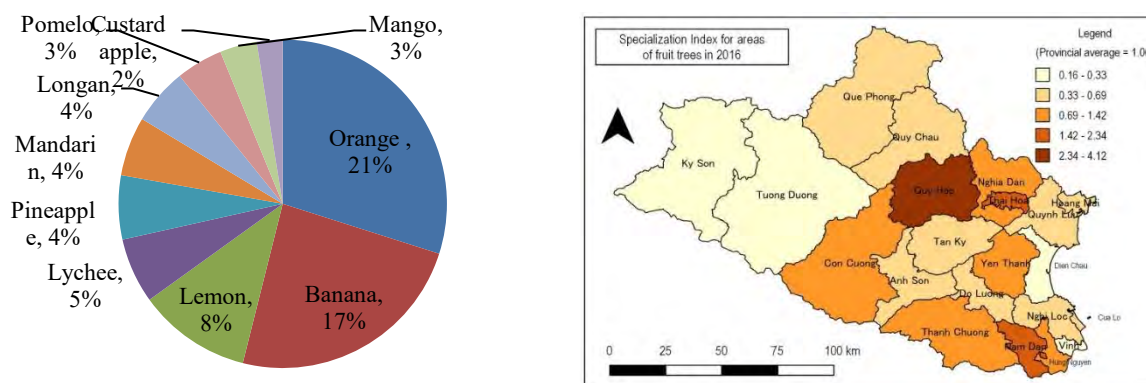
The consumers who are highly interested in safe food are increasing in recent years and the demand for vegetables which have a certificate of food safety or show traceability of producer and production area. Along with that, the number of retailers which deal with safe food in Vinh city has been increased at 44 shops in 2018 compared with 22 shops in 2016. Including restaurants and hotel industry, there are more than 200 organizations which need safe foods especially vegetables. Moreover, some DPCs recommend primary schools and hospitals to purchase vegetables certified its safety, and the demand for 'Safe Vegetable' can be increased in the future.

As for the export, 600 tons of vegetables produced in Quynh Luu seemed to be exported to Netherlands in 2005, but no similar cases are reported recently even to China officially.

2) Fruits

Different from the vegetables, the fruits produced in Nghe An province are more or less competitive. Total fruit production was 180,000 tons and its area was 18,800 ha in the province, which is shared only 2.2 % of total country's fruit production in 2016. However, there are some particular fruits such as banana, orange, and lemon of which have comparative advantages with specialization coefficients of 2.0, 3.0 and 4.5 respectively. Especially the orange in Nghe An province is famous as 'Cam Vinh'¹ and sold through the county with high price. Top 10 fruits produced in Nghe An province in 2016 are shown in the figure below.

¹ 'Cam Vinh' can be used as a brand name for oranges which are produced in 10 communes of 5 districts : Nghi Loc(Nghi Hoa, Nghi Diên),Quy Hop(Minh Hạp) and Tan Ky(Tân Phú, Tân Long, Tân An)



Source: Statistical data, DARD Nghe An

Figure 3.11 Cropping Area Distribution by District for Fruit (2016)

The main production areas are different by fruit. Bananas are generally planted around paddy field as a windbreak, so most of them are seen in plain areas such as Thanh Chuong, Yen Thanh and Nam Dan. On the other hand, approximately 53 % of orange production field is located in Quy Hop and 43 % of lemon is produced in Hung Nguyen and Nam Dan in 2016 because those 3 districts have a relatively suitable environmental condition for such citrus fruits; quite large hill areas, a range of daily temperature and soil.

The production periods are also different by crop and variety. Generally, bananas are harvested in all year. High season is from August to December. As for oranges, it starts ripening from November and the harvest ends in April. Lemon is produced in all seasons but main harvest season is from February to March and from August to September. Pomelo is harvested from the end of August until September.

The biggest restriction for the fruit cultivation is a weather phenomenon. A Foehn phenomena with hot and dry wind called 'Lao wind' comes from June to August. This wind always damages the crops especially at flowering stage. After that, a series of typhoons and flood come and continue until October which affects the growth of Banana and Citrus fruits.

Although fruit trees especially citrus fruits are affected by such harsh weather or its rarity because of the weather, those kinds of fruits especially oranges in Nghe An province are traded with high price as gift especially before Tet holiday. Therefore the provincial government has been promoting to expand citrus fruits plantation such as oranges. Indeed, its production area has been expanded rapidly by 60% for 2 years (2014-2016) even in neighboring provinces. Farmers who start and expand the production of oranges by changing from other crops are increasing in the main production area in Quy Hop, because of its high farm gate price in the past. As a result, it has been expanded from 1,357 ha in 2014 to 2,523 ha in 2016. However, cheaper oranges from other provinces are increasing in the market and thus the market competition is becoming hard along with the increase of production both inside and outside of Nghe An. The governmental authorities and orange producers themselves are feeling a sense of crisis that the oranges of the province are no longer sold as they used to be. Furthermore, due to the influence of climate change in recent years, it is said that it is becoming difficult to cope with conventional production techniques and pest and disease control method, and the competitiveness of the orange is losing on quality as well. In response to this situation, governmental authorities, private sectors and research institutions, etc. have started making effort to improve the situation as raising disease-free seedlings and developing production techniques.

As for the export, the orange was sold to Russia in the past, but it did not last long period since the selling price is high in the domestic market rather than that of international according to the DARD. Instead of oranges, pineapple and passion fruit are expected as an export-oriented fruit. The former has been produced in Quynh Luu which has a good topographic and pedological condition. The latter is mostly produced by Nafoods under contract in Que Phong for processing. But it is also planned to be sold as fresh fruits in the domestic and international markets.

(3) Livestock

In Nghe An province, the percentage of animal husbandry production in total agriculture sector is 47.0 % in 2016. The recent growth rate of animal husbandry sector is estimated to be 5 - 5.5 %/year.

The population of livestock has been increasing in Nghe An province except for buffalo and pig. The major consumption of meat is still pork, and the percentage of pork is about 70 % of total meat amount. But the population of pig has been decreasing because of the limitation of land, high cost of concentrate feed and environmental problem.

Reflecting the diversity of taste due to the recent urbanization and increase of income, the production of beef, chicken, milk, goat and honey has been increasing in Nghe An province instead of the pork.

In comparison with the national data in 2016, all kind of livestock occupy the high percentage in Nghe An; that is 8% in cattle, 12% in buffalo, 3% in pig and 5% in poultry as nationwide ratio. It should be noted that Nghe An province has the largest population of cattle and buffaloes among 63 provinces nationwide.

Table 3.3 Livestock Population (2016)

Livestock	Vietnam (x 1000 heads)	Nghe An (x 1000 heads)	Percentage in Nghe An	Rank in Vietnam
Cattle	5,496.6	426.4	7.8 %	1/64
Buffalo	2,519.4	290.9	11.5 %	1/64
Pig	29,075.3	895.4	3.1 %	6/64
Poultry	361,721	17,533	4.8 %	3/64

Source: General Statistics Office of Vietnam

1) Pig

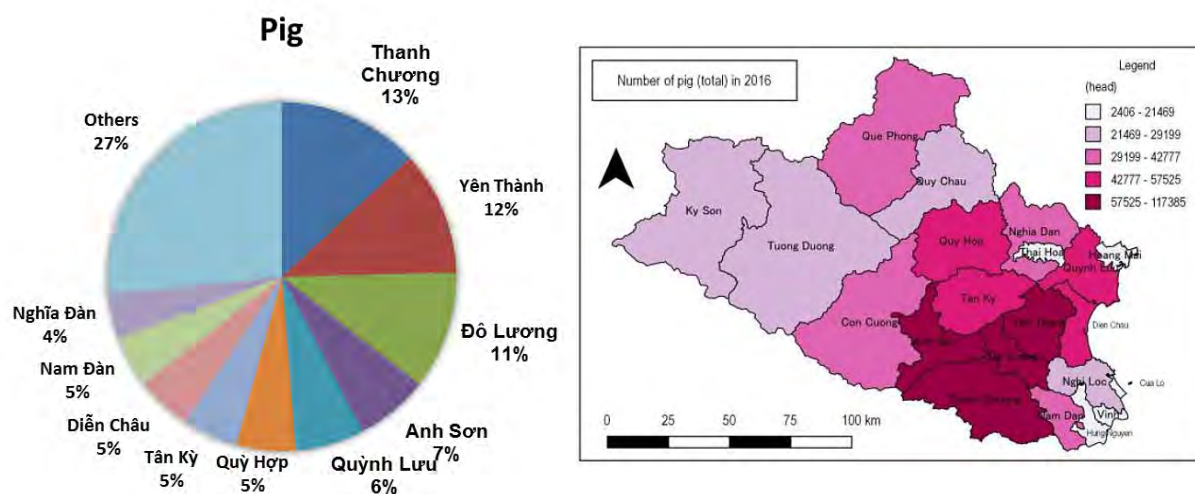
The population of pig is 895,369 heads (include 185,197 breeding sow). The number of sold pig is 2,309,394 heads (130,399 ton) in 2016. The population is large in Yen Thanh district, Thanh Chuong district and Do Luong district. The meat of piglet before weaning is also popular and 159,013 heads (1,892 ton) is consumed in Nghe An.

The improvement of pig breeding has been processed by mating Mong Cai (local Vietnamese breed) with Landrace or Yorkshire (European breed). But recently, to improve the feed efficiency, farmers use European breed and feed much concentrates instead of using Mong Cai.

The population of pig has decreased 21 % in recent 5 years because of the difficulty in expanding the land, bearing the cost of concentrate feed and preventing environmental pollution.

For the production of pork in Nghe An, the Masan group, one of the three biggest companies in Vietnam, and the CP group (Charoen Pokphand), the largest conglomerate company in Thailand are also expanding the business. Since 2017, the Masan Group has raised 240,000 pigs in Quy Hop district by following VietGAHP standards and shipped to their processing factory in Ha Nam province. The CP group provides the feed, sows and semen to small and medium-sized farmers in contract with them, and buys fattened pigs through traders.

Meanwhile, exporting meat is not easy in Vietnam due to the prevalence of serious animal diseases, but as whole country, 13,000 tons of pork is exported to Hong Kong, Macao and Malaysia in 2016. Although also Nghe An province has plan to export meat to overseas, there are many issues to be solved, such as securing a clean area of livestock diseases, improving slaughter processing techniques, satisfying hygiene standards and establishing cold storage and distribution infrastructures.



Source: Statistical data, DARD Nghe An

Figure 3.12 Production Area Distribution by District for Pig (2016)

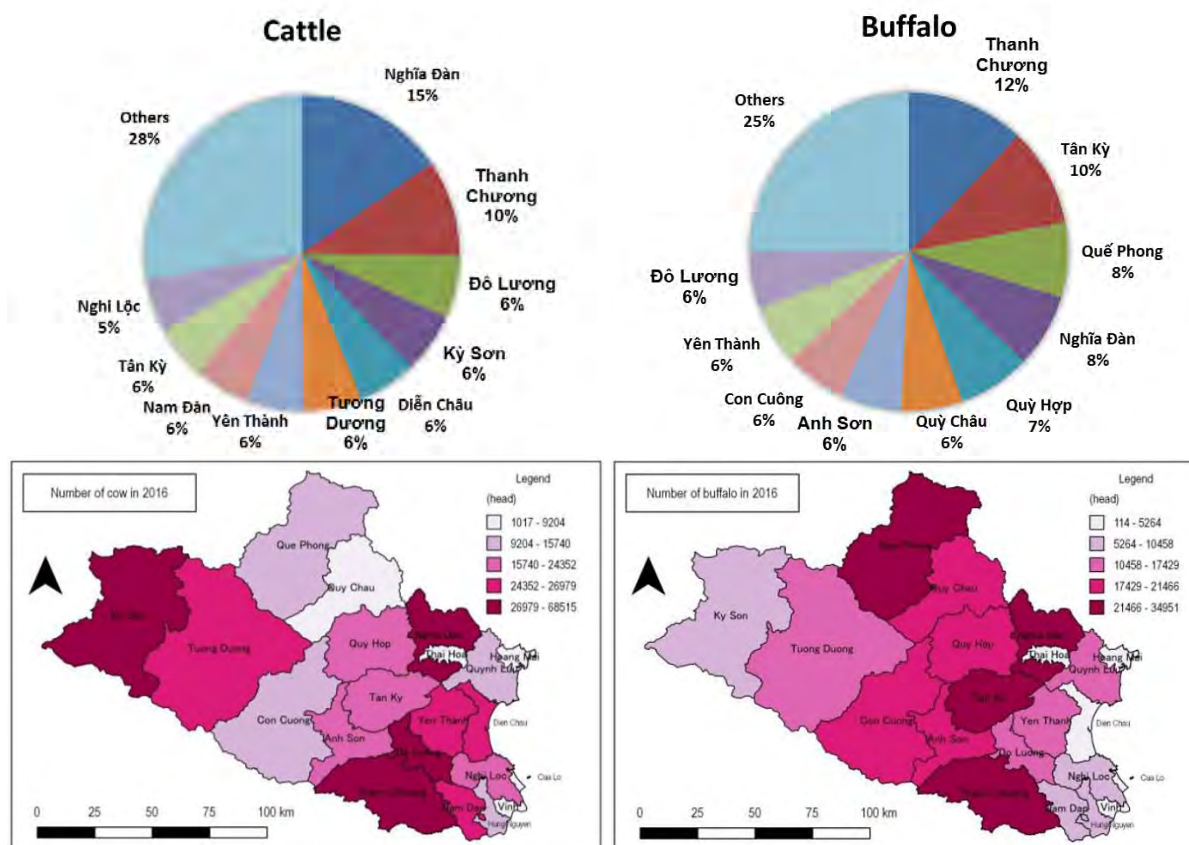
2) Cattle and Buffalo

The population of cattle is 446,422 heads (include 62,393 dairy cow) in Nghe An. The number of sold cattle is 108,971 heads (15,294 ton) in 2016. The individual farmer owns 98.5% of the cattle population (exclude dairy cattle). The population is large in Thanh Chuong district, Nghia Dan district and Ky Son district. The population has increased 8 %, but it may be offset by the decrease of cattle as a draft animal, and the actual growth rate is seemed to be higher.

Reflect on the increase of the demand, the import of beef cattle from Australia has been increasing with cheap price and high quality. For example, Petrol Food Joint Company which has slaughterhouse and meat processing facility in Vinh city imports live fattening cattle from Australia and sell the meat to large factories such as Formosa Ha Tinh Steel Corporation (Ha Tinh province) and Vietnam Oil and Gas Group (Vung Tau province).

The population of buffalo is 290,863 heads and the amount of sales is 44,060 heads (9,726 ton) in 2016. The population is large in Thanh Chuong district, Tan Ky district and Que Phong district. Reflect on the diffusion of agricultural machines in rural area, the demand for buffalo as a draft animal has been decreasing. The population of buffalo has decreased 4 % in recent 5 years.

Although Nghe An province has the largest population of cattle in Vietnam, there is almost no meat distribution outside the province using the cold chain except for the ANIMEX company. Many beef cattle are also shipped to Hanoi and Ho Chi Minh City, but they are usually transported to the consumption site by living body. At present, it is said that the consumption rate of beef cattle within the province is only 10 to 15%, and most of which are slaughtered, processed and sold after being transported outside Nghe An province.



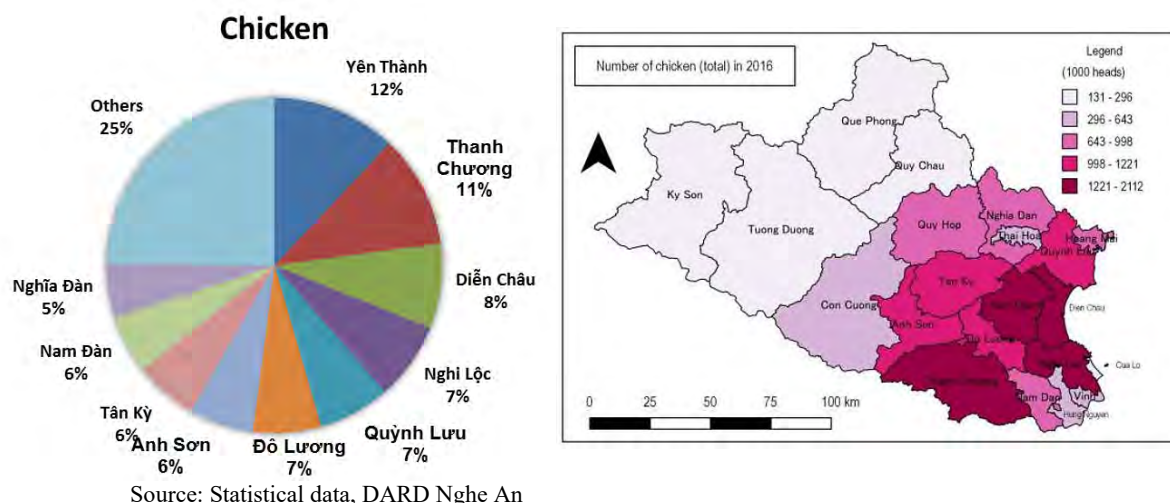
Source: Statistical data, DARD Nghe An

Figure 3.13 Production Area Distribution by District for Cattle and Buffalo (2016)

3) Chicken

The population of chicken is 17.6 million (include 13.6 million broiler chicken and 4.0 million layer chicken). The amount of sales is 25.6 million chickens (35,786 ton) in 2016. The population is large in Yen Thanh district, Thanh Chuong district and Dien Chau district. The total number of chicken has increased 26% in recent 5 years.

In general, Vietnamese people prefer chewy meat than tender one. Therefore, there is a high demand for free-range chicken raised by natural feed resources than the broiler raised by concentrate feed. The price of free-range chicken is 2 times higher than broiler at the farm. As local chicken meat produced in Nghe An province, Thanh Chuong Chicken in Thanh Chuong district, Nam Thai Chicken in Nam Dan district and H'mong Chicken in mountainous regions such as Ky Son district and Quy Hop district are famous among consumers.



Source: Statistical data, DARD Nghe An
Figure 3.14 Production Area Distribution by District for Chicken (2016)

4) Milk

People in Vietnam consume a relatively large amount of meat compared to neighboring countries, whereas the consumption of dairy products is relatively small. However, with the economic growth in recent years, milk consumption has been expanding, and the import amount of milk has increased sharply by 3.7 times over 5 years from 5,221 tons (2011) to 19,350 tons (2016)².

The population of dairy cow is 62,393 heads and heifer is 33,135 heads. The amount of milk production is 206,354 ton in 2016. The dairy companies own 99.0 % of the dairy cow, and TH Milk Company in Nghia Dan province owns 77.6 % of the population. Reflect to the scale expansion of TH Milk, the population of dairy cow in Nghe An has increased by more than 8 times in recent 6 years from 8,064 heads (2010) to 62,393 heads (2016). At the same time, sales amount of raw milk and dairy products in Nghe An province has rapidly increased from VND 9.9 billion (2010) to VND 352.7 billion (2016).

TH Milk has raised 58 thousand cows at their own farm with the area of about 1,000 ha. They have been milking average of 30 liters/day per head by using automatic milking machine made by Israel, and producing 180 million liters of milk per year. However, as the supply volume does not catch up with the demand of the market, the company is planning to further increase of production scale. The company's raw milk processing throughput is expected to reach 500 million liters by 2017.

On the other hand, Vinamilk Company has a raw milk processing plant with capacity of 30 million liters in Cual Lo town, and has been producing by following ASEAN GAP standards. Regarding dairy cows, about 4,500 heads are raised in their farm which has over 40 ha of land in Thai Hoa Town.

These dairy companies have raised pure breed of Holstein imported mainly from New Zealand and USA which has lactation capacity of 6,000 to 8,000 liters/year per head in their farm. On the other hand, there are private dairy farms in Quigh Luu district, Nghia Dan district, Tan Ky district and Thai Hoa town who have contracted with Vinamilk,. These farmers raise about 2,000 cows in total, and they are mainly the hybrids of Holstein breed which has the lactation capacity of about 4,000 to 4,500 liters/year per head. These small dairy farms formulate dairy cooperatives or farmers' group and ship raw milk to Vinamilk company by contracting with them. Milk price paid to farmers is around VND 14,000/kg, but it is lowered by quality and component of raw milk.

² FAOSTAT

5) Fodder Crops

Although there are abundant forage resources mainly in mountainous areas in Nghe An province, it is difficult to utilize them efficiently because most of the land are slopes in that area. During the summer season from July to October grasses grow abundantly, while most of the grasses disappear in the winter season from January to February. The grass and fodder crop such as corn, cassava, sweet potato, sorghum and napiergrass are utilized in Nghe An; however in general, small-scale farmers only use the weeds that naturally grow at roadside. There are cases that dairy farms are contracting with Vinamilk make and use corn silage, though, the general livestock farmers apply cut-and-carry method which harvests necessary amount of raw grasses every day. In other words, few farmers apply fodder storage techniques such as hay preparation and silage making.

The cultivation area of grass and forage crop in Nghe An province is 3,470 ha (2015), and the province has plans to increase it to 13,207 ha by 2020. Most of this area is aimed for producing corn silage for dairy cattle, and almost all of the increased amount will be sold to TH Milk and Vinamilk. These dairy companies purchase corn cultivated by farmers and make corn silage in a large scale at their own farms.

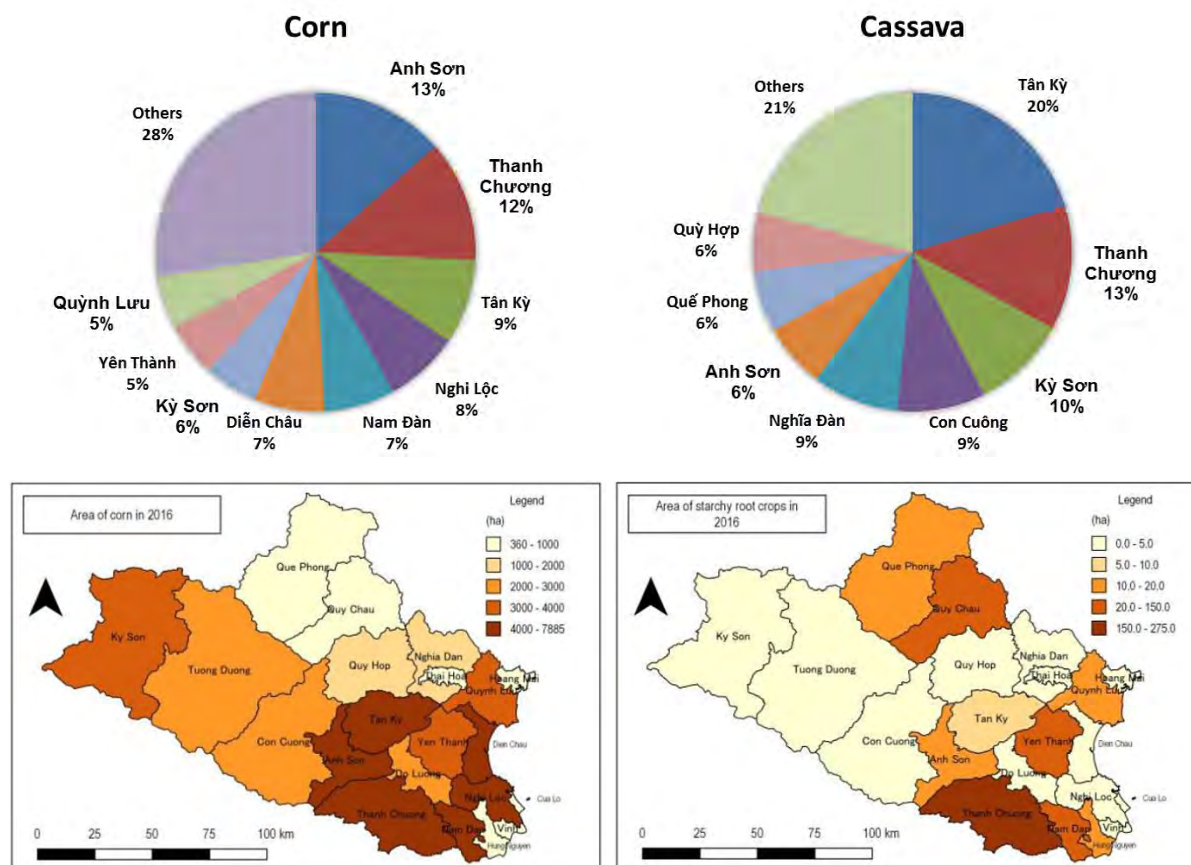
In Vietnam, due to the rapid development of industrial method of dairy and meat production, the overseas dependence on raw feed material is increasing, and 40% of corn and 80% of soybeans are depended on import materials. In Nghe An province, there are several feed companies such as Con Heo Vang, Golden Star, Khu Hope, Mavin feed (AUSFEED) and Cagrills which have started business at the industrial zone of the province due to government investment promotion of tax incentive. Therefore this area has become a supply base of animal concentrate feed in Northern Central region of Vietnam. Although demand for feed in the region is growing, the feed companies except for Con Heo Vang is foreign-affiliated companies, and the competitive environment of the market is very intense. Most of these companies depend on imported feed materials in the range of 70 to 80% and intend to secure them inside the province especially for corn and cassava, however, their plans have not been proceeding well. The problems need to be solved in using the raw materials produced in Nghe An are as follows; (1) The production costs of farmers are high and the price of product become higher than imported materials, (2) The production scale of each farm is small and companies cannot purchase products in a large lots, (3) The water contents of the products produced by farmers are too high because of the insufficient drying after harvesting.

Also cassava is one of the major agricultural products of Nghe An, and it is cultivated mainly in Tan Ky district and Thanh Chuong district as a raw material for tapioca powder processing. The processed tapioca is exported to China, however, the export volume tends to decrease from 125,000 tons (2014) to 86,000 tons (2016)³. On the other hand, the cultivation area in the province has increased from 16,540 ha (2014) to 19,260 ha (2016). This is influenced by the procurement of cassava from farmers by feed company as a raw material for feed processing. Cassava as feed material has mainly been imported from Laos, though its low quality was a problem. Demand for concentrate feed is expected to be increased, and demand for cassava produced in Nghe An will be continued to expand as feed materials. Even at the farmer's level, farm-gate price of cassava for tapioca processing declined to VND 800/kg in 2016, and many farmers have stopped to sell and started to use them as feed for their livestock. In 2018, due to the shortage of cassava supply, the farm-gate price by Tapioca processing factory had increased up to VND 2,000/kg.

Furthermore in Nghe An province, various kinds of agricultural and food processing byproducts are produced; such as rice straw, corn stalks, sweet potato leaves, banana trunks, cassava lees, soybean meal, sugar cane residue, peanut lees, beer residue, rice wine residue, molasses, bagasse and rice bran. However, these byproducts are limited to small-scale use by livestock farmers near the production area, and most of them are not utilized enough⁴.

³ Nghe An Statistical Office, 2016

⁴ Livestock Development Plan to 2020, MARD



Source: Statistical data, DARD Nghe An
Figure 3.15 Cropping Area Distribution by District for Corn and Cassava (2016)

6) Other Livestock Products

The population of layer chicken is 4.0 million and the amount of production is 300 million eggs in 2016. The population has increased by 27 % in recent 5 years. Dong Vinh ward in Vinh city is the largest and Dien Chau district is the second largest production area of eggs in Nghe An.

The population of duck is 2.6 million (include the 0.9 million ducks for egg production). The amount of sales is 5.1 million ducks (7,335 ton) for meat and 172 million eggs in 2016. The population of duck has increased 27 % in recent 5 years. Yen Thanh district and Quynh Luu district are the main production areas of ducks.

The population of goat is 189,118 heads and the amount of sales is 69,494 heads (1,390 ton) in 2016. The population has increased by 2.4 times in recent 5 years. Particularly in mountainous areas, it is expected that unused forest resources can be used as feed, and goat can be commercialized as a special product in the future.

The number of bee hives is 54,646 and 410 ton of honey was produced in 2016. The number of hives has increased 67 % in recent 5 years. On the other hand, however, there are many beekeeping farmers who are moving through the country from Nghe An to the southern province, because of the insufficient source of the nectar due to the industrial development.

The amount of cocoon production is 45 ton in 2016. The production has decreased to one-fifth in recent 5 years. Silk is sold to the wholesalers of Laos mainly after processing into raw silk or cloth in Nghe An.

3.1.2 Present Situation of Agricultural Market

Firstly, the features of retail food market in Vietnam, which is closely related to the agricultural market, is briefly described and some data on domestic and overseas markets in Nghe An are followed.

(1) Retail Food Market in Vietnam

In Vietnam, retail food market is largely dominated by traditional general trade, in which small independent stores ideal for small-quantity and high-frequency food purchases are main actors. There are many grocery stores all over the place and modern retail trade (supermarkets, hypermarkets, cash and carry wholesale centers, minimarts, and convenience stores) is still partially distributed only in urban areas. According to USDA Report⁵, the traditional retailers account for 94% of sales while modern retailers only account for 6%.

This fact that the traditional retailers represent the dominant food retail channel is one of features in the Vietnamese food retail sector. Although the data shown below are figures in 2012, the low modern trade rate in Vietnam is remarkable as compared with other neighboring ASEAN countries.

Table 3.4 Comparison of Food Retail Sector of Some ASEAN Countries by Trade Channel (2012)

(Unit: mil. USD)

Country	Vietnam	Indonesia	Philippines	Thailand	Malaysia	Singapore
Food Retail Sector Sales	43,041	94,725	37,949	50,867	11,111	5,773
Modern Trade Sales	1,762	13,526	9,475	21,484	5,900	4,079
Traditional Trade Sales	41,279	81,199	28,473	29,383	5,212	1,694
Modern Trade Rate (%)	4.1	14.3	25.0	42.2	53.1	70.7

Source: 'Report on Food Market Survey in Thailand, Vietnam and Myanmar (in Japanese)', Daiwa Research Institute (Sponsored by the Ministry of Agriculture, Forestry and Fisheries, Japan), March 2013

Another report predicts⁶ that the grocery retailers will still represent 71% of store-based retailing amount in 2020 while it was 73% in 2015. The figures in Singapore are forecasted as 20% in 2020 down from 27% in 2015. However, according to the USDA report aforementioned, the modern food retail sector will account for around 20% of the food retail sales in Vietnam by 2025 because of (1) its strong economic growth, (2) growing middle class with higher disposable income, (3) rapid urbanization, and (4) concerns about hygiene and food safety. European Commission also forecasts the rapid growth of the modern trade channel in Vietnam⁷. The report mentioned that "the modern retailers channel is expected to grow at a compound annual growth rate (CAGR) of 11.5% until 2019."

In fact, Vietnam's economy has been growing very vigorously so far. Its per capita income increased by more than 7 times from USD 260 to approximately USD 2,000 for a period of 19 years, from 1995 to 2014. The economy is continuously expanding in recent years. Based on the data of International Monetary Fund, Vietnam's CAGR of gross domestic product per capita (current prices) between 2016 and 2023 is forecasted the second highest among the 10 ASEAN nations as tabulated below.

⁵ 'Vietnam Retail Foods Sector Report 2016', Global Agricultural Information Network Report Number: VM6081, 3 July 2017, USDA Foreign Agricultural Service

⁶ 'Capturing the Vietnamese Consumer Market', Business Sweden in Vietnam, the Swedish Trade & Invest Council, February 2018

⁷ 'The Food and Beverage Market Entry Handbook: Vietnam-a practical guide to the market in Vietnam for European agri-food products', Promotion of Agricultural Products Unit, Consumers, Health, Agriculture and Food Executive Agency, European Commission, October 2016

Table 3.5 Forecast of Gross Domestic Product per Capita of the 10 ASEAN Nations (2016-2023)

(Unit: current prices, USD per capita)

Year	2016	2017	2018	2019	2020	2021	2022	2023	CGAR
Brunei Darussalam	26,935	29,712	33,233	33,623	34,282	36,504	37,872	40,790	6.1%
Cambodia	1,278	1,390	1,499	1,614	1,733	1,857	1,986	2,123	7.5%
Indonesia	3,604	3,876	4,052	4,291	4,585	4,866	5,164	5,480	6.2%
Lao P.D.R.	2,417	2,542	2,706	2,918	3,146	3,380	3,627	3,890	7.0%
Malaysia	9,374	9,813	11,237	12,241	13,180	14,175	15,256	16,421	8.3%
Myanmar	1,210	1,264	1,338	1,414	1,555	1,710	1,880	2,061	7.9%
Philippines	2,953	2,976	3,095	3,247	3,510	3,779	4,083	4,410	5.9%
Singapore	55,241	57,713	61,767	64,413	66,893	69,186	71,557	74,105	4.3%
Thailand	5,970	6,591	6,992	7,510	7,941	8,386	8,857	9,368	6.6%
Vietnam	2,172	2,354	2,546	2,774	3,015	3,256	3,510	3,773	8.2%

Source: International Monetary Fund, World Economic Outlook Database, April 2018, <http://www.imf.org/external/pubs/ft/weo/2018/01/weodata/weorept.aspx?pr.x=72&pr.y=9&sy=2016&ey=2023&scsm=1&ssd=1&sort=country&ds=.&br=1&c=548%2C518%2C516%2C522%2C924%2C566%2C576%2C534%2C578%2C536%2C158%2C542%2C111%2C544%2C582&s=NGDPD%2CPPPGDP%2CNGDPDPC%2CPPPPC%2CLP&grp=0&a=>, accessed on 12 July 2018

In general, as the economy develops, the urbanization also comes after, which in turn brings more urban middle-class population. People in urban areas normally tend to switch from shopping in the wet markets (traditional trade) to modern retail channel. From 2010 to 2020, the population in urban areas will increase by 35% and the urban population will reach 35 million by 2020 in Vietnam.⁸ Hence modern trade is supposed to rapidly increase in the Vietnamese retail food market in the near future, even though the importance of traditional trade will remain unchanged in rural areas.

(2) Domestic Market

In Nghe An, there are over 3.1 million inhabitants as of 2016. It is considered that they are the primary consumers of the retail food market in Nghe An. For some urban residents, modern retail trade (supermarkets, hypermarkets, cash and carry wholesale centers, minimarts, and convenience stores) is gradually available but the majority of people are living in rural areas where traditional trade is still the mainstream of food market.

Because there are no official statistical data on number of modern retail trade channel in Nghe An, number of supermarket operators and major local retailers within Nghe An was preliminarily surveyed by JICA Project Team in July 2018.

Supermarket:

There are four nationwide supermarket chains in Nghe An namely Metro, Big C, Maximark, and Intimex. Among them, Maximark has two supermarkets, one in Vinh and another in Cua Lo and Intimex has two in Vinh. Metro and Big C have only one each in Vinh. In short, there are 6 nationwide supermarket stores in Nghe An.

Local Retailer:

There are vast amounts of local retailers dealing with agricultural products in Nghe An. Most of them are family-owned small shops but there are some medium scale corporate managed retailers including Bibi Green, Goc Cho xanh, Tam Nguyen, Tam Nong, Auriga, etc. Both Bibi Green and Goc cho xanh has 6 stores within Vinh and Tam Nguyen has 4 in Vinh. In general, those local retailers have stores in the capital city, Vinh, but Tam Nong and Auriga have shops in other areas such as Dien Chau, Hoang Mai and Quynh Luu. As of July 2018, 15 medium scale retail shops are observed and active in grocery food markets in Nghe An.

As indicated above, the supermarkets in Nghe An are basically located in urban areas. This means that majority of people within Nghe An (According to the statistics, only 15% of provincial population are

⁸ 'Capturing the Vietnamese Consumer Market', Business Sweden in Vietnam, the Swedish Trade & Invest Council, February 2018

urban dwellers in 2016.) are not considered as supermarket customers. Therefore the retail food market in Nghe An is considered to be largely dominated by traditional trade channel.

There are so many small grocery stores all over the province. Public markets are major marketing channels in rural areas since many grocery shops around rural villages have a stock of agricultural produce there. According to the data obtained from Nghe An PPC, the number of existing and planned public markets by district, town and city is summarized below.

Table 3.6 Existing and Planned Public Markets by District, Town and City

District, Town and City	Existing Markets		Planned New Markets		
	Number in 2013	Land area (1,000m ²)	2014-2020	2021-2025	Planned land area (1,000m ²)
Vinh	18	158.46	11		188.96
Quy Chau	1	9.935	8	3	49
Con Cuong	10	19.7	1	3	27.75
Tan Ky	22	160.5	3		171
Yen Thanh	38	281	1		284.5
Nam Dan	12	108.5	10	3	133.2
Dien Chau	39	153.35	9	3	199.35
Do Luong	16	148.349	20	3	196.42
Hung Nguyen	15	74			74
Nghi Loc	6	165.2	18	8	189
Anh Son	6	58.674	18	2	71.174
Tuong Duong	5	25	5	4	57
Ky Son	2	5.7	9	8	44.7
Nghia Dan	21	95.5	5		114
Quy Hop	8	106.5	10	7	229
Quynh Luu	32	140.5	5	3	165
Thai Hoa	7	43.88	3	3	83.7
Thanh Chuong	32	193.19	18	4	237.399
Cua Lo	3	19.534	5		45.693
Que Phong	8	26.5	5	3	63.5
Hoang Mai	7	29	1		32
Total	308	2,022.972	165	57	2,671.346

Source: Data obtained from Nghe An PPC

As of 2013, there were 308 public markets in Nghe An ranging from 2 markets in Ky Son to 39 in Dien Chau. The total market land area was 202 ha. On average, there was 0.66 ha of market land per one market. Yen Thanh had the largest market area, 28 ha, with 38 markets.

By 2020, 165 new markets are planned to be constructed and further 57 markets will be added by 2025 according to the provincial plan. The total public market land area in Nghe An will be 267 ha in 2025, 65 ha larger than the area in 2013. In the future, Thanh Chuong will have the most markets, 54, followed by Dien Chau with 51 markets.

Accordingly, the number of public markets will increase by 72% (from 308 to 530) though the market land area will expand only 32% (from 202 ha to 267 ha). This implies that small-scale public markets will be densely constructed within the province, rather introducing large public markets. For agricultural producers scattered all over the province, this will improve their marketing opportunities because newly constructed public markets may be operated in the vicinity of their houses.

Together with the population data in 2016, the number of markets per 10,000 residents are calculated by district, town and city. (Note that population will gradually increase toward the year 2025 but the projected 2016 population data are applied here.)

Table 3.7 Number of Markets per 10,000 Residents in 2013 and 2025 by District, Town and City

District	2013	2025	District	2013	2025
Do Luong	0.81	1.98	Quy Hop	0.64	1.99
Anh Son	0.56	2.42	Quynh Luu	1.21	1.51
Cua Lo	0.53	1.41	Que Phong	1.17	2.34
Con Cuong	1.41	1.97	Tan Ky	1.62	1.84
Dien Chau	1.38	1.81	Tuong Duong	0.67	1.89
Hung Nguyen	1.31	1.31	Thai Hoa	1.07	1.99
Ky Son	0.26	2.52	Thanh Chuong	1.42	2.40
Nam Dan	0.76	1.58	Vinh	0.57	0.91
Nghia Dan	1.61	1.99	Yen Thanh	1.39	1.42
Nghi Loc	0.30	1.61	Hoang Mai	0.67	0.76
Quy Chau	0.17	2.08	Nghe An	0.99	1.71

Source: Calculated by the JICA Project Team

On average, there was one public market per 10,000 residents in 2013 in Nghe An. Tan Ky recorded the highest figure, 1.62 markets per 10,000 population while Ky Son had the lowest, 0.26 markets. If the market development progresses in line with the development plan, 1.71 public markets will be available per 10,000 residents in 2025 in Nghe An. Ky Son will be the most beneficial district, improving from 0.26 in 2013 to 2.52 markets per 10,000 residents in 2025. In general, through the market development plan, the districts in mountainous and hilly areas such as Ky Son, Que Phong and Anh Son get more benefits than the districts on flat coastal areas such as Hung Nguyen, Yen Thanh and Dien Chau. Vinh has the lowest figures in 2025, 0.91 markets, but Vinh Market is the largest in Nghe An with 3.2 ha land area.

(3) Overseas Market

According to the latest statistical data obtained from Nghe An Statistics Department, export value of agricultural products from Nghe An recorded 160 million USD in 2017, which was over three times larger than the previous year, 50.7 million USD in 2016. Since 2014 the export value of agricultural products from Nghe An had been decreasing year by year, but it drastically increased in 2017. The detailed data indicated that export of fresh fruit, which was not exported so far, suddenly emerged in 2017 (the whole amount was exported to China) and it reached USD 130 million representing 81% of the total export value in 2017. Export of cassava and its powder, which was the largest export value in 2010, 2014, 2015 and 2016 (46-69% of the provincial agricultural product export value), considerably decreased to a half of the 2016 value, occupying only 10% of the total export value in 2017.

Table 3.8 Export Value (USD) of Agricultural Product by Item in 2010, 2014-2017

ITEM	2010	2014	2015	2016	2017
Fresh fruit	-	-	-	-	130,842,410
Cassava + Cassava powder	34,149,264	52,976,657	47,220,837	31,565,030	15,394,726
Tea	6,155,292	6,461,943	5,797,795	7,576,417	8,530,457
Chili pepper	3,088,131	3,740,745	1,688,352	-	3,716,762
Rice	7,597,181	-	88,000	-	1,415,110
Cinnamon	61,271	331,380	211,848	29,850	359,904
Coffee	642,237	449,894	633,016	158,870	250,576
Star anise	79,760	97,127	57,110	-	17,794
Dry powder of kumquat	-	-	-	-	16,040
Noni	-	-	-	-	9,966
Coffee shell	-	-	-	-	7,520
Dry onion and garlic	301,092	-	-	37,441	6,650
Peanut seed	3,832,178	29,070	-	-	-
Rubber	7,262,530	-	-	-	-
Latex of pine	10,785,263	14,760,519	11,607,202	11,246,068	-
Cashew	-	363,570	288,780	110,300	-

ITEM	2010	2014	2015	2016	2017
Wheat flour	-	1,249,200	414,500	-	-
Total	73,954,199	80,460,105	68,007,440	50,723,976	160,567,915

Source: Calculated by the JICA Project Team based on the statistical data obtained from Nghe An Statistics Department

In terms of export amount in tons, the recent trends are similar to the export value. The export of fresh fruit suddenly increased to 150,000 tons in 2017, which represented 72% of the total export amount, 210,000 tons, in 2017. Export of cassava and its powder was the largest export amount in 2010, 2014, 2015 and 2016 and occupied 64-90% of the provincial agricultural product export amount.

Table 3.9 Export Amount (ton) of Agricultural Product by Item in 2010, 2014-2017

ITEM	2010	2014	2015	2016	2017
Fresh fruit	-	-	-	-	150,184
Cassava + Cassava powder	61,402	125,042	114,384	86,278	50,748
Tea	5,379	4,221	3,738	5,095	5,448
Rice	15,281	-	200	-	2,220
Chili pepper	946	521	240	-	840
Cinnamon	50	165	83	15	168
Coffee	399	211	296	75	110
Coffee shell	-	-	-	-	38
Dry onion and garlic	532	-	-	-	25
Star anise	20	56	23	-	7
Noni	-	-	-	-	4
Dry powder of kumquat	-	-	-	-	3
Peanut seed	3,151	19	-	-	-
Rubber	2,422	-	-	-	-
Latex of pine	5,690	6,679	6,818	7,614	-
Cashew	-	75	42	99	-
Wheat flour	-	2,950	1,020	-	-
Total	95,272	139,939	126,844	99,176	209,795

Source: Calculated by the JICA Project Team based on the statistical data obtained from Nghe An Statistics Department

The import value data by country show that China is the largest importer of Nghe An agricultural product, occupying 61-90% of annual total value in all years. Particularly, it dominates 90% of the total export value in 2017. Hence its dominance is extending. The second largest importer of Nghe An agricultural product had been India until 2016 (12-14%), but Pakistan (2%) replaced it in 2017. Other countries below the top five (occupying 5-13%) include 21-26 countries, so the importers of Nghe An agricultural product recently range 26-31 countries in the world.

Table 3.10 The Top Five Importers of Nghe An Agricultural Product by Country in 2010, 2014-2017

2010		2014		2015		2016		2017	
China	62.6%	China	64.7%	China	70.4%	China	61.3%	China	90.4%
India	13.3%	India	12.4%	India	12.0%	India	14.1%	Pakistan	1.6%
Philippines	5.8%	Pakistan	5.1%	Pakistan	2.5%	Afghanistan	5.6%	Afghanistan	1.3%
Thailand	4.7%	Arab	3.4%	Arab	2.1%	Korea	5.2%	Taiwan	1.0%
Finland	1.9%	Lao	1.6%	Afghanistan	1.7%	Pakistan	4.0%	Iran	0.6%
Others	11.6%	Others	12.9%	Others	11.2%	Others	9.8%	Others	5.2%

Source: Calculated by the JICA Project Team based on the statistical data obtained from Nghe An Statistics Department Current Situation and Issues Regarding the Supply Chain of Agricultural Products

3.2 Outline of Actors Regarding Food Supply Chain

3.2.1 Seedlings and Agricultural Input Suppliers

(1) Seed and Seedling

As a general situation, there are 415 seed and seedling related organizations in Vietnam. This breakdown consists of 213 seedling companies operated by state-owned and private enterprises, 76 seedling centers operated by university laboratories and seeds center operated by province and 96 seedling production organization of forest trees and agricultural cooperatives. Most of this is producing seedlings related to rice and maize. On the other hand, there are few domestic suppliers of vegetables and fruit trees, and most of them circulated in the market are mainly imported products.

There are 25 seed suppliers registered in Sub-department of crop production and plant protection of DARD in Nghe An province. Besides, there is a seedling center which is under the jurisdiction of DARD, and information on other seeds and related organizations has not been obtained. 16 of the 25 seeds suppliers deal with rice varieties, 7 companies maize varieties, 1 company deals with passion fruit varieties and 1 company deals with fruit tree varieties such as mandarin and pomelo. In addition, Nghe An seedling center produces and sells seeds such as rice, maize and peanut.

Seeds and seedlings produced from the private suppliers and seedling center are sold to retail stores and agricultural cooperatives and then distributed to individual farmers. The table below shows the procurement routes of seeds and seedlings of major agricultural products by agricultural cooperatives. According to this, most of cooperatives procure seeds of rice and maize from major seed suppliers in Vietnam. While most of cooperatives procure seeds and seedlings of sugarcane and passion fruit from the processing company who concludes the faring contract with those cooperatives, seeds and seedlings of cassava, peanut and ginger are produced by themselves. Regarding those of vegetables, the cooperatives tend to procure from major vegetable seed wholesalers and retailers in Vietnam, but the seeds in poor quality, which are sold by unauthorized traders and agents in rural area.

Regarding oranges, it is said that orange reproduce seedlings by using cuttings by themselves. Except for those who have been trained technically, they cannot properly manage seedlings, which leads to spread of diseases. For mandarin and pomelo, Phu Quy Fruit Research Center located in Ngia Dan has been breeding and improving varieties, and releasing the seedlings.

Table 3.11 Procurement Route of Seeds and Seedlings of Each Agricultural Product

Item	Procurement Route
Rice	<ul style="list-style-type: none"> ✓ 96% of rice seeds are procured through major seedling companies in Vietnam. ✓ Each cooperative procures rice seeds from 2-3 seedling companies.
Maize	<ul style="list-style-type: none"> ✓ 80% of maize seeds are procured through major seedling companies in Vietnam. ✓ 20% of maize seeds are procured through Nghe An seedling center.
Sugarcane	<ul style="list-style-type: none"> ✓ 50% of sugarcane seedling are procured through contracted companies who process sugarcane. ✓ 25% of sugarcane seedlings are procured through local producers. ✓ 25% of sugarcane seedlings are produced by producers themselves.
Cassava	<ul style="list-style-type: none"> ✓ 68% of cassava seedlings are produced by producers themselves. ✓ 20% of cassava seedlings are procured through local retailing shop. ✓ 12% of cassava seedlings are procured through local producers
Vegetable	<ul style="list-style-type: none"> ✓ 54% of vegetable seeds are procured through wholesale companies of seedlings in Vietnam ✓ 41% of vegetable seeds are procured through local retailing shop.
Peanut	<ul style="list-style-type: none"> ✓ 50% of peanut seeds are produced by producers themselves. ✓ 28% of peanut seeds are procured through major seedling companies in Vietnam. ✓ 22% of peanut seeds are procured through local traders.
Orange	<ul style="list-style-type: none"> ✓ 80% of orange seedling are produced by producers themselves. ✓ 20% of orange seedling are procured through Vinh university.
Tea	<ul style="list-style-type: none"> ✓ 100% of tea seedling are produced by producers themselves.
Passion Fruit	<ul style="list-style-type: none"> ✓ 100% of tea seedling are procured through contracted companies who process passion fruit.
Ginger	<ul style="list-style-type: none"> ✓ 100% of ginger seedling are procured through local producers.

Source: JICA Project Team

(2) Fertilizer

There are 13 fertilizer manufacturers registered in sub-department of planting and plant protection of DARD in Nghe An province. Eleven of them manufacture mixed fertilizers using single fertilizer procured from domestic and abroad, and the remaining two companies are manufacturing compost from cow dung which was procured at Nghe An province. There are 23 wholesalers of fertilizer that are approved to handle such fertilizers throughout the province, and agricultural cooperatives and retailers generally procure fertilizer through wholesalers. Agricultural cooperatives and retailers sell multiple compound fertilizers and single fertilizer of NPK to the local farmers while considering the adaptability of fertilizer products to the local agricultural condition

The table below shows the actual situation regarding the technical guidance to farmers by manufacturers of several chemical fertilizers and agricultural cooperatives / retail stores as their stewardship activity. According to this, most of fertilizer manufacturers responded that they are conducting lecture style training, local guidance, provision of manuals and oral advice, etc. to enlighten proper use of fertilizer. In addition, more than 70% of fertilizer dealers including agricultural cooperatives also replied that they provide similar technical services to their customers. On the other hand, according to interviews from the director of agricultural extension center, fertilizer suppliers sometimes conducts training for farmers to promote sales of their products without considering the validity of their products for the crop cultivation conducted in the sales area.

Table 3.12 Current Situation of Technical Services to Farmers by Fertilizer Manufacturing and Distributors

	Classroom lecture	On-site lecture	Provision of technical manual	Oral advise
Maker of Fertilizer (n=6)	100%	83%	100%	100%
Retailer of Fertilizer (n=14)	71%	71%	86%	71%

Source: JICA Project Team

WB reports that rice farmers in Vietnam countries are applying chemical fertilizers 20 to 30% more than the appropriate amount. It is pointed out that low-quality chemical fertilizer is circulating as a reason for this, and it is reported that 54% of NPK compound fertilizer distributed in the market does not meet quality standards. According to the hearing of fertilizer manufacturers in Nghe An province, in recent years, the number of fertilizer manufacturers has increased and there is oversupply situation of fertilizer suppliers. In addition, since single fertilizer (especially N and K) has a large dependence on imports, its procurement cost fluctuates markedly. For that reason, they produce fertilizer by procuring raw materials of low price and low quality preferentially. As a result, some fertilizer manufacturers sell their products that do not meet the quality standards. This background seems to lead to the deterioration of the quality of the fertilizer that circulates in the market and the inappropriate technical service for the purpose of selling its own products. In order to solve this issue, it is necessary to manage the production and distribution of fertilizer properly as a state as well as Nghe An province. According to DARD's sub-department of crop production planting and plant protection and DOST⁹, four to five serious violation dealers are caught every year and imposed fines (see 3.3.6 for details).

(3) Agricultural Chemicals

The regulation regarding agricultural chemicals in Vietnam is specified by MARD Circular No. 21/2015 / TT - BNNPTNT. This includes not only the registration process of pesticide products but also the process of registration for pesticide manufacturers and pesticide dealers. The table below shows the situation of agricultural chemicals handling stores registered in Sub-department of planting

⁹ DOST was responsible for monitoring and control of chemical fertilizer dealers and shops, but due to Decree 108/2017 / NJJ-CP issued in December 2017, Sub-department of crop production planting and plant protection of DARD' was to be in charge.

and plant protection of DARD which manages the handling of agricultural chemicals in Nghe An province. According to this, there are a total of 576 shops in the entire province, of which 306 are within the validity period of registration and 274 shops are out of registration period. According to the regulation, the registration as pesticide handler should be updated for 5 years, and nearly half of stores are un-updated at present. Although the real number is unknown, there are also suppliers that continue to sell pesticides without registering as a pesticide handling store. On the other hand, in Vietnam, the regulation of agricultural chemicals has been tightened in recent years. In the above Circular, there are new provisions to require qualifications of management managers of agricultural chemicals handlers (academic-related educational background, or history of training clauses related to agricultural chemical management, etc.). Therefore, it seems that there are some pesticide handling individuals and companies who cannot apply renewal of registration due to the tightened qualification.

In addition, the number of agricultural chemicals handling stores is many in the plain area where the rice farmers are many and thus the pesticide demand is high. On the other hand, there are few stores in Quy Chau, Tuong Duong, Que Phong and Ky Son since there are few paddy field rice farmers in these districts, and it is evidence that demand for agricultural chemicals is small in the first place. However, improving the convenience of procurement of materials is one of the challenges in considering future agricultural development in mountainous areas. At present, agricultural chemicals etc. are collectively purchased by the cooperative and are sold to neighboring farmers. In addition, agricultural extension stations in each district also sell some agricultural chemicals, and some cooperatives procure materials from there.

Table 3.13 Current Situation of the Number of Agricultural Chemicals Handling Stores in Nghe An Province

City / Town / District	Total	Certified	Expired
Vinh City	28	21	7
Hung Nguyen district	31	24	7
Nam Dan district	34	21	13
Nghi Loc district	44	28	16
Quynh Luu district	18	11	7
Dien Chau district	70	37	33
Yen Thanh district	93	31	62
Thanh Chuong district	80	39	41
Do Luong district	71	27	42
Nghia Dan district	36	27	9
Tan Ky district	30	14	16
Quy Hop district	22	17	5
Con Cuong district	14	8	6
Quy Chau district	4	1	3
Tuong Duong district	2	0	2
Que Phong district	1	0	1
Ky Son district	1	0	1
Total	579	306	273

Source: DARD

In Vietnam, 3,902 pesticides containing 1,643 active ingredients are distributed as of 2015, and 99% of which are imported from abroad. There are many types of agricultural chemicals handled by agricultural chemical suppliers, and there are abundant choices of pesticide products even for single intended use. The table below shows the number of agricultural chemicals handled by agricultural chemical wholesalers and retailers who sell their products to the local farmers and agricultural cooperatives.

Table 3.14 Items Handled by Pesticide Wholesalers and Retailers of Nghe An Province

	Insecticide	Bactericide (fungicide)	Nematicide	Herbicide
Wholesaler (n=5)	17	17	6	9
Retailer (n=12)	10	9	4	5

Source: JICA Project Team

The table below shows the status of implementation of technical guidance to farmers through stewardship of agricultural chemical handlers. According to this, all wholesalers of pesticides responded that they are conducting lecture style training, manual provision and oral advice, etc. On the other hand, few retailers of agricultural chemicals provided technical services compared to wholesalers. Many retailing stores are being operated by family management, and it is presumed that there is a shortage of providing such technical services. However, verbal explanations on how to handle agricultural chemicals at stores are being implemented at many retailing stores. In addition, there are also some lecturers concerning the use of agricultural chemicals and local guidance, so there are many opportunities for farmers to receive guidance and training on agricultural chemicals. However, as with materials such as fertilizers, it is necessary to pay attention to the validity of the quality and contents of technical services provided by agricultural chemicals handling companies.

Table 3.15 Current Situation of Technical Services to Farmers by Pesticide Distributors

	Classroom lecture	On-site lecture	Provision of technical manual	Oral advice
Wholesaler of Pesticide (n=6)	100%	60%	100%	100%
Retailer of Pesticide (n=14)	41%	41%	41%	83%

Source: JICA Project Team

(4) Feed and Veterinary Drugs

Distribution and usage of feed and veterinary drugs are supervised by Sub-department of Veterinary and Animal Husbandry (VAH) of Nghe An province. The target products are such as feed, animal medicines, vaccines, microorganisms as feed additives and general livestock materials. The shops dealing with these products are inspected by the VAH and accredited as registered business operators.

Currently, in Nghe An province, 186 dealerships of feed company and 730 retail shops are registered as feed stores. Regarding veterinary drugs, 76 dealerships of manufacturers and 307 retail shops are registered as veterinary drug stores. In particular, there are many feed shops in Yen Thanh district, Thanh Chuong district and Dien Chau district, and this is consistent with areas with a large number of poultry farms. Meanwhile, in mountainous areas such as Ky Son district, there are some areas where stores do not exist other than the central area of the district, which should be taken into consideration for future livestock development.

Six (6) feed companies have operated the business at industrial zone of Nghe An province, however, feeds manufactured by other companies are also distributed. According to the report of VAH in 2017, although these 6 companies have sold products according to government standards, there were some feed products that do not meet the standard distributed from outside of Nghe An. Regarding the veterinary medicines as well, medicines that are not approved to be sold or fake medicines that do not have a label or are not consistent with the label were found by VAH. In 2017, such illegal products were forcibly confiscated by Nghe An province, and the sellers were fined total of more than VND 600 million. The distribution of illegal vaccines, hormones and antibiotics is a problem directly linked to the health of consumers. Thus strict monitoring by the government is required.

3.2.2 Agricultural Producer

(1) Outline

Actors responsible for the production of agricultural and livestock products are largely classified into 1) individual farmers, 2) agricultural cooperatives (or farmer groups), and 3) agricultural enterprises. Statistical data on the number of individual farmers are not available, but it is estimated that about 1.35 million people have engaged in agriculture in Nghe An province. Assuming that the number of persons engaging in agricultural activity in each household is 4, there are about 338 thousand households who engage in agriculture (Actually, there are cases where the person engages in agriculture as an employed worker, so real numbers are less than this). Approximately 152,000

households of these individual farmers belong to agricultural cooperatives which are formally registered, while there is many informal farmer's groups. The number of members in each agricultural cooperative is varied depending on the cooperative. While there is a large-scale cooperative composed of 5,000 or more members, there are many cooperatives with 7 or fewer members which does not conform the definition of cooperative defined by the Vietnamese cooperative law (No:23/2012/QH13). Most of agricultural cooperatives engaged in the production activities of grain (rice, maize) and nuts (peanut, sesame). The cooperatives engaged in these production activities tend to have a relatively large number of members. Currently, there are 23 agricultural corporations engaged in agricultural production, 16 of which own their own farms, mainly producing tea, rice, rice seed, rubber, coffee, sugar cane, cassava, passion fruit and orange. Agricultural production of individual farmers is carried out on a small scale, and the agricultural land area of general farm households is about 0.2 - 1 ha. When considering this as an agricultural cooperative (or farmer group), the production scale is estimated to be in the range of roughly 0.5 - 500 ha, depending on the number of members in the cooperative. However, only about 38% of the agricultural cooperatives in Nghe An Province cooperate to ship and sell agricultural and livestock products. Even in this case, the cooperative only conducts negotiations with the buyer side, and the farmers individually carry out collection and shipping operations at present. The production scale of agricultural enterprise, although depending on the scale of company's operations, is generally large, and some enterprises operate agricultural production on agricultural lands of 1,000 ha or more.

The roles played by each actor in the agricultural and livestock supply chain in Nghe An Province are as follows

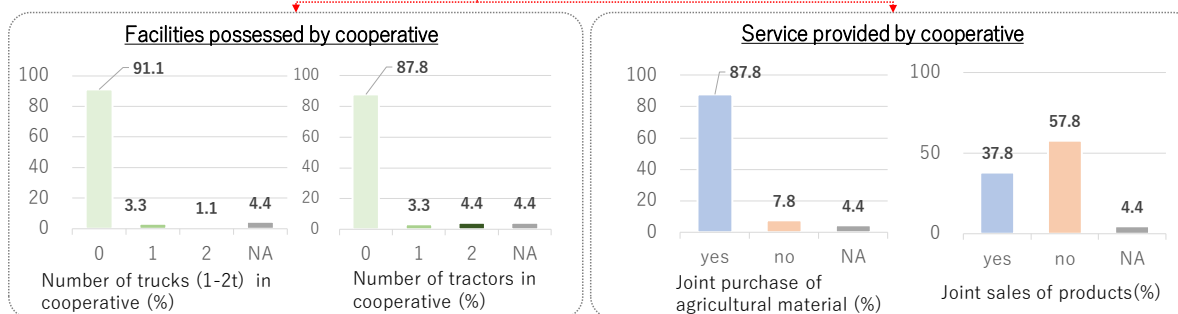
Individual Farmers: Individual farmers mainly engage in production activities on farmland owned by themselves. Conventional agricultural production is common and the farmers who utilize agricultural machinery or green-house cultivation are limited. Individual farmers sometimes sell their products in neighboring wholesale markets, but their amount is small while they mostly sell their products to middlemen.

Agricultural Cooperative: Although the members belonging to the cooperative are responsible for production, there are few cooperatives engages in the purchase, processing, shipping and sale of agricultural products. The role of the cooperative is mainly to procure agricultural material and sell it to its members. When dealings with large-scale demanders, they also make roles as a negotiation window and production adjustment, but the collection and shipment of the products are carried out by each member. Since there are few cooperatives that own transportation trucks and it is difficult to ship products jointly, the sales of the products often go through middleman.

Agricultural Enterprise: It depends on the enterprise's business scale and business model, but most enterprises are responsible for the majority of supply chain of their products. Some enterprises possess their own farms and realize large-scale cultivation through improvement of agricultural machines and irrigation facilities. As for sales, they exported their products through trading companies, and also supplied to the domestic market through sales to middleman and enterprise's own sales channels. In addition, many of these companies procure raw materials necessary for food processing by contract cultivation with local farmers.

Current Situation of Agricultural Producers

Category	Number	Farming Scale	Production	Processing	Transportation	Sales
Individual Farmers	134.8 thousand farmers	0.1-1.0 ha	Conventional Farming			Sales to traders or wholesale market
Agricultural Cooperative	387 cooperatives	0.5 – 500 ha	Conventional Farming			Sales to traders or wholesale market <i>Conducted by few cooperatives</i>
Agricultural Companies	23 companies	3 – 1,000 ha	Advanced Farming	Depends on Business	Depends on Business	Depends on Business



Source: Based on surveys conducted by JICA Project Team

Figure 3.16 Current Situation of Agricultural Producer

(2) Agricultural Cooperative

1) Number of Cooperative Members, Capital and Administration Board

The figure herein-below shows the number of members, the amount of capital and the composition of the officers in the surveyed cooperatives. 21.1% of the cooperatives has less than 20 members. On the other hand, 20% of cooperatives with more than 1000 members exists. The cooperative with more than 1,000 members tends to produce rice, maize, peanut, sugarcane, vegetables, etc. as the main crops. The capital of 12.2% of the cooperative is below 50 million VND, while 13.3% is over 1,000 million VND. Although there is no clear correlation between the number of members of the cooperative and the total capital amount, there is a tendency that the capital of the cooperative, which mainly engages in rice and maize cultivation as a major product, is relatively high. As a feature of the composition of the executive officers, 30% of cooperatives allocates personnel engaged in marketing while the rest do not assign.

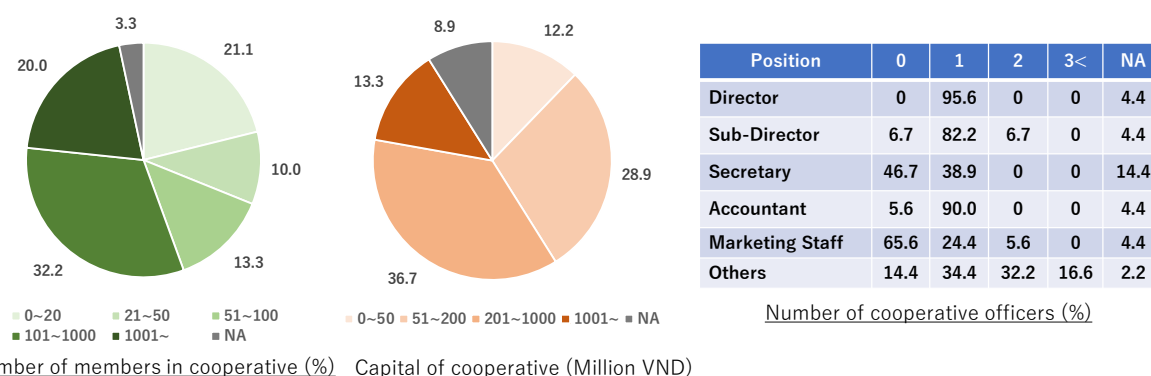


Figure 3.17 Number of Members, Capital and the Composition of Administration Board in Cooperative

2) Equipment and Facilities

The figure below shows the survey results on equipment and facilities owned by surveyed cooperatives. As the agricultural machinery, JICA Project team confirmed the holding situation of tractor, transplanter / seed spreader and harvester, and only 7.7%, 6.6%, 2.2% of total cooperatives owned each respectively. Besides, the cooperatives holding transportation trucks used for transporting agricultural materials and harvested goods accounts only for 4.4% for 1-2 t trucks and 2.2% for 2-4 t trucks or above, respectively. On the other hand, the storage facility is owned by 72.3% of the cooperative, while there are no cooperatives holding refrigerated storage.

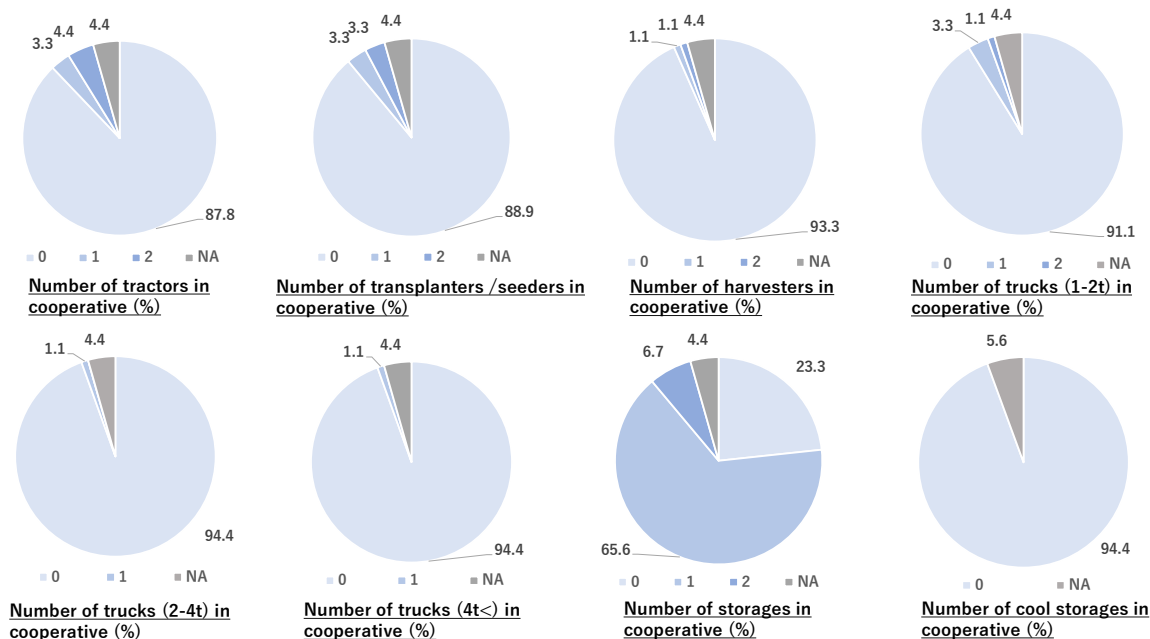


Figure 3.18 Holding Situation of Equipment and Facilities of Cooperative

3) Service Provided by Cooperative

The figure below shows the survey results on the services provided by the surveyed cooperatives to their members. While 87.8% of the cooperatives purchase and sell agricultural materials jointly, only 37.8% of the cooperatives conduct joint sales of agricultural and livestock products. As for joint sales, the cooperative representative generally takes over negotiations with business partners, and each cooperative member ship their products individually to the partner based on the agreed condition. There are few cases for the cooperative to collect the products from the members and ship to their partner jointly. This is due to the fact that the cooperative itself does not possess transport vehicles and storage facilities for collecting and shipping agricultural products, and they have to depend on the business partner regarding these functions. Regarding agricultural machine rental service, 12.2% of the cooperatives carry out and these are mainly rental services of rice threshing machine, tractor, and transplanter. The cooperative which conducts food processing is as low as 6.7%, which is mainly threshing of rice, drying of tea and packaging of goods etc. As for marketing, 58.9% of the cooperatives conducts marketing activities. However, the contents of the marketing activities are the support of transaction with known middleman and exhibiting the products in trade exhibition, and sales activities to supermarkets and retail shops are hardly implemented. For financial services, 12.2% of the cooperatives responded that they are providing the financial service to the members, but it seems that most of them do not conduct any substantive activities regarding financial services. The cooperative providing financial services is funded by member investment funds, and one cooperative operates it under the condition of a short-term loan with a limit of 20 million VND (interest is equivalent to agricultural rural development bank).

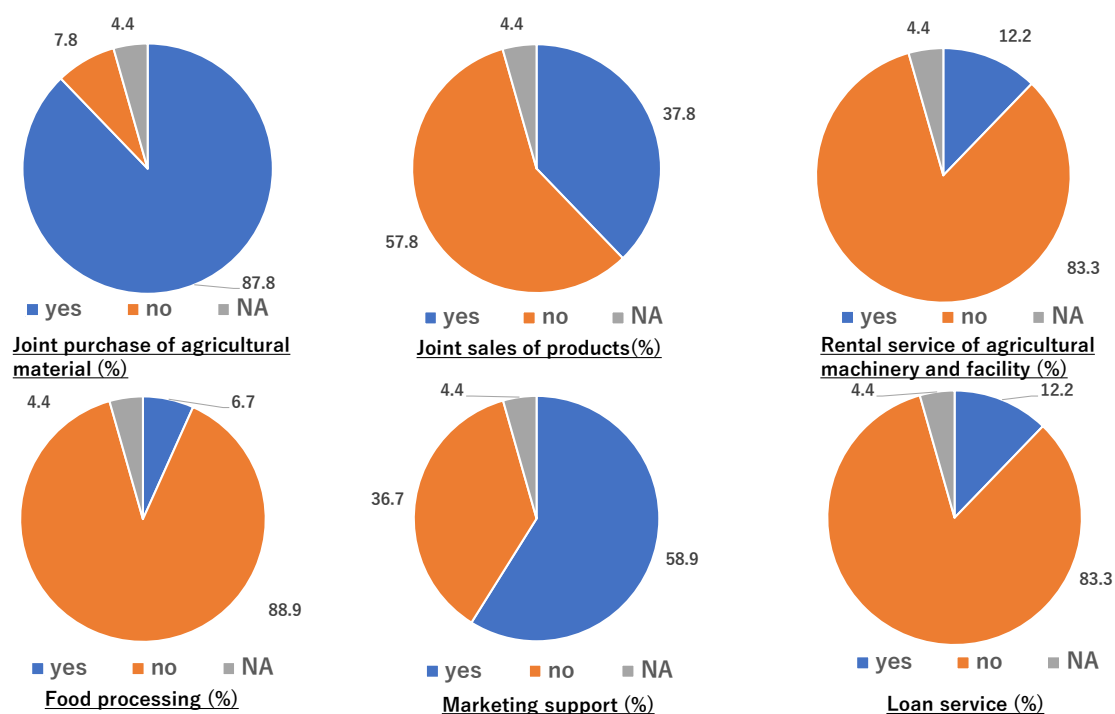


Figure 3.19 Current Situation of Cooperative Service

4) Management Situation of Cooperative

The figure below shows the survey results on the management situation of cooperatives. As for the state of implementation of the general assembly, half of the cooperatives conducts it once a year. Particularly the cooperative conducting the cattle / buffalo pig / pig breeding and the rice cultivation tends to correspond to this. On the other hand, cooperative engaging in vegetable production tends to have a relatively large number of general assemblies. The expenses required for member registration differ depending on the cooperative, but in general 22.2% of the cooperatives do not seek the registration fee. In addition, there are no cooperatives which collect regular fees other than the registration fee. Funds for cooperative management are considered to be covered by material sales and other service revenues to the members. In other aspects, more than 90% of cooperatives responded that they manage accounts, formulate action plans and register business entities, etc. However, only 12.2% has registered in tax office as the organization who can issue the red invoice. This indicates that most of cooperatives have not conducted the business transaction with the buyer who requires the issuance of red invoice. In recent years, due to the increase of opportunities to trade with supermarket and processing company which requires the issuance of red invoice, the cooperatives which start the tax treatment are increasing.

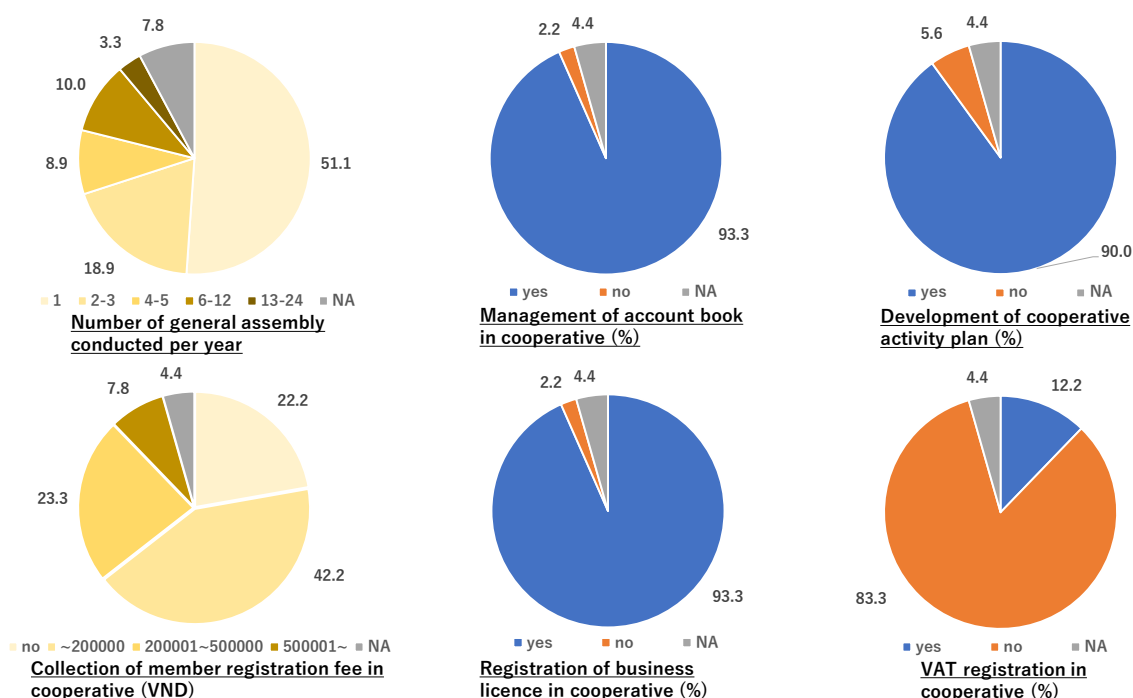


Figure 3.20 Management Situation of Cooperative

5) Issues

The figure below shows the survey results on the various issues regarding the cooperative management. Many cooperatives pointed out insufficient market information including business partner information etc. and lack of funds necessary for investment is the critical issue for the development. On the other hand, there are few cooperatives that recognize aspects such as procurement of agricultural materials and opportunities to acquire agricultural skills as the issues for the improvement of cooperative management.

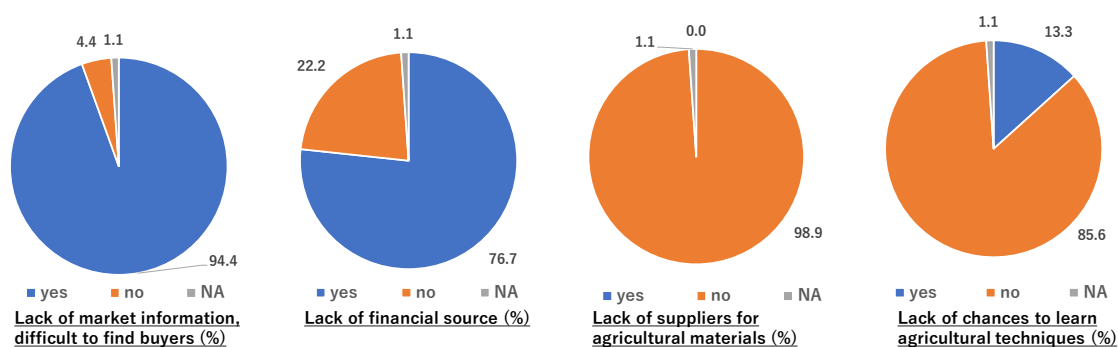


Figure 3.21 Issues Regarding Cooperative Management

6) Contract Farming

The figure below shows the experience regarding the contract farming of cooperative. According to this, 41 % of the cooperatives have experience of contract farming. Hearing from the cooperative having experience of contract farming, the stable transaction in terms of transaction price and partner is regarded as the merit of contract farming, while the low profit and dispute with buyers due to the breaking contract are regarded as the demerit. The cooperatives which do not have experience of contract farming pointed out 1) difficulty to find good partner, 2) production condition is not well prepared, 3) low profit, 4) troublesome as the reason why they don't conduct contract farming, while most of the cooperatives are willing to conduct it if there is a reliable

partner for them.

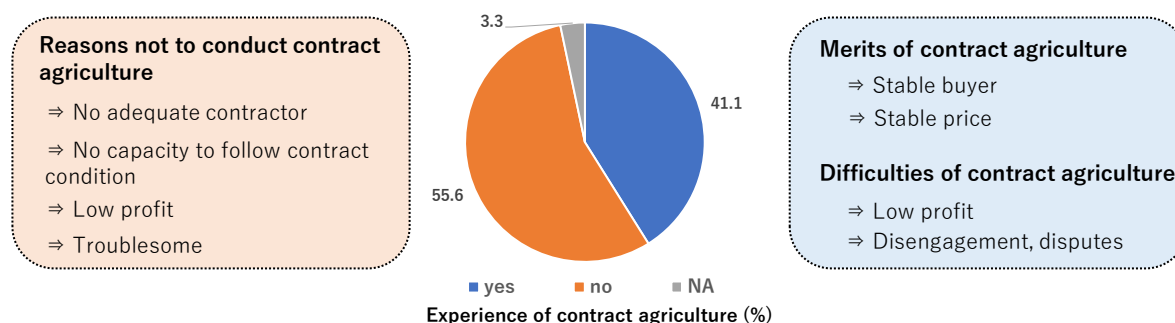


Figure 3.22 Situation of Contract Farming by Cooperative

(3) Agricultural Enterprise

There are 23 agri-business enterprises in Nghe An province and those of 16 enterprises are conducting agricultural production based on their own farmland. The products produced by those enterprises are tea, rice, rubber, coffee, sugarcane, cassava, passion fruit, orange and various types of commercial seed. Most of those enterprises have also farming contract with the local farmers for the supply of raw products to the enterprises. Hence, those enterprises are conducting the processing of the products procured through their own farmland and others derived from farming contract. Several crops such as tea, rice, cassava, sugarcane, milk and passion fruits are exported by the enterprises while other crops are distributed to domestic market by themselves or by delegated distributors.

Table 3.16 Role of Agri-business Enterprise in Supply Chain of Each Agricultural Product

Product	No. of enterprise	No. of enterprise possessing own farmland	Production	Distribution	Processing	Retailing	Export
Tea	4	4	○	○	○		○
Rice	2	2	○	○	○	○	○
Rubber	5	3	○		○	○	
Coffee	1	1	○		○		
Sugarcane	2	1	○	○	○	○	○
Cassava	4	1	○		○		○
Passion fruit	1	1	○	○	○		○
Commercial Seed	1	1	○		○	○	
Microbial Fertilizer	2	1	○	○	○	○	
Milk	1	1	○		○	○	○

Source: JICA Project Team

3.2.3 Distributer

(1) Actors Regarding Food Distribution

As the results of the survey conducted so far, the role of middleman in Vietnam's agricultural and livestock distribution is significant. The middleman is classified as 1) Individual Trader, 2) Traders group, and 3) Trading company, depending on the scale of the business. Many individual traders utilize motorcycles as means of transporting agricultural and livestock products, while the trading companies own transportation trucks and primary storage of agricultural and livestock products. In case of the traders group, they collect the products jointly and ship to the partners who buy large quantity of the products. Thus, normally there are several traders who own the transportation vehicle in the traders group. Most of the trading companies sell their products to their partner after they conduct the primary processing (grading, cleaning, packaging, etc.), while the individual trader and traders group do not conduct these activities and specialize in the transportation function (except for

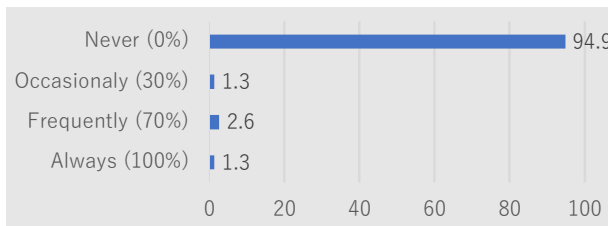
the traders who conduct primary processing of rice, peanut and tea).

After buying agricultural and livestock products from producers, trader sells products through their own sales network. According to the survey of this project, 52% of the agricultural and livestock products are sold in the wholesale market via middleman while 21% in the retail market (so-called Wet Market), 14% in the processing market and 13% in the other destination (canteen in industrial park, restaurant, etc.)

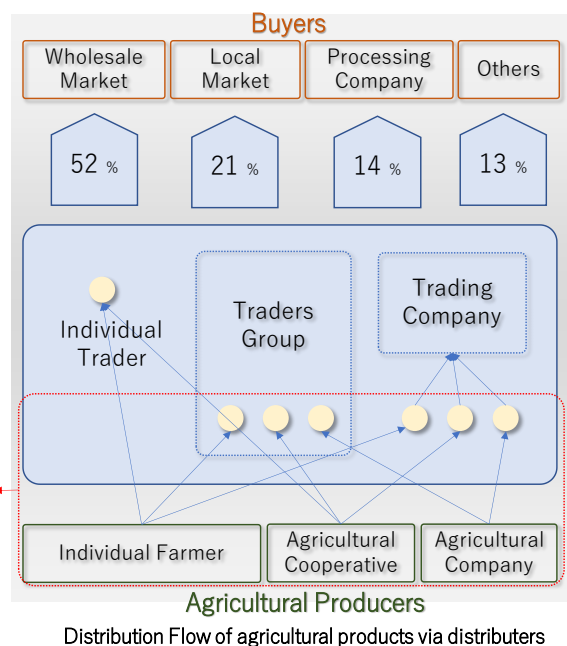
As for the contract farming between produces and traders, 94.9 % of traders do not conclude the contract when they procure the products from the producers although some traders dealing with the raw materials such as cassava, passion fruit and sugarcane for the processing tends to prepare the farming contract which describes the contract price. Most of traders pointed out 1) the transaction scale is too small, 2) they already have network with reliable producers and 3) the production is unstable as the reason why they do not conclude the farming contract with farmers.

Current Situation of Local Traders

Category	Number of workers	Transportation Vehicle	Processing
Individual Trader	1	Motor Bike Truck	Rarely conducted (Rice, Peanut, Tea etc.)
Traders Group	2-20	Motor Bike Truck	Rarely conducted (Rice, Peanut, Tea etc.)
Trading Company	ND	Truck	Fairly Conducted



Rate of conclusion on the farming contract between farmers and distributors (n= 78 distributors)



Distribution Flow of agricultural products via distributors

Figure 3.23 Current Situation of Actors Regarding Food Distribution

(2) Cold Chain

Equipment related to cold chain (refrigerated truck, cold / freezer storage, etc.) is limited in Nghe An province. As far as JICA Project team investigated in the project, there are about 2 to 3 enterprises holding refrigerated vehicles, all of which are used for transporting marine products and there is no case to be used for agricultural and livestock products. Regarding cold storage, two seafood processing enterprises in the Industrial Park have cold storage, and engaged in rental service of the facilities. However, except that local passion fruit processing enterprises utilize cold storage in puree storage, they are all being used for frozen storage of marine products.

3.2.4 Food Processor

By the food safety law (Decree No. 55/2010 / QH 12) issued in June 2010, all food processors need to comply with the food sanitation standards set by the government. Among them, the total number of processors who acquired safety certification from DARD in Nghe An province is 343 companies as of 2018, but in reality, there are not a few suppliers who have not obtained safety certification, and the actual number of the total is more than this figure. As a breakdown, there are 154 meat processing companies, 94 marine product processing companies, 10 vegetable / fruit processing companies, 56

company craft crops (tea, etc.) processing companies, 29 cereal (rice, etc.) processing companies.

Most of these processors are operated by a family-owned processing facility. Raw materials for processing are generally procured mainly through middleman, and there are few trading companies operating on the scale to conduct contract farming. On the other hand, only a few large enterprises conduct food processing based on the raw materials procurement by contract farming with local farmers and cooperatives and the raw material production at their own farms.

Over the whole country in Vietnam, more than 70% of the investment in the food processing industry is concentrated in the southern part of Vietnam, and investment in the northern and central part of Vietnam is limited. Reasons why the food processing industry does not grow as much as in the southern part of Vietnam include 1) farmland are subdivided and it is difficult to supply stable quantities of the products at present, 2) the quality of fruit and horticultural crops is low, 3) A big market compared with the southern part cannot be expected, etc. These factors explain the reason why there are many small scale processors and less large scale processors in Nghe An province.

3.2.5 Actors for Selling of Agricultural Products

(1) Supermarket

There are four main supermarkets in Vinh city namely Metro, BigC, Maximark, and Intimex. Maximark is highly interested in high quality and safety-certified agricultural products such as organic, Viet GAP, Global GAP, etc. They can handle the products from small quantity. On the other hand, BigC requires huge amount of products to supply the same products for all of their groups. In case of Metro and BigC, the purchasing department in Ho Chi Minh City makes decision of its purchasing. Therefore, it is necessary to discuss with the purchasing department in Ho Chi Minh City to sell the products. Intimex handles raw/ fresh food, rice and processed products. They require reasonable price, good-quality, safety certificate.

Japanese supermarket also handles products from small quantity. In case of Japanese supermarket, safety certificates such as Viet GAP, Global GAP, etc. cannot be an advantage for sales promotion, because they implement independently pesticide residue inspection, pesticide residue was detected many times from safety-certificated products.

(2) Local Market

There are 405 local markets in Nghe An as of 2013. According to the plan of Nghe An province, the number of the local market will be increased to 530 by 2025. Local markets handle not only products from Nghe An but also many products from other provinces and China. Most farmers do not like to sell their products to local market because their products are handled with Chinese products which Vietnamese do not have confidence. However, they still sell to the local market because they do not have connection with other markets.

(3) Retailer

There are several small-medium scale retailers dealing with agricultural products in Nghe An. The information of retailers is as follows.

- Tam Nong company has function of whole value chain from production to selling. They produce vegetables in their own field and also collect agricultural and livestock products from farmers in Nam Dan district and Dien Chau district. Regarding food processing, they have a factory to produce rice noodle. They provide food material to 8 kindergartens, 2 primary schools, 3 restaurants and 2 hotels. In addition, they have stores in Vinh city and Dien Chau district.
- V-Green has 3 stores in Vinh city. The company is interested in safe vegetable, especially Viet GAP certified product. The store has good condition for sales because of near from residential area in Vinh city.
- Mitraco Food company has 12 stores in Vietnam. The company sells vegetables from its own farm in Ha Tinh province and FVF in Vinh city.

- Bibi Green company has 6 stores in Vinh city. The company procures vegetables from FVF, Mitraco Food and Dalat, and Nghe An especially from Nghi Lien commune and sells 100 - 120 kg of the vegetables per day.
- TH True milk has 5 stores in Vinh city selling products of FVF which also belong to TH Group
- Tam Nguyen company has 4 stores in Vinh city but also provide products to some industrial area and sell as wholesaler to Da Nang city
- Goc Cho Xanh” has 6 stores in Vinh city
- Auriga company has 4 stores, 1 in Hoang Mai, 1 in Quynh Luu, 2 in Vinh city.
- Xanh Mart belongs to Nghe An Cooperative Alliance.
- Tomato Mart, Family Health, Vietnamese Health, Thuy Khanh, Phan Manh Hung, Fresh Food, Thien Phuc each has one store provides products from many provinces in Nghe An.
- Nghe An specialty souvenir shop sells processed agricultural products from Nghe An
- Phu Chau Cooperative produces products in Ha Tinh, Dien Chau, Hoang Mai and has one store in Vinh city.
- Youth Union Cooperative has 13 livestock farms in Nghe An selling their products and vegetable from other suppliers in Nghe An.

All the stores now require to purchase products which have at least DARD certificate, most of the stores are purchasing products from Mitraco, FVF and Da Lat.

(4) Hotel and Restaurant

Hotels and restaurants are considered as large-scale food service provider possibly using agricultural products from Nghe An. There are 54 hotels officially got star from government and 51 restaurants in Nghe An listed for tourist in the website of DOT. The largest hotel in Nghe An is Muong Thanh Hotel chain, which has 53 hotels in Vietnam and 6 hotels in Nghe An province. Each hotel individually purchases food materials from supplier which is near the hotel. Muong Thanh Qua Lo purchases 300 kg of meat and 150 kg of vegetables per day from 15 suppliers including supermarkets such as BigC and Metro in summer season. Purchase center of the group in Hanoi is responsible for supplier selection and quality control. All of the hotels and restaurants are highly interested in safety agricultural products.

Table 3.17 Number of Hotels in Nghe An listed by DOT Nghe An

District	5 star	4 star	3 star	2 star	1 star
Vinh city	1	2	8	4	11
Cua Lo town	1	3	2	8	3
Hoang Mai town	0	1	0	0	1
Quy hop district	0	0	0	1	0
Tan Ky district	0	0	0	0	1
Do Luong district	0	0	0	0	2
Yen Thanh district	0	0	0	1	0
Con Cuong district	0	1	0	0	0
Nam Dan district	0	0	0	0	1
Dien Chau district	1	1	0	0	0
Sub-total	3	8	10	14	19
Total	54				

Source: DOT Nghe An

Table 3.18 Number of Big and Medium Restaurant in Nghe An Listed by DOT Nghe An

District	Number of restaurants
Vinh city	38
Cua Lo town	10
Nam Dan district	3
Total	51

Source: DOT Nghe An

3.3 Current Situation and Issues Regarding the Distribution of Agricultural Products

There are various types of agricultural market, differed by commodity. Agricultural products are commonly traded beyond border of the provinces. High-quality vegetables and fruits are generally imported from other provinces. Lam Dong province is a predominant production site of vegetables in Vietnam. While, some Nghe An products, for example, tea, passion fruit juice, and groundnut, are mainly exported to various countries.

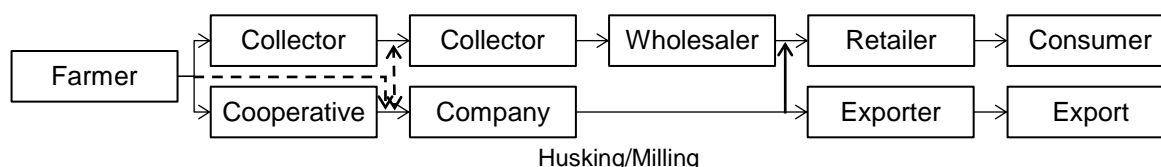
The food safety is a current hot issue of common consumers especially in urban areas. Demand for safe foods is growing steadily, according to interview with retailers, hotels and restaurants in Nghe An.

3.3.1 Market Channel of Food Crop and Industrial Crop

Market channels of food and industrial crops vary by crop. Those of the major food and industrial crops are summarized below.

(1) Rice

Likewise other many provinces in Vietnam, most farmers primarily produce paddy rice for home consumption and surplus produce is sold. Main marketing channels have been already surveyed by the Detailed Planning Survey on the Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An (October 2015, JICA) and some marketing channels observed in this Study are added (dotted lines) as shown below.



Source: Detailed Planning Survey Report on the Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An, October 2015, JICA Vietnam Office

Figure 3.24 Main Marketing Channels of Rice

In Nghe An, rice is cultivated three times per year, but principal harvest is brought by spring and summer season cropping. Lowland paddy represents 94% of the total rice cropping area and its average yield level was 5.4 t/ha in 2016 (ranging from 3.5 to 6.3 t/ha), which was a bit lower than the national average yield, 5.6 t/ha. Upland rice, which represents about 6% of the total rice cropping area, is mainly cultivated in the mountainous areas bordering with Lao and its yield level is fairly low, 1.0-2.0 t/ha. According to DARD, the rice produced in Nghe An is of moderate quality with a reasonable amount. Provincial annual rice production ranges 930,000 - 1,010,000 ton (equivalent to 623,000 - 667,000 ton of milled rice) between 2011 and 2016. This volume is enough to supply for provincial consumption including urban population, and rice exportation is not so actively practiced.

Some farmers have contracts with private companies such as AGRIMEX (Vinh city) and Vinh Hoa (Yen Thanh). While AGRIMEX mainly deals with normal rice varieties such as NA2 and NA9, Vinh Hoa deals with aromatic and red/purple-colored rice varieties developed by the company itself. According to the interview survey of 28 rice producers conducted by the JICA Project Team in 2018,

37% of the harvested rice are sold to traders followed by self-consumption (35%) and sales to enterprises (27%). It also reveals that 10 rice producers have contracts with enterprises while other 18 sell their harvested rice to unspecified collectors/traders. Among the six rice collectors/traders in Nghe An interviewed in 2018, five of them sold more than half of the procured rice to wholesalers located in Nghe An and other provinces.

Agricultural inputs such as chemical fertilizers and insecticides are commonly used by farmers in Nghe An because these inputs are being sold at many shops all over the province. Some agricultural cooperatives implement collective purchase of fertilizer and subsequent distribution to their member farmers. Under the contract farming with the private companies, these inputs are normally provided to the contracted farmers by the companies and its purchased costs will be deducted from the sales amount of rice.

For home consumption, harvested rice is commonly milled at nearby rice mills. Some private companies have their own large milling machines to sell white rice, which is then sold to wholesalers/retailers/exporters before reaching to consumers and/or overseas buyers. Some portions of rice are marketed to a food processing industry to produce various kinds of rice products such as rice noodle, rice paper, rice cracker, and so on.

Summary of the current situations and issues on rice supply chain is shown in the table below. Farmgate price of rice varies very much, VND 6,000-11,000 per kg, depending upon variety, contract farming or not, use type (for staple food or processing), and so on. For rice for processing, not only unit price but also quality control is important, so farmers need to manage both aspects

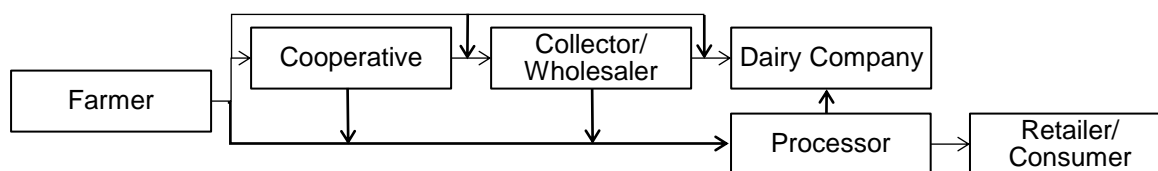
Table 3.19 Current Situations and Issues on Rice Supply Chain

	Major Actor	Current Situation and Issues
Agricultural Input	Cooperative, Local trader	<ul style="list-style-type: none"> ✓ Both fertilizer and pesticide are commonly used and they are available at retail shops and cooperatives. ✓ Seedlings are normally prepared by farmers themselves.
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ In Nghe An, there is about 186,000 ha of rice fields. (Lowland paddy represents 94%, 174,000ha, and the remaining 6%, 11,900ha, is for upland rice.) ✓ Farmland size per farmer varies from small subsistence farmers to large-scale enterprises. The unit yield levels range between 3.5-6.3 t/ha for lowland paddy and between 1.0-2.0 t/ha for upland rice.
Distribution	Cooperative, Trader	<ul style="list-style-type: none"> ✓ Except for subsistence rice, collection and distribution of rice is managed by collectors and enterprises of contract farming.
Processing	Local Processing Factory	<ul style="list-style-type: none"> ✓ Rice is processed into noodle, rice paper, alcohol, sweets, cracker, etc. ✓ There are high demands for cheap and uniformed quality rice for processing so management of both cost and quality is crucial.
Sales	Wet market, Local retailer, Local trader	<ul style="list-style-type: none"> ✓ Rice for food is commonly available at wholesale and retail markets within and outside Nghe An. ✓ Rice for processing is mainly marketed to major processing factories through collectors and wholesalers.

Source: JICA Project Team

(2) Maize

Many farmers have direct contracts with several dairy farms to produce fodder maize. Agricultural inputs including seeds and fertilizers are being provided to the farmers by the dairy companies. Harvested maize is directly transported and sold to these dairy farms by dump trucks. Production costs are deducted from the payment to the corresponding farmers.



Source: JICA Project Team

Figure 3.25 Main Marketing Channels of Maize

There are also some maize farmers for self-consumption as well as for sale of harvested maize. For the commercial farmers, traders/collectors are important because they link the maize producers and consumers. According to the interview survey of eight maize collectors/traders in Nghe An conducted in 2018, six of them sold the entire procured maize to processing companies located in Nghe An and other provinces. Farmgate price of maize changes in accordance with district, variety, season, and so on, but it normally ranges VND 5,500-7,000 per kg.

One of the major dairy companies in Vietnam, TH Milk, plans to expand its milk production in Nghe An, so the demand for fodder maize will remain high in the future. The marketing situation of maize is expected to be a seller's market for the time being. The current situations and issues on maize supply chain is summarized in the table below. Farmland consolidation is very important for large-scale fodder maize cultivation, but it is difficult to get agreements from the farmers concerned to consolidate their farmland.

Table 3.20 Current Situations and Issues on Maize Supply Chain

	Major Actor	Current Situation and Issues
Agricultural Input	Dairy company, Cooperative, Local trader	<ul style="list-style-type: none"> ✓ Contract farming of fodder maize cultivation for dairy companies is popularly practiced and necessary agricultural inputs (seeds and fertilizers) are normally being supplied by the dairy companies. ✓ Some farmers cultivate maize for food and fodder without contract farming and they procure agricultural inputs from retail shops and cooperatives.
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ In Nghe An, there is about 58,700 ha of maize fields. The unit yield levels range between 2.1-5.7 t/ha. ✓ Farmland size per farmer varies from small subsistence farmers to large-scale fodder cultivation enterprises. For large-scale fodder maize cultivation, farmland consolidation is very important to introduce mechanized works, but it is one of difficult issues.
Distribution	Dairy company, Trader	<ul style="list-style-type: none"> ✓ For fodder maize under contract farming, dairy companies manage collection and distribution of the fodder maize on the field. ✓ For maize without contract farming, collectors and traders are in charge of collection and distribution.
Processing	Dairy company, Local Processing Factory	<ul style="list-style-type: none"> ✓ Dairy companies do processing of fodder maize under contract farming. ✓ For maize without contract farming, processing factories do processing after purchasing maize from collectors and traders.
Sales	Wet market, Local retailer	<ul style="list-style-type: none"> ✓ Maize for food is commonly sold at wholesale and retail markets like other crops.

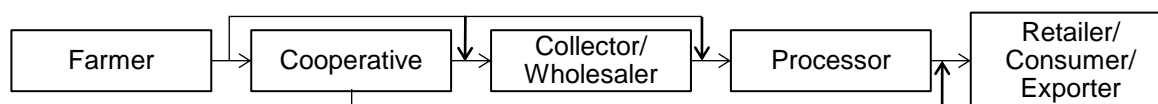
Source: JICA Project Team

(3) Tea

Many tea farmers in Nghe An have contracts with tea processing companies such as Nghe An Tea Development Investment Company and others. According to Nghe An Tea Development Investment Company, it occupies 60 % of provincial tea production area while the remaining areas are under the control of farmers and medium- and/or small-sized tea companies. Most contracts of Nghe An Tea Development Investment Company are made with tenant farmers, which means that the company owns the tea cropping land under the contracts. Technical guidance which includes crop management,

insect and disease control, etc. are commonly provided to the farmers. Fertilizers are also supplied to the farmers and these agricultural materials are deducted from the sales amount of tea leaves and buds.

Many farmers normally sell their tea buds and leaves to their contracted companies in accordance with the contract conditions. According to DARD, tea buds purchase had been relatively stable for many years. However, the demand for tea is recently increasing and many tea processors in Nghe An are struggling to secure a necessary amount of tea leaves and buds. Therefore many farmers who have contracts with private tea companies often sell their tea leaves and buds to other traders who offer higher purchase prices outside the contracts.



Source: JICA Project Team

Figure 3.26 Main Marketing Channels of Tea

According to the interview survey of six tea collectors/traders in Nghe An done in 2018, three of them sold 70-100% of their products to processing companies located in Nghe An and other provinces and two of them sold 70-100% of the products to wholesalers in Nghe An and other provinces. Farmgate price of tea changes with district, season, and so on, but it ranges VND 3,000-4,500 per kg. Summary of the current situations and issues on tea supply chain is shown in the table below. Because of material shortage due to high demand for tea products, contract breach (sales of tea leaves and buds to traders who offer higher purchase prices outside the contracts) is a serious issue.

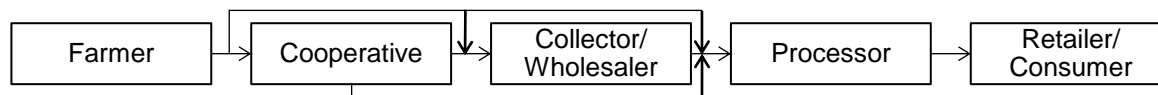
Table 3.21 Current Situations and Issues on Tea Supply Chain

	Major Actor	Current Situation and Issues
Agricultural Input	Tea company, Cooperative, Local trader	<ul style="list-style-type: none"> ✓ Contract farming of tea cultivation for tea companies such as Nghe An Tea Development Investment Company is widely extended and necessary agricultural inputs (in addition to seedlings and fertilizers, financial loan is available too) are being supplied by the tea companies. ✓ Some farmers who plant tea without contract farming procure agricultural inputs from retail shops and cooperatives.
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ In Nghe An, there is about 10,700 ha of tea fields for tea leaves and buds. The unit yield levels range between 3.9-13.8 t/ha for tea leaves and between 3.9-27.0 t/ha for tea buds. ✓ Age of tea tree often matters but large difference in yield levels among districts is one of issues for tea production.
Distribution	Tea company, Trader, Individual farmer	<ul style="list-style-type: none"> ✓ Tea companies manage collection and distribution of the tea buds and leaves under contract farming. For tea without contract farming, collectors and traders collect and distribute tea leaves and buds. ✓ Because of high demand in tea processing industry, some farmers breach contract to sell their products to traders who offer higher purchase prices outside the contracts. Hence, tea companies have difficulties to procure enough amount of tea leaves and buds.
Processing	Tea company, Cooperative	<ul style="list-style-type: none"> ✓ Tea companies are usually in charge of producing black and green tea. ✓ Though the number is a few, some cooperatives consistently operate from cultivation of tea to manufacturing of tea products.
Sales	Tea company, Local retailer	<ul style="list-style-type: none"> ✓ Tea companies normally sell their tea products within and outside Nghe An. ✓ Major exporting destinations for tea products include China, Pakistan, Israel, Poland, Taiwan and so on.

Source: JICA Project Team

(4) Sugarcane

There are three sugar processing factories in Nghe An: Nghe An Sugar Company (Quy Hop), Song Con Sugar Factory (Tan Ky) and Song Lam Sugar Factory (Anh Son). In 2018, six sugarcane producers in Nghe An were interviewed and the result showed that 83% of the harvested sugarcane were sold to these enterprises followed by sales to traders (17%). Thus many sugarcane farmers have contracts with one of these factories. The harvested sugarcane is purchased in accordance with the price set by its sugar content (CCS, commercial cane sugar). Sugar produced in Nghe An is mainly consumed in the domestic market.



Source: JICA Project Team

Figure 3.27 Main Marketing Channels of Sugarcane

In the case of Nghe An Sugar Company, they provided various support measures to the farmers in the 2015/16 season, which covered not only fertilizer provision but also loans for irrigation, spraying machine for pesticide and herbicide, small tractor, etc. Furthermore, if farmers convert their forest land or rice field into sugarcane field, Nghe An Sugar Company provided non-return support to the farmers ranging VND 1-2 million per hectare. Currently, sugarcane cultivation is competing with fodder crop cultivation and its cropping area is decreasing. This may result in the support offered by sugar companies.

In addition, there are many medium-scale to small-scale molasses processing facilities in some districts where sugarcane is widely cultivated. Some of them are operated by cooperatives. Most molasses produced are sold to collectors/traders not only in Nghe An but also from other provinces. Farmgate price of sugarcane ranges VND 800-900 per kg. The current situations and issues on sugarcane supply chain is summarized in the table below.

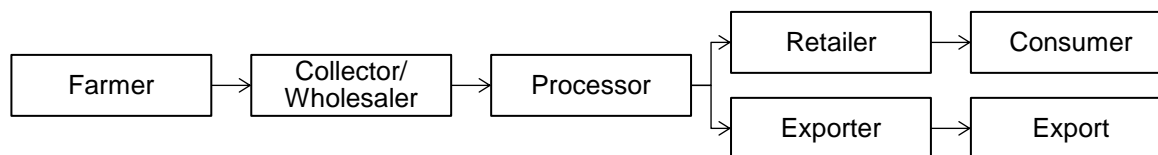
Table 3.22 Current Situations and Issues on Sugarcane Supply Chain

	Major Actor	Current Situation and Issues
Agricultural Input	Sugar company, Cooperative, Local trader	<ul style="list-style-type: none"> ✓ Contract farming of sugarcane cultivation is popularly extended and necessary assistance including agricultural inputs (seedlings and fertilizers) is normally being supplied by the sugar companies. ✓ Some farmers cultivate sugarcane without contract farming and they procure agricultural inputs from retail shops and cooperatives.
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ In Nghe An, there is about 24,000 ha of fields for sugarcane. The unit yield level ranges between 28-91 t/ha. ✓ Farmland size per farmer varies from small-scale farmers to large-scale contract farming. ✓ Contract farming of sugarcane faces competition with fodder cultivation. ✓ It is an issue to produce high sugar content sugarcane.
Distribution	Sugar company, Molasses factory, Trader	<ul style="list-style-type: none"> ✓ Buyers such as sugar and molasses factories mostly manage the collection and distribution of sugarcane. ✓ In case farmers transport their sugarcane to factories, the purchase price slightly increases.
Processing & Sales	Sugar company, Molasses factory	<ul style="list-style-type: none"> ✓ Sugar and molasses are produced at factories located in Nghe An and the products are sold to customers within and outside Nghe An.

Source: JICA Project Team

(5) Cassava

Cassava is commonly cultivated in the eight mountainous and hilly districts. Many cassava fields are located on large and sloping land without irrigation facilities. In 2016, the cropping area in Nghe An was 19,300 ha, which was the largest since 2011 with 21,000 ha. The cassava cropping area once decreased to 16,500 ha in 2014 (21% decrease as compared to the 2011 cropping area) and there was no significant trend in cropping area.



Source: JICA Project Team

Figure 3.28 Main Marketing Channels of Cassava

Summary of the current situations and issues on cassava supply chain is shown in the table below. Cassava is normally processed into chips and/or tapioca at several factories in Nghe An and then exported to China, Malaysia and so on. The demand quantity fluctuates very much mainly due to the demand of China (China represents 89-99% of cassava product export from Nghe An between 2014 and 2017.). Therefore it is one of the serious issues that material price also changes drastically according to the Chinese demand quantity. Farmgate price of cassava ranges VND 1,200-1,500 per kg, depending upon district, harvested season, and so on. In addition, because harvesting months are limited due to cropping patterns, operation period of processing factories lasted for 5-6 months (From October to March). Hence low operating rate of the factories is another problem.

Table 3.23 Current Situations and Issues on Cassava Supply Chain

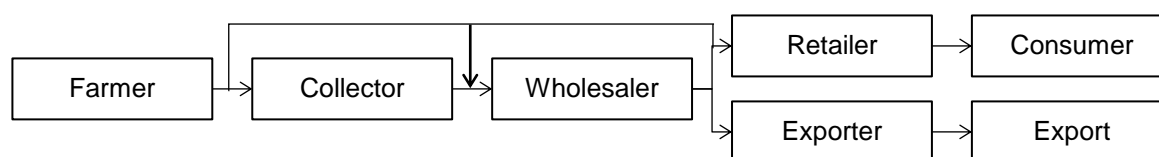
	Major Actor	Current Situation and Issues
Agricultural Input	Cooperative, Local trader	✓ Some farmers cultivate cassava without fertilizer application, but others procure agricultural inputs (fertilizer) from retail shops and cooperatives.
Production	Individual Farmer, Farmers group	<ul style="list-style-type: none"> ✓ In Nghe An, there is about 19,300 ha of cassava fields. The unit yield level ranges between 9-38 t/ha. ✓ Processing factories sometimes have contracts with farmers groups, but don't have direct contracts with individual farmers.
Distribution	Trader	✓ For cassava, transaction at processing factories by weighing trucks is commonly practiced, so collectors and traders normally manage collection and distribution. (Because farmers, farmers groups and agricultural cooperatives don't have dump trucks, they can not collect and/or distribute cassava.)
Processing	Local Processing Factory	✓ There are many enterprises doing processing of cassava and exporting cassava products, which procure cassava as materials from collectors and traders and process it into tapioca and chips.
Sales	Wet market, Local retailer	<ul style="list-style-type: none"> ✓ Except for cassava for subsistence and fodder, the cassava products are marketed by processing companies. ✓ One of the issues is that sales quantity and price fluctuates severely according to the demand in China.

Source: JICA Project Team

(6) Groundnut

In contrast to sugarcane, many groundnut farmers don't practice contract farming. According to the interview survey of five groundnut producers in Nghe An in 2018, 77% of the groundnut harvest were sold to traders followed by self-consumption (16%). There are various local collectors/traders coming to villages to purchase groundnut. Many groundnut farmers also bring sample of their dried and husked groundnuts to the local collectors/traders to negotiate price. After visiting several

collectors/traders to get the price information, the farmers conduct cash transactions with the collectors/traders who propose the best condition. Main marketing channels have been already surveyed by the Detailed Planning Survey on the Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An as shown below.



Source: Detailed Planning Survey Report on the Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An, October 2015, JICA Vietnam Office

Figure 3.29 Main Marketing Channels of Groundnut

According to several local collectors/traders in Dien Chau, the purchased dried and husked groundnuts are manually graded by temporary labors and then packed in 60-kg bags. The majority of them are sold to exporters in Lang Son province located at the border with China and then exported to China. In the past, their main overseas customer was Thailand but China completely replaced it. Some portions of groundnuts are also domestically sold by wholesalers/retailers to consumers as well as processing industries such as oil extractors, groundnut candy (kẹo Cu Đơ) manufacturers, etc. Farmgate price of groundnut extremely changes with district, season, quality, and so on, and it ranges VND 18,000-38,000 per kg.

Based on the interview survey of seven groundnut collectors/traders in Nghe An conducted in 2018, five of them pointed out that unstable market price was an issue of the business. This implies that the demand amount of China often fluctuates year by year, which in turn remarkably affects the groundnut price in Nghe An. The current situations and issues on groundnut supply chain is summarized in the table below.

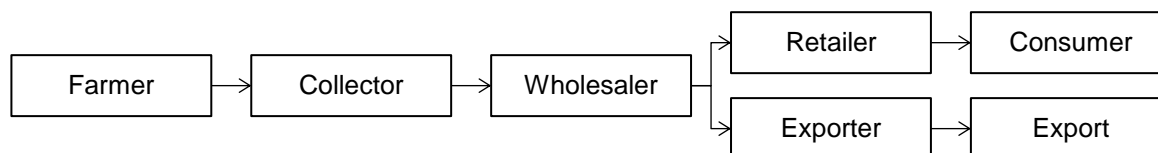
Table 3.24 Current Situations and Issues on Groundnut Supply Chain

	Major Actor	Current Situation and Issues
Agricultural Input	Cooperative, Local trader	<ul style="list-style-type: none"> ✓ Farmers procure agricultural inputs (fertilizer, pesticide, plastic mulching materials) from retail shops and cooperatives.
Production	Individual Farmer	<ul style="list-style-type: none"> ✓ In Nghe An, there is about 15,700 ha of groundnut fields. The unit yield level ranges between 1.2-3.2 t/ha. ✓ Cultivation by individual farmers is dominant. ✓ Groundnut is cultivated in spring (January-May) and winter (August-December) in the main production districts, Dien Chau and Nghi Loc. Sesame is usually cropped in between.
Distribution	Individual Farmer, Trader	<ul style="list-style-type: none"> ✓ Local traders basically manage collection and distribution of groundnut. ✓ Some farmers bring harvested groundnuts to the traders to sell.
Processing	Local trader, Local Processing Factory	<ul style="list-style-type: none"> ✓ Local traders hire casual labors and they do processing works (drying, grading, and packing) of groundnut. ✓ Producing groundnut candy and extracting groundnut oil is practiced by many small processing factories within Nghe An. Some factories provide oil extraction services in case groundnut is brought in.
Sales	Local trader, Exporters, Wet market, Local retailer	<ul style="list-style-type: none"> ✓ Candy and oil are commonly sold at wholesale and retail markets within and outside Nghe An. ✓ Chinese buyers sometimes come to buy groundnuts to export them to China, but exporters coming from Lang Son province mainly procure them on behalf of the Chinese buyers. ✓ Unstable price is an issue.

Source: JICA Project Team

(7) Sesame

In Dien Chau, both black and white sesame varieties are produced without fertilizer application after harvesting groundnut, which utilizes nitrogen fixed by symbiotic nitrogen-fixing bacteria (rhizobia) in groundnut roots. Marketing of sesame is similar to that of groundnut and many of local collectors/traders of groundnut also deal with sesame as a commodity.



Source: JICA Project Team

Figure 3.30 Main Marketing Channels of Sesame

Volumes of sesame are currently exported to China through exporters because of its huge demand. Similar to groundnut, unstable market price of sesame was mentioned by all the four sesame collectors/traders interviewed by the JICA Project Team in 2018. In addition, all these collectors/traders conducted grading of sesame seeds before sales. Farmgate price of sesame varies with variety, quality, and so on, ranging VND 28,000-40,000 per kg. The current situations and issues on sesame supply chain is summarized in the table below. Because main production areas are located in the coastal plains, serious damage by typhoon is one of issues.

Table 3.25 Current Situations and Issues on Sesame Supply Chain

	Major Actor	Current Situation and Issues
Agricultural Input	Cooperative, Local trader	<ul style="list-style-type: none"> ✓ If groundnut is cropped just before sesame, fertilizers are not applied to cultivate sesame.
Production	Individual Farmer	<ul style="list-style-type: none"> ✓ In Nghe An, there are about 3,200 ha of sesame fields and Dien Chau district occupies more than a half. The unit yield level ranges between 0.3-1.1 t/ha. ✓ Cultivation by individual farmers is dominant. ✓ Cropping season of sesame coincides with typhoon season, so it often gives serious damages.
Distribution	Individual Farmer, Trader	<ul style="list-style-type: none"> ✓ Local traders basically manage collection and distribution of sesame. ✓ Some farmers bring harvested sesame to the traders to sell.
Processing	Local trader, Local Processing Factory	<ul style="list-style-type: none"> ✓ Local traders grade sesame. ✓ Sesame crackers (locally know as Bánh Đa Vũng) are produced at many small processing factories within Nghe An. Some factories provide oil extraction services in case sesame is brought in.
Sales	Local trader, Wet market, Local retailer	<ul style="list-style-type: none"> ✓ Sesame crackers and oil are commonly sold at wholesale and retail markets within and outside Nghe An. ✓ Exporters coming from Lang Son province mainly procure the sesame to be exported to China on behalf of the Chinese buyers. ✓ Unstable price is an issue.

Source: JICA Project Team

(8) Ginger

The ginger production by shifting cultivation is actively carried out in mountainous area of Nghe An province, especially in Ky son district. Although the ginger cultivation area fluctuates every year, it is roughly 400 ha approximately. The major ginger varieties produced in Ky Son district are the big ginger with low pungency (“Güng trâu” in local language name) and the small ginger with strong pungency (local name of “Gùng xê ”). Although the former is exported to Bangladesh etc. for processing since the demand in Vietnam is small. It is generally traded in the form of order production (i.e., contract cultivation). Meanwhile, the latter has demand in domestic market for cooking for

ordinary households, and it is distributed in Vietnam through middleman and cooperative.

The table below shows the current status and issues of ginger supply chain. Ginger in Nghe An province has a relatively high yield (15-20 t/ha). Since the farmgate price of ginger is strongly affected by market conditions, it is generally 2,000 - 7,000 VND/kg, which is generally low. Therefore, the potential as relatively cheap ginger for processing is high.

On the other hand, the collecting and shipping efficiency of ginger is quite low due to the scattered farm land by shifting cultivation. Besides, there are issues regarding ginger distribution such as undeveloped farm road to the market. Although the local producers in Ky Son district cultivate ginger without the application of any agricultural input, the sales marketing as safe ginger has not been conducted so far.

Table 3.26 Current Situations and Issues on Ginger Supply Chain

	Major Actor	Current Situation and Issues
Agricultural Input	Agricultural Extension Station, Local Trader	<ul style="list-style-type: none"> ✓ Most of farmers cultivate ginger without the application of any agricultural input ✓ There are few suppliers in mountainous area due to low demand for agricultural input ✓ The middleman supplies necessary agricultural input to the local farmers
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ The ginger is cultivated around 400 ha annually by shifting cultivation. The farming scale of each farmer is about 0.1-0.5 ha. The yield of ginger is 15-20 t/ha in case of big ginger. ✓ The cultivation technique of local farmers is generally low since they have been conducted traditional way to cultivate ginger and hardly applied agricultural input.
Distribution	Cooperative, Trader	<ul style="list-style-type: none"> ✓ The farmland is scattered since the farmers conduct shifting cultivation, which makes it difficult to collect and ship ginger to the market. ✓ The farm road running in ginger cultivation area is undeveloped, which makes it difficult to transport especially in rainy season.
Processing	Local Processing Factory	<ul style="list-style-type: none"> ✓ There is ginger processing company in the province while there has not been any agricultural transaction between the ginger producing area and the ginger processing company
Sales	Wet Market, Local Retailer	<ul style="list-style-type: none"> ✓ The ginger is generally sold in wholesale and retail market. Although the ginger produced in mountainous area is safe since farmers do not apply agricultural input, the sales marketing utilizing this advantage has not been conducted.

Source: JICA Project Team

3.3.2 Horticulture Crops (Vegetables and Fruits)

Most of horticultural crops produced in Nghe An are distributed and consumed in the domestic market. The marketing channels and actors concerned are complex and differ traditionally without exception. Basically, the channel can be classified into 6 types as shown in the following figure.

(1) Market Channel

Basically, the channel can be classified into 6 types as shown in the following figure.

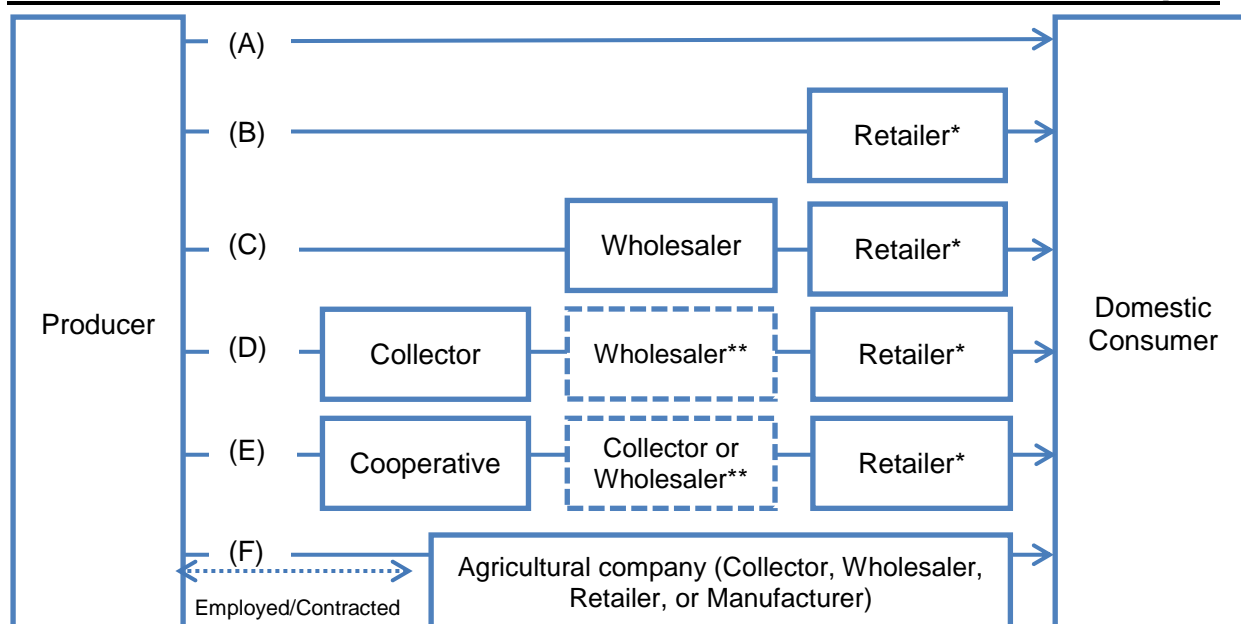


Figure 3.31 General Marketing Channel of Fresh Horticultural Crop

*Retailer includes all those who retail products; street vendors in wet market, supermarkets and restaurants etc.

** Depending on crop and producers, there is a case that collectors or wholesalers do not intermedate.

Source: JICA Project Team based on a figure 'Vegetable Marketing Channel in Hanoi' from a 'study on the production and distribution institution of high valued vegetables in Viet Nam' JETRO, 2015

Fresh vegetables produced in the province are sold from production fields to the local markets and to consumers within the districts, to Vinh city and centers of the neighboring provinces or to Hanoi at the farthest through the channels from (A) to (E) shown in the above figure. As for the fruits, those main markets are wider than vegetable, Vinh city, Hanoi and Ho Chi Minh City. Some of them are produced by contracting with an agricultural company through the channel (F) to meet special demand such as safety and certification; it is relatively uncommon in the province though.

(2) Characteristics of Marketing Channel

All channels can be seen in all market places; marketing channels can be characterized by the type of commodity and target consumer described as the following table. It should be noted that the above figure and below table does not determine but only shows relative characteristics of presumed after hearing from actors in Nghe An and documents search.

Table 3.27 Characteristics of Marketing Channel in Nghe An

	Actors (until consumer)	Main end retailers	End user (target)	Type of vegetables & fruits
(A)	Producer	Producers (direct sale) in Wet market or street in Nghe An	All people (w/o upper-middle class)	Freshly-picked with uncleaned but defined origin
		Producers (farm to house)	Farmers' acquiesces	Safe/high valued ones
(B)	Producer, Retailer	Retailers in the wet market, Supermarket, Restaurant, Canteen relatively in Nghe An	Upper middle class, Restaurant users Canteen users in Nghe An	Specific products as safe or certified food
(C)	Producer, Wholesaler, Retailer	Wet markets, Supermarket, Restaurant Manufacturer, Canteen in Nghe An and other area	All people in Nghe An and other area	Mixed with products from other areas and/or imports: undefined origin and safety
(D)	Producer, Collectors, (Wholesaler) Retailer			
(E)	Producer, Cooperative, (Collector, Wholesaler), Retailer	Specific Supermarket, Restaurant Manufacturer in Nghe An and other area	Specific consumers	Specific products as safe or certified food
(F)	Producer, Agricultural company	Exporter	International consumers	Met a quality standard in the destination

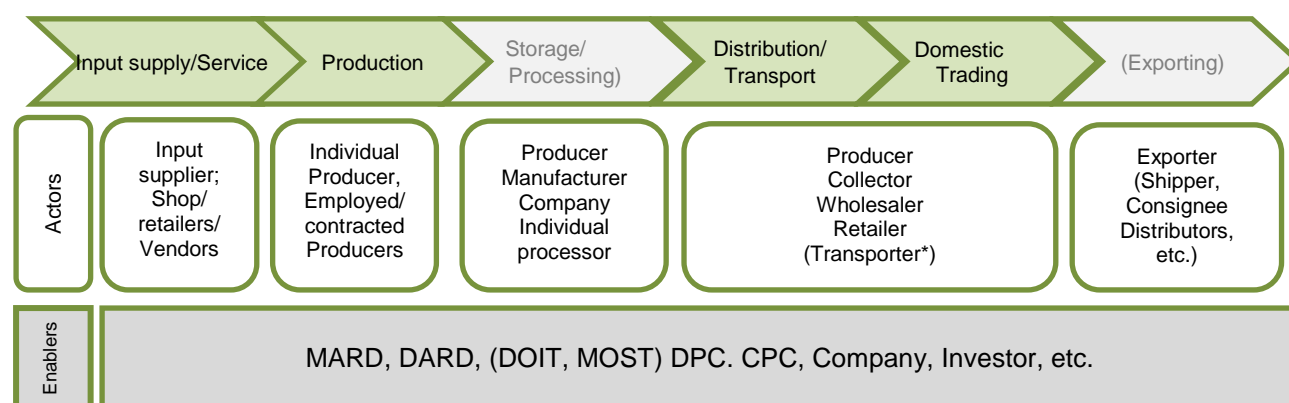
Source: JICA Project Team referring 'Emerging Agro-food Markets, Supply Chains, and Regional Rural Development Prospects in Nghe An Province, Vietnam', Steffanie Scott, Dept. of Geography, University of Waterloo, 2008

It is said that the channel (A) (C) and (D) are the most common distribution system in Nghe An province for vegetable. Since consumers in Vietnam prefer fresh vegetables and fruits, ordinary people go and buy vegetables in the local markets. The quality and safety of the products are not certain there, of those who have highly conscience of safe food purchase them from farmers known personally or introduced by acquaintances as well as upper-class ones. However, the people who are concerned about food safety are increasing not only in wealthy people. The channels of (B), (E) and (F) are increased slightly in recent years in order to meet specific demand of end retailers who want to sell exclusively 'safe food'.

Regarding fruits, orange in Nghe An province is famous for its quality as a brand name of 'Cam Vinh' and are distributed to all over the country through the channels (C) and (D). However, being afraid of mixing up with other oranges and damaging the brand name, some producers and traders are choosing the channels (B), (D) and (F) at the present same as vegetable. The channel (F) also is conducted by a manufacturing company, Nafoods for passion fruits or by traders families called 'micro enterprise' at the household scale for other fruits. As for export, some retailing companies have been tried to export pineapples and bananas in the province, but it has not realized yet because shipment quantity and grown varieties (brings about quality problem) do not meet the international market needs.

1) Present Situation, Challenges and Possible Measures of Horticultural Value Chain in Nghe An

This section explains present situation of value chain for horticultural crops and concerning actors in Nghe An province. The current value chain and actors are shown in the following figure.



*Transporter is generally hired by traders who take charge and responsible of products distribution and trading.
Source: JICA Project Team

Figure 3.32 Value Chain and Actors of Horticultural Crop in Nghe An

The value chain of horticulture crops is quite simple in Nghe An province and all actors seem to be working well in their range to connect the chain. However, the value chain is not necessarily fair for all actors as shown in the above figure. The present situation, challenges and possible measures of the value chain are described below.

1) Vegetables

Vegetables are not main products in the Nghe An province but the demand is increasing presently for the inside of the province, and promoted to expand the production area because they are often consumed as perishable goods and high freshness and safety and rarity are required in the market. In particular, since agricultural products including vegetables which are produced following the standard of Basic GAP can be certified as “Compliance with Safety Regulation” issued by DARD from 2014, the production of "safe vegetables" certified by DARD is increasing in Nghe An province.

The "safe vegetables" can be sold to retailers and collectors at prices that are as high as 10 - 30% of normal prices, so obtaining such certificate can be a measure of value addition. The governmental authorities recommend purchasing safe vegetables to schools and hospitals as materials for school

meals and hospital foods, and thus it is expected to expand its market in the future.

In addition, highly rare vegetables are also traded at high prices in the province, such as spinach, Queen Melon (*Dưa kim hoàng hậu*), local tomato (*Cà chua múi*) and cucumber, regardless of safety certification. The spinach and Queen Melon which are very popular in the province were brought or imported from other provinces and/or other countries, but these products can be grown by introducing suitable varieties and cultivation methods in some areas. The local variety of tomato and cucumber are produced in mountainous and hilly areas such as Ky Son, Tuong Duong, Con Cung or Anh Son. These are dealt with at high prices even within the province for salads etc. With the production of these vegetables, it will be possible to develop a value chain which can bring high profit for producers. Nevertheless, there are many challenges to develop a value chain of vegetable. The table below shows the challenges by layer of the supply chain.

Table 3.28 Challenges of Vegetables Value Chain Development

Layer	Major Actor	Issues on Vegetable Value Chain Development
Agricultural Input	Agricultural Extension Station, Local trader	Widely distribution of unauthorized, expired or imitated agriculture inputs Lack of human resources to instruct farmers appropriate inputs and its uses No organizations which can analyze the contents of the inputs in the province
Production	Individual Farmer, Cooperative	Lack of infrastructure to produce vegetables leading a seasonality problem (oversupply in winter and lack of products in summers) Lack of improvement of environmental condition for vegetable production Lack of market information to be reflected in production
Distribution	Individual Farmer, Cooperative, Collector	Unfairly low farm gate price if no certificate or specialization Lack of facilities such as pick up point, warehouse and cool/cold storage High proportion of post-harvest loss
Processing	Individual Farmer, Cooperative, Processing company	Few vegetable processing companies Few ideas to add value on vegetables Low skill and techniques for processing in the cooperatives and company
Sales	Producer, Cooperatives, Wholesaler, Retailer	Difficult to sale products collectively (even within cooperative members) Lack of trust of consumers toward farmers (safety reliability of products) Lack of appropriate contract between farmers and traders

Source: JICA Project Team

Of the described in the above table, It is necessary to take measures four urgent challenges namely; i) Distribution of illegal agricultural inputs, ii) inadequate development of vegetable production areas including production and distribution infrastructure, iii) lack of reflection of market needs to production, and iv) lack of value addition,

i) Distribution of illegal agricultural inputs

There are many actors of agricultural input supply in Nghe An. However, most of inputs affordable for farmers are less quality or sometimes imitations. In general, producers who cannot distinguish between good ones and bad ones use uncertain inputs. Therefore the producers tend to buy the illegal inputs drawn meretricious cheap price and immediate effect by skillful talk of dealers. In consequence, the products are not well grown or over agrochemical residues are detected, and they become lesser competitiveness to non-local products.

Although DARD and DPCs manage and control agricultural input suppliers, they cannot inspect and monitor sufficiently due to lack of staff and budget. Additionally, chemical composition analysis and test cannot be done because of any authorized laboratories in the province, illegality of agricultural inputs such as expiration date can be found to a degree by those labels though. Thus, it takes time to distinguish using risks to human health and agricultural products by the usage of illegal inputs. In fact, the government authorities rely on the related information from farmers for management and control of the agricultural inputs and those suppliers. On that account, it is necessary to build the capacity of farmers for research and observation illegal input suppliers and to introduce simple inspection equipment in the province for a new controls system an establishment with producers' cooperatives.

ii) Insufficient environment improvement of vegetable production area

Electricity for irrigation has been developed in most of vegetable production area, but facilities for water intake and irrigation or infrastructure which responds to dry and hot weather or floods

in the summer have not been well developed. Therefore, vegetables are not produced and sold throughout the year in the province. The vegetables cannot be necessarily grown in summer in all areas but it can be said that the producers in the potential areas lose a chance to add value on vegetable production when the price becomes soaring in summer.

Besides, there are vegetable production areas near garbage disposal plants, industrial areas, or cemeteries and so on. In order to promote safe vegetable production and sales particularly in Nghe An province, it is necessary to identify environmental impact on vegetable production and to take measures if there is a problem. However, there is no system and authorized laboratory in the province to check and analyze the not only the detailed environmental condition but also for simple check of water quality and soil quality etc. All samples to be checked should be sent to the distant laboratory designated by the government in other provinces. Consequently, it takes time to receive the analysis results and to examine and implement countermeasures, and improve the environmental condition. It is urgent to improve and develop facilities and environment condition including infrastructure for not only for value chain development but also for the promotion of safe vegetable production and sales in the province.

iii) Lack of reflection of market needs to production.

Consumer behaviors and needs are changing day by day in international and domestic market even in Nghe An province. Although producers and traders sometimes are communicating and selling products directly to consumers, they do not notice or pretend not to notice and hesitate to reflect the market needs on their production. In general, farmers hardly adopt new crops, cultivars, production methods, because agriculture is high-risk economic activity basically. However, new crops and production methods which are required by markets can be easily disseminated if farmers themselves understand the profitability of the production reflected such market needs. For that purpose, it is important to establish constantly a system that communicates information on market needs to producers. As possible measures, it can be considered to create occasions for opinions exchange between producers and buyers on a regular basis, to hold an event of farm visit of consumers or to renew trading contracts in accordance with changes in market needs.

iv) Lack of value addition

As mentioned in above-section, processing and export, as well as storage are barely practiced by a few actors, and vegetables are sold for fresh use shipped right after harvest. However, only the manufacture of processed products is not value addition activities. For example, production of safe foods can be regarded as a high-value addition which is easier than processing and exporting.

Besides, the farm gate price of vegetable can be higher if they are washed, cut roots and packed with the same size after harvesting as simple processing called 'Pre-Processing'. It is also possible to raise the farmer's income if certain quantity of vegetables can be shipped regular though the collective shipment and sales by cooperative. It is essential to examine and introduce the appropriate value addition activities according to the particularity of the sales markets for value chain development of vegetable in Nghe An province.

2) Fruits

As above-mentioned, the usage, the supply chain and value chain are different by crop as well as the current situation and challenges regarding fruits produced in Nghe AN province. Those of characteristic crops are described below.

i) Orange

Orange is a signature agriculture product of Nghe An province, which is produced mainly in the hilly - mountainous areas and purchased by individual collectors in and out of the province, and then distributed to the market through wholesalers and retailers.

Oranges which are produced in some areas, in particular, are known nationwide as a brand name "Cam Vinh", so orange producer cooperatives and micro enterprises in the production area are directly selling to retail stores in large cities such as Hanoi and Ho Chi Minh City. In particular,

oranges are sold as a gift before Tet holiday, and thus the farm gate price becomes higher than usual. It seems that a value chain profitable for producers is formulated.

However, as above mentioned, the orange production area has rapidly expanded both inside and outside the province, and market competition is getting severe. The following table lists the challenges in the development of orange's value chain in Nghe An province.

Table 3.29 Challenges in the Value Chain Development of Orange

Layer	Major Actor	Issues on Vegetable Value Chain Development
Agricultural Input	Agricultural Extension Station, Local trader	<ul style="list-style-type: none"> ✓ Widely distribution of unauthorized, expired or imitated agriculture inputs, especially folia and pesticide ✓ No organizations which can analyze the contents of the inputs in the province
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ Lack of awareness of false inputs and appropriate production techniques ✓ Lack of appropriate techniques which can adapt the climate changes ✓ No appropriate seedling producers and distributors
Distribution	Individual Farmer, Cooperative, Collector	<ul style="list-style-type: none"> ✓ Price fluctuation at rural and farm level ✓ Bad condition rural road to transport affecting farm gate price ✓ Lack of facilities such as pick up point, warehouse and cool/cold storage
Processing	Individual Farmer, Processing company	<ul style="list-style-type: none"> ✓ Few fruits processing companies ✓ Low skill and techniques for processing in the cooperatives and company
Sales	Wholesaler, Retailer	<ul style="list-style-type: none"> ✓ Damaging brand name caused by being sold with low-quality oranges from other province and by harmful rumors ✓ Information asymmetry between farmers and market needs

Source: JICA Project Team

DARD, AEC and AES have regularly held technical training to improve the quality and productivity of orange in order to enhance market competitiveness, but have not achieved a great improvement yet. In recent years, illegal chemicals are distributed wildly due to increase of new pests, and thus some producers are applying production techniques to use such illegal chemicals rather than instructions from DPC and AES. In consequence, the productivity is decreased instead of improving. In addition, because many problems such as Citrus Greening Disease and other various diseases have been reported, and quality and productivity of orange have declined, some producers cut and remove infected orange trees and to plant new seedlings. However, new seedlings are often infected with pathogenic bacteria because there are no appropriate seedling production / sales system in the province and many farmers produce seedlings by themselves with cuttings and sell them.

As far as the fresh oranges produced by Nghe An province were sold at high prices, the processing industry was not well developed. However, since the market competition is intense in recent years and price fluctuations have intensified, some companies have started processing oranges to peel candy, jam, essential oil or soap etc. to increase the value of orange producers and stabilize their income in the province. Particularly, fresh and processed oranges are demanded as souvenirs in the big cities' markets throughout the year and in Vinh and Cua Lo in summer season from June to August. Oranges harvested from March to April can be preserved for 2-3 months if they are properly sterilized and wrapped, which can be sold at high price for tourist in off season, in summer. It will be useful as value addition activity.

There are two main challenges regarding sale namely; i) the brand name of 'Cam Vinh' can be damaged through a rumor of being mixed and sold with orange which is of inferior quality and which are produced by other provinces because 'Cam Vinh' has been well-known as a brand and ii) farmers cannot produce and sell oranges according to market needs because they do not have enough chance to know. Especially for the latter, except for orange as a gift before Tet holiday, consumer tends to make less account of origin, some scratches on surface or irregularity of sizes as long as the safety and a certain degree of taste are secured. However, some farmers are convinced that the oranges produced in the province can be always sold at high price, and lose appropriate time to sell while they are waiting for increase in the price.

ii) Passion fruit

Passion fruit is introduced largely to Que Phone district as a processing material of a private processing company, Nafoods. It is one of important cash crops in Que Phone district and mountainous areas because the market demand is high as a processing material for juice, syrup, functional foods etc in overseas countries and as fresh fruit in the food service shops and supermarket chain in the big cities as well as in Nghe An province. Having seen the present situation, however, there are many challenges to overcome for developing value chain of passion fruit from the procurement of inputs to sales. The main issues are described below.

Table 3.30 Challenges in the Value Chain Development of Passion Fruit

Layer	Major Actor	Issues on Vegetable Value Chain Development
Agricultural Input	Agricultural Extension Station, Local trader	✓ Difficult to find and buy authorized inputs because widely distribution of unauthorized, expired or imitated agriculture inputs, especially folia and pesticide
Production	Individual Farmer, Cooperative	✓ Lack of awareness of false inputs and appropriate production techniques ✓ Lack of research on appropriate techniques and methods to raise quality and quantity ✓ Difference of culture with minority people who most live in suitable areas for passion fruits
Distribution	Individual Farmer, Cooperative, Collector	✓ High proportion of post-harvest loss ✓ Bad condition rural road to transport affecting farm gate price ✓ Lack of facilities such as pick up point, warehouse and cool/cold storage
Processing	Individual Farmer, Processing company	✓ Few vegetable processing companies ✓ Low skill and techniques for processing in the cooperatives and company
Sales	Processing company, Wholesaler, Retailer	✓ Lack of collectors and buyers other than Nafoods :No choice to sell at low prices because of limited buyers ✓ Information asymmetry between farmers and market needs

Source: JICA Project Team

As a challenge, it is difficult to obtain suitable agricultural inputs (materials) for developing a passion fruit value chain. The periphery of the suitable production area has a border with Laos, so illegal agricultural inputs from other countries are easy to flow. If farmers contract with Nafoods, it is easy to obtain disease-free seedlings and appropriate inputs and acquire production techniques. However, because of this relationship, other issue is raised as producers are forced to sell their products at cheap price asked by the company. If many collectors (buyers) seek passion fruit, producers could select the selling destination considering the farm gate price, but there are not so many collectors come to Que Phone district presently according to agriculture officers of DPC. This current condition also causes to lose opportunity to know the market needs for farmers.

Moreover, productivity of passion fruit is low at the farmer level which is 50-60% less than Nafoods's farm; the yield is 60-100 tons/ha/year, whereas it is 30-40 tons/ha/year in contract farmers' fields. As reasons, it is assumed that farmers lost their desire in passionfruit production due to low trading price offered by Nafoods, the production techniques and methods are not adaptable for environmental condition in the production area or social-cultural traits or farmers think that food production such as rice is more important than cash. But the true reasons have not been clarified yet.

As mentioned earlier, since demand of passion fruit is high in the markets, farmers themselves need to understand thoroughly the market information such as the market price and required quality and system which provide appropriate inputs and production techniques should be established for farmers in order to build a fair and profitable value chain.

iii) Other fruits

- Pomelo and other citrus

Other than oranges, citrus fruits such as lime, pomelo and mandarin are produced in Nghe An province. Major production areas were Nghia Dan, Quy Hop, Thanh Choung and Yen Thanh. Originally the citrus trees were planted in farmers' gardens in mountainous areas. Since Phu Quy Fruits Research Center

improved and released varieties of pomelo and mandarin suitable to environmental condition in the province, and thus those were grown widely. Owing to valuable fruit for gifts in whole Vietnam, a variety called *Quang Tien* Pomelo has been improved to meet the environmental conditions of Thanh Hoa town, which is characterized by higher sugar content than many varieties.

Besides, it is said that lime which has a pink color inside produced in Nghe An province is high demanded in big cities due to its high sweetness. However, the volume of production and sale is still small, and its value chain has not been developed by utilizing its marketability. If there is some way for value addition way for this type of lime, it would be possible to construct a value chain profitable for producers targeting the domestic market.

- Bananas

Bananas are mainly produced Thanh Choung, Yen Thanh and Nghia Dan as wide as orange in Nghe An province. But different from oranges, only a few cases of intensive banana production are reported and most of them are often planted around a paddy field as a windbreak or for consumption at rural and household level. Banana flowers and premature fruits are used for garnish a dish and for salads in Vietnam. Its research, production techniques or extension system are not well developed as a cash fruit crop. A Korean company had advanced to Tan Ky a few years ago to raise bananas for export but it was not realized due to the spread of diseases.

Nevertheless, due to the damage caused by the new Panama disease (*Fusarium wilt*) which spread in the Philippines in 2016 to 2017, and thus a Japanese trading company tried to import bananas from Vietnam as an alternative production area. If the production can be intensified and effective breakthroughs come out for the disease, it will be possible to develop a value chain targeting the international market in the future.

- Pineapple

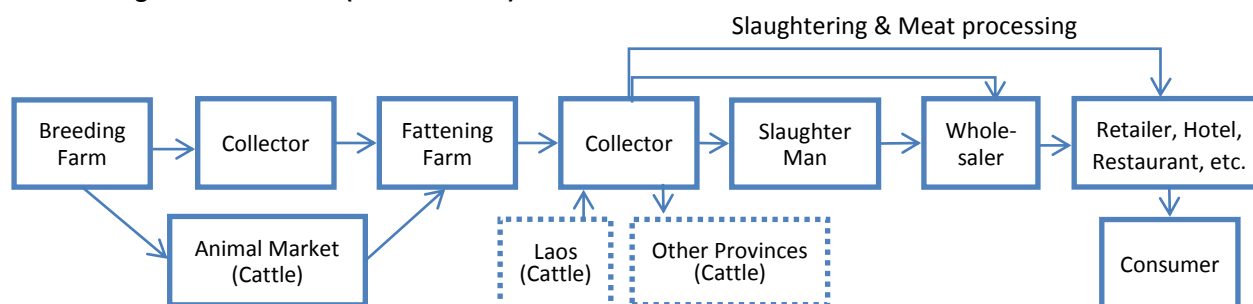
Pineapple is mainly produced in Quynh Luu and Yen Thanh in Nghe An province. It is sometimes sold to Nafoods as a raw material for processing and also to major companies such as Big-C and Fivimart Chain as a vegetable, but mainly sold to local collectors as a raw material for processing or at a low price as a vegetable for cooking. Although selling as fresh fruit can be traded at higher price rather than selling as a raw material for processing or vegetables for cooking, a variety required in international market can be grown in the province but the productivity is 30% lower and the quality is inferior to one grown in southern Vietnam and Philippines. For the development of Pineapple’s value chain, it will be important to establish and disseminate appropriate production technology of varieties highly demanded in the market.

3.3.3 Livestock Products

Most of livestock products produced in Nghe An are distributed and consumed in the domestic market. The market channel is different depending on the products as shown in the following figure. Except for the distribution of milk products which is controlled by dairy companies, most part of the livestock market is operated by small scale unit involved by numerous traders in respected area.

(1) Beef and Pork

Marketing Channel of Meat (Beef and Pork)



Source: JICA Project Team and Detailed Planning Survey Report on the Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An

Figure 3.33 General Marketing Channels of Meat (Beef and Pork)

Regarding the value chain of beef and pork in Nghe An, in many cases of beef and pork distribution, collector, slaughter man and wholesaler is consisted of one family. Many collectors sell the meat directly to the retailers and the rest of the meat is brought to wholesale market. Moi Dau market in Vinh city is the biggest meat wholesale market in Nghe An, and beef and pork from whole area of Nghe An province are collected and sold to retailers.

There are 63 registered slaughterhouses in Nghe An, of which 34 are regularly operated, however it is said that there are more than 2,350 unregistered small-scale slaughter points. They should be monitored by the government steadily. Regarding live cattle and buffalo, they are traded at 13 livestock markets and about 300 livestock trading spots. It can be said that distribution infrastructure of living beef cattle is substantial in Nghe An.

The pig produced in the province are usually distributed and consumed in Nghe An. In regard to the beef cattle (including buffaloes), Nghe An province has the largest population of them, however it is said that large amount of cattle has been entered from Laos. Among these cattle, it is estimated that the consumption within Nghe An province is around 15% and the remaining 85% are shipped to Hanoi, Ho Chi Minh City, Da Nang and other provinces. In addition, some beef cattle are exported to Thailand via Laos through the border gate of Quang Binh Province (Table below).

Table 3.31 Distribution Flow of Beef Cattle and Buffalo

Production area		Consumption area	
Nghe An province	Cattle 35-40%, Buffalo 30-35%	Nghe An province	Cattle 10-15%, Buffalo 10-15%
Laos	Cattle 35-40%, Buffalo 25-70%	Hanoi	Cattle 5-10%, Buffalo 5-10%
Other provinces	Cattle 20-30%, Buffalo 0-45%	Danan	Cattle 10-20%, Buffalo 20-25%
		HCMC	Cattle 10-15%, Buffalo 20-25%
		Quang Binh province →	Cattle %20-25, Buffalo 15-20%
		Laos →	
		Thailand	
		Other provinces	Cattle 15-45%, Buffalo 5-30%

Source: Adjustments & supplement of cattle development plan by 2020, Nghe An province

The slaughterhouse operated by Truong Lan Company in Vinh City is the largest slaughter facility in Nghe An, and they slaughter and process about 200 pigs/day and 15 cattle/day. As of 2016, 27 brokers register and use the facility by paying the facility usage fee. There is no cold chain of meat distribution, and all of the meat is brought to the adjacent Moi Dau market (the largest meat wholesale market in Nghe An).

As mentioned above, there are more than 2,350 unregistered slaughterhouses in the province, and most of these illegal slaughter facilities do not meet the hygiene standards. They have serious problems in terms of the food safety, labor safety and environmental pollution. However, in the rural areas of Vietnam, farmers themselves slaughter the livestock in the garden for the purpose of self-consumption or provision to neighborhood, and these traditional customs make it difficult to control illegal slaughter.

In Nghe An province, Petrol Food Joint Stock Company is the only company that is engaged in slaughter, meat processing and cold transport on a large scale. They have slaughter and processing plants in Vinh city and Dien Chau district, and their processing capacity is 200 cattle/day, 70 pigs/day and 4,000 chickens/day. The cattle to be slaughtered are mainly purchased from a contract farm in Nghe An growing Australian beef cattle, and the processed frozen meat is sold to the Formosa

industrial area in Ha Tinh province and oil field development company in Ba Ria Vung Tau province. While these attempts have been seen, it is also true that ordinary consumers tend to like meat that has not gone long since slaughter, and they have an image that frozen meat is not fresh. This is one of the reasons that living cattle is imported from Australia, and it is not necessarily true that meat distribution by the cold chain will become the main measure in the future.

The table below shows the current situations and issues of pork supply chain. The price of pork varies greatly depending on the year and time, and the farm-gate price changes from VND 30 to 50 thousand per kg of live weight. For this reason, income of farmers is unstable. In addition, pork that is shipped to the local market in Nghe An is often slaughtered and processed at unauthorized slaughterhouse by the traders in a poor sanitary condition. Improving the supply chain in terms of food safety is the highest priority.

Table 3.32 Current Situation and Issues in Supply Chain of Pork

	Major Actor	Current Situation and Issues
Agricultural Input	Feed Companies, Animal Husbandry and Veterinary Station, Local trader	<ul style="list-style-type: none"> ✓ Competition between feed companies is intense, and there is no difficulty for farmers to secure concentrate feed ✓ Although the demand for feed is high, the business environment of feed companies is severe due to the competition ✓ There are few farmers who purchase raw feed materials and blend in their own way, thus it is difficult to make their own feed design for the purpose of product branding ✓ Although there are commercial mixed feed and veterinary medicine which component is different from the label, they have not been controlled by the government sufficiently
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ Small-scale pig farmers of 2 or less heads occupy about 60% of whole farms, and production efficiency is low ✓ Serious diseases such as hog cholera, foot-and-mouth disease and PRRS are prevailing, however, there are many areas where vaccination is not fully applied ✓ Profit of farms is low because of the higher feed cost and lower farm-gate price than that of other provinces ✓ The farm-gate price of the pig is largely influenced by the market price, and it varies from VND 30 to 50 thousand per kg of live weight
Distribution	Trader	<ul style="list-style-type: none"> ✓ Farmers cannot decide the exact shipping time by themselves, and it is common to wait for the traders to come to buy the products ✓ One pig trader purchases from 100 to 200 small and medium scale farmers on average ✓ Most of the traders have fixed farmers that have been in trading for many years ✓ Since the number of trader is quite large and the market competition is working, the profitability of trader is not high ✓ Farm-gate prices are leveling at the market price, and contract trading of ordinary products have no advantage for both farmers and buyers ✓ There are also traders in Nghe An who sell pork to China
Processing	Local Processing Factory	<ul style="list-style-type: none"> ✓ In many cases, traders themselves slaughter and process pig at slaughterhouses and ship the meat to wholesale market or retail shop ✓ Many of the pork meat sold at local wet market are those slaughtered by the traders at the illegal slaughter point with serious problems in sanitation ✓ Pigs are transported to other provinces by living body, then slaughtered and processed at the site of consumption; means no value addition in Nghe An
Sales	Wet market, Local retailer	<ul style="list-style-type: none"> ✓ Pork is sold at wholesale and retail markets in and outside the province, and information such as the place of production and methods of raising is not clearly indicated ✓ There are few attempts to sell the products making use of their characteristics or specialty ✓ The retail price of pork in Nghe An is about VND 20,000/kg lower than in other provinces

Source: JICA Project Team

The table below shows the current situation and issues of beef supply chain. One of the biggest issues is the illegal inflow of beef cattle and buffaloes from Laos, which has led to the spread of infectious animal diseases and the decline in meat prices. Also, in recent years, genetic improvement of beef cattle has been progressed due to extension of artificial insemination (AI). However, along with the improvement of cattle body size, farmers' feed cost has been increasing. Regarding mixed feed, the products with insufficient quality are also distributed in Nghe An, and strict monitoring by the government is required.

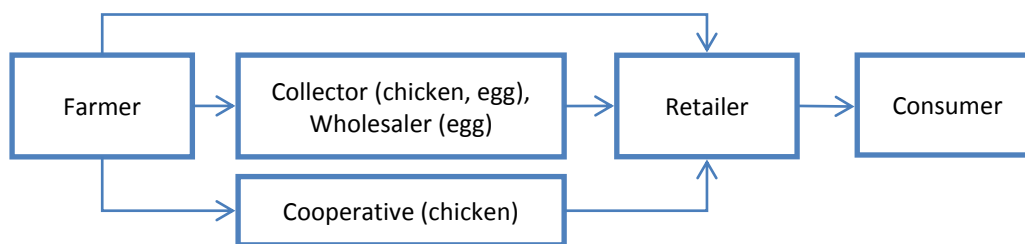
Table 3.33 Current Situation and Issues in Supply Chain of Beef

	Major Actor	Current Situation and Issues
Agricultural Input	Feed Companies, Animal Husbandry and Veterinary Station, Local Trader	<ul style="list-style-type: none"> ✓ Competition between feed companies is intense, and there is no difficulty for farmers to secure concentrate feed ✓ Although there are commercial mixed feed and veterinary medicine which component is different from the label, they have not been controlled by the government sufficiently ✓ The traditional fattening method was only grazing, however in recent years, it is common that about 1 kg/head of mixed feed is fed per day during the last 6 months before shipping ✓ The illegal inflow of beef cattle from Laos leads to the spread of animal disease and decline of meat price
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ Most of the cattle farms are small-scale that raised 5 or less heads, and production efficiency is low ✓ Serious diseases such as foot-and-mouth disease are spread, however, the coverage rate of vaccination is relatively high compared with other livestock ✓ They are shipped between 2.5 and 3 years of age, and the price is about VND 30 million/ head in beef cattle and VND 50 million/ head in buffaloes at slaughtering ✓ Due to the extension of artificial insemination, the size of the cattle has become larger than that of conventional breed, and the feed cost of farms have been increased ✓ Fed fodder is only the rice straw or weed at roadside other than grazing and few silage usage
Distribution	Trader	<ul style="list-style-type: none"> ✓ Farmers cannot decide the exact shipping time by themselves, and it is common to wait for the traders to come to buy the products ✓ The price is determined by the live weight, however, the weighing is not accurate ✓ Since the number of trader is quite large and the market competition is working, the profitability of trader is not high ✓ Farm-gate prices are leveling at the market price, and contract trading of ordinary products have no advantage for both farmers and buyers ✓ There are many traders who through Do Luong district, and from there some cattle are distributed to Hanoi and China
Processing	Local Processing Factory	<ul style="list-style-type: none"> ✓ Cattle are transported to other provinces by living body and slaughtered and processed at the place of consumption ✓ Some traders slaughter and process livestock at unregistered small-scale slaughter place where there are problems in hygiene and the environment
Sales	Wet market, Local retailer	<ul style="list-style-type: none"> ✓ Distribution volumes of cattle and buffalo in Nghe An province are about 10 to 15% ✓ There are few beefs produced in accordance with standards of any safety certificate, and the efforts to adding high-value sales such as branding are very limited ✓ There is no provincial strategy for beef sales as the largest production site of beef cattle and buffalo, and insufficient trials for branding and promotion

Source: JICA Project Team

(2) Chicken and Egg

Marketing Channel of Chicken and Egg



Source: JICA Project Team and Detailed Planning Survey Report on the Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An

Figure 3.34 General Marketing Channels of Chicken and Egg

Usually, the collector buys chicken by visiting the farms and distributes the live chicken to retailers. Then, the retailers sell the live chicken in local market and most of the consumers slaughter and cook them at their own home. This is related to the short expiration date of chicken meat. But recently, some large-scale retailers such as Maximark supermarket request the delivery of packed chicken meat reflect the demand of consumers. There is no chicken meat processing company in Nghe An province to meet this demand and most of the large-scale retailers procure processed packed chicken meat from adjacent provinces or around Hanoi.

Similarly, eggs are collected from layer farms by collectors, then distributed and sold to retailers directly. Meanwhile, Chan Nuoi Mien Trung Company, the biggest egg wholesaler in Nghe An province, distributes 20,000 eggs a day. This company has made contract with layer farms which have DARD safety certificate or Viet GAHP certificate in Vinh city, Dien Chau district and Nghia Dan district. Then, they distribute the eggs to the retailers in and outside of the province to meet the demand of increasing demand of consumers for safe eggs.

The table below shows the current situation and issues of supply chain on chicken and egg. There are no quantitative shortages on procurement of input materials such as feeds and chicks, however, there are some areas where these materials are not always available. Regarding layer and broiler chickens, farmers have become larger and more intensive to increase their competitiveness. For this reason, establishing a new value chain is required for small-scale farmers by making efforts to establish a farmers’ cooperative or branding distinctive chicken products.

Table 3.34 Current Situation and Issues of Supply Chain on Chicken and Egg

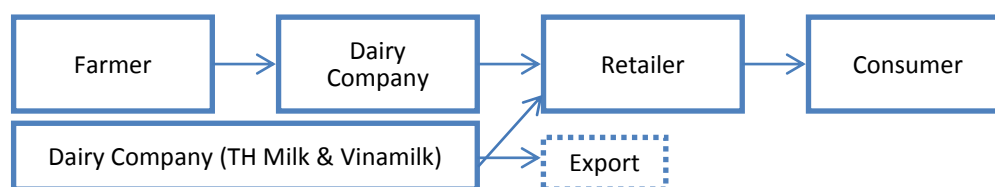
	Major Actor	Current Situation and Issues
Agricultural Input	Feed Companies, Animal Husbandry and Veterinary Station, Local trader	<ul style="list-style-type: none"> ✓ Competition between feed companies is intense, and there is no difficulty for farmers to secure concentrate feed ✓ Although there are commercial mixed feed and veterinary medicine which component is different from the label, they have not been controlled by the government sufficiently ✓ Day-old chicks are provided by large companies and traders, and the F1 hybrid breed which is called Super Chicken has been becoming popular in Nghe An ✓ Usually, small-scale farmers use self-produced corn and rice other than commercial mixed feed
Production	Individual Farmer, Cooperative	<ul style="list-style-type: none"> ✓ Highly pathogenic avian influenza and Newcastle disease occur sporadically. Chickens in small-scale farmers are not thoroughly vaccinated ✓ There are several kinds of local chickens in the province, however few organized branding efforts are undertaken ✓ There are poultry farming areas for eggs production in Nghe An, though, individual farmers procure materials and sell products independently

	Major Actor	Current Situation and Issues
		without any collaboration ✓ The farming scale expansion and concentration have been progressing, and farms raising 300 to 2,000 chickens is recently popular in Nghe An
Distribution	Trader	✓ Farmers cannot decide the exact shipping time by themselves, and it is common to wait for the traders to come to buy the products ✓ Since the number of trader is quite large and the market competition is working, the profitability of trader is not high ✓ Farm-gate prices are leveling at the market price, and contract trading of ordinary products have no advantage for both farmers and buyers ✓ Live chickens are sold in the local market and are slaughtered and cooked by consumers themselves ✓ From the farm road of production area to the main road is unpaved, and it is impossible to pass when it rains
Processing	Local Processing Factory	✓ There are some traders who slaughter chickens at illegal slaughter facility with serious problems in sanitation and environment ✓ Fertilized chicken eggs are collected by traders who have incubators, and chicks after hatching are sold to chicken fattening farms by them ✓ Duck egg developed in the incubator around 16 days is sold as popular edible egg product ✓ As electric wires in the rural areas are partially uncovered, the power supply stops at the time of rain and the egg incubators often stop ✓ Vietnamese consumers have strong image that frozen meat is not fresh and don't prefer it
Sales	Wet market, Local retailer	✓ Some layer and broiler farmers have acquired safety certificates such as DARD certificate, however they are still not linked to advantageous sales ✓ There are few efforts to promote brand livestock products produced in Nghe An

Source: JICA Project Team

(3) Milk Product

Marketing Channel of Milk Product



Source: JICA Project Team and Detailed Planning Survey Report on the Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An

Figure 3.35 General Marketing Channels of Milk Product

Most of the dairy operations are owned by two dairy companies (TH Milk and Vinamilk) in Nghe An. The individual dairy farms formulate dairy cooperatives or farmers' group and make contract with Vinamilk. Number of dairy farms contracted with Vinamilk was 109 as of 2017. The milk price purchased from farmers is about VND 14,000/L. In this case, farmers usually trade with Vinamilk for not only milk but also the materials such as feed and livestock medicines. The dairy companies collect milk and process them at their factory, then sell the dairy products in the domestic market and export to many foreign countries. Vinamilk also supplies dairy cows to contract farmers. Pregnant dairy cows are provided to farmers with price of around VND 50 million per head. Pure breed dairy cows are imported from USA and Canada, and F1 hybrid cows are produced locally by AI.

On the other hand, TH Milk produces and processes all amounts of raw milk at their own farm in Nghia Dan district, and ships the products to retailers. TH Milk is comprised of three companies; the dairy sector (TH Milk Food JSC), the dairy manufacturing sector (TH Milk JSC Company) and the distribution sector (TH Food Chain JSC). These companies were founded in 2009 with political support from the central government and Nghe An province and capital investment of USD 1.2 billion from BAC A Bank. They have own farm in Nghia Dan district as their base, at the same time, they

start producing milk also in Da Lat city and Ha Giang province, moreover, there are two farms in Russia. In 2015, they acquired EU and USDA organic certificates and started production and sales of organic milk.

The table below shows the current situation and issues of milk supply chains. As for milk, unlike other livestock products, almost all the products are produced at their own farms or contract farms of dairy companies and distributed by dairy companies, thus there are fewer actors on the supply chain. Currently for individual dairy farms, the shipping destination of raw milk is limited only to Vinamilk company.

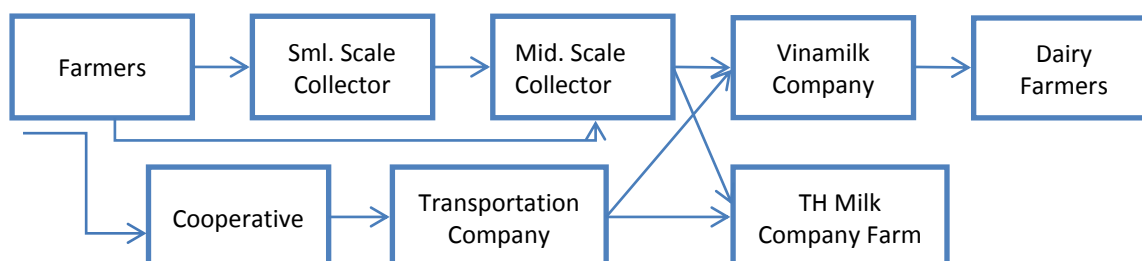
Table 3.35 Current Situation and Issues in Supply Chain of Milk

	Major Actor	Current Situation and Issues
Agricultural Input	Dairy Companies	<ul style="list-style-type: none"> ✓ Dairy farmers shipping to Vinamilk Company procure mixed feed, hays, animal drugs, and milk test kit through the company. Technical support is also provided by the company ✓ Farmers purchase dairy cows via Vinamilk or by themselves from Ba Vi near Hanoi. Also, F1 breed cows are produced by AI ✓ TH Milk and Vinamilk procure materials and dairy cows by themselves for their farm
Production	Dairy Companies, Individual Farmers	<ul style="list-style-type: none"> ✓ Most of the farmers contracted with Vinamilk have organized farmers' groups to secure bargaining power ✓ Vaccination such as for FMD and Pasteurellosis is serious issue, however the coverage rate is higher than for other livestock ✓ The average number of milking cow is around 10. The amount of milking is about 30 L/ head in winter and 20 L/ head in summer. The annual sales amount of milk is about VND 2 million/ cow ✓ The self-sufficiency rate is about 80% for forage and 40% for mixed feed (Corn, Cassava, etc.) in individual dairy farms ✓ Mastitis has been occurred chronically at farmer level
Distribution	Dairy Companies	<ul style="list-style-type: none"> ✓ There are milk collecting point at each commune in dairy production area, Vinamilk collects raw milk from there twice a day ✓ Milk test is performed at the time of collection, and the milk price of each farm is determined by its quality ✓ If any prohibited substance such as antibiotics comes out, the contract with the farmer is terminated by Vinamilk ✓ The contract period with Vinamilk is one year. Farmers want to compare the contract conditions with other companies, though, alternative demander is very limited
Processing	Dairy Companies	<ul style="list-style-type: none"> ✓ All of the raw milk collected from farmers is processed by Vinamilk, and the milk produced by TH Milk farm is processed by TH Milk ✓ There are a few farmers who wish to process and sell dairy products by themselves
Sales	Dairy Companies, Retailers	<ul style="list-style-type: none"> ✓ Farmers have intention to acquire safety certificates such as VietGAHP to add values ✓ The marketing depends on the dairy companies, and government support for the milk promotion is limited in Nghe An

Source: JICA Project Team

(4) Fodder Crops

Marketing Channel of Fodder Crop (Maize)



Source: JICA Project Team and Detailed Planning Survey Report on the Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An

Figure 3.36 General Marketing Channels of Fodder Crop (Maize)

Although many kinds of fodder crops are utilized for feed in Nghe An province, only the maize is traded with large amount under the regular value chain. The distribution flow of corn is that (1) small-scale traders collect corn from farmers around the production area, (2) the corns are collected by middle-scale traders who own transport trucks, (3) then, they are sold to two dairy companies of TH Milk and Vinamilk. Usually, transactions between traders and farmers are based on verbal contracts, but transactions between traders and dairy companies are based on the official contract. In some cases, there are farmers' cooperatives which make official contract with dairy companies and transport companies and sell the corns produced by the members. Besides this, a production method increasing in recent years is a system in which the dairy companies borrow land that is gathered from farmers in the commune and conducts all works from the sowing of corn to harvesting using large machines and center pivot irrigation system. Corn purchased in this way is ensiled by dairy companies, and TH Milk is mainly used in their farm in Nghia Dan district and Vinamilk is selling to contract dairy farms.

Since TH Milk needs 1,500 tons (100 to 150 trucks) of forage in a day in their own farm and its stable securing is their serious challenge, thus they have tried to increase the production of maize at various places in Nghe An. In Nghe An province, the whole crop corn can be harvested three times a year by proper scheduling and irrigation, however, TH Milk recommends farmers to harvest twice a year from the viewpoint of maintaining soil condition and controlling moisture rate of corn. On the other hand, other than the farmers who sell corn produced by themselves, there are farmers who contract with dairy companies and receive seeds and fertilizers distributed by the companies. The companies purchase the corns and pay them after deducting the expenses. TH Milk uses hybrid seeds of corn from foreign companies such as Monsanto, Syngenta, Pioneer and CP, however, the percentage of genetically modified seeds (GM seeds) is still low. DARD of Nghe An province plans to extend the GM seeds gradually from the viewpoint of improving productivity. As for the grass, TH Milk imported seeds of Mombasa variety of Guinea grass from Brazil and used them at their farm. However, it has problems that the high moisture content for silage and poor growth in winter season. In addition, TH Milk has also used Super Sorghum of Sorghum Japan Company, though, they did not use it continuously due to the weakness of typhoon. Production and contract management of these feed crops is done by AGITEC, a subsidiary of TH Milk Food JST.

3.4 Current Situation and Issues Regarding the Public and Private Service in the Field of Agriculture

3.4.1 Agricultural Extension

Agricultural extension services are implemented by AEC under the jurisdiction of DARD. Besides this, various donors and NGOs and others play a part of agricultural technology dissemination, but they are conducted only locally or temporarily. Thus, this section describes the current status and issues of AEC's dissemination activities.

(1) Outline of AEC

AEC is regarded as a not-for-profit organization within the DARD organization, and much of its administrative budget is covered by provincial budget and subsidies from the country. As of 2015, the number of staff of AEC has been reported to 220. Among them, 50 staff belong to AEC and the remainder are assigned to AES of each city, district and town. The table below shows the main tasks of each department of AEC.

Table 3.36 Main Operations of Each Department of AEC

Division	Number of Staffs	Main responsibilities and duties
Division of Administration and Human resources	6	- conducts general administration tasks for supporting director of AEC including management, training, evaluation, appointing and dispatch of human resource - Arrange and manage working conditions such as electricity, water and equipment
Division of Planning and Finance	8	- Formulation of annual activity plan of AEC - Formulation of budget plan of agricultural extension activities - Follow up and summarize progress and results of extension programs.
Technical Division of Agriculture and Forestry Extension	11	- Support directors regarding technical & professional issues; propose annual contents, programs, projects of agricultural & forestry extension - Organize monitoring, instructing and guiding assigned AES staffs and other contracted social-economic organizations to implement programs, projects of agriculture extension in accordance with progress, quality, designed technical standards and approved budget.
Technical Division of Fishery Extension	5	- Support directors regarding technical & professional issues; propose annual contents, programs, projects of fishery extension - Organize monitoring, instructing and guiding assigned AES staffs and other contracted social-economic organizations to implement programs, projects of agriculture extension in accordance with progress, quality, designed technical standards and approved budget.
Division of Information, Training and Education	12	- Determine contents and prepare documents to be used for training. - Formulate plan and organize training program for technical staff to update knowledge and new technology - Prepare agriculture extension documents such as agriculture extension news, leaflets and other publications
Division of Consultancy – Services	8	- Implement duties assigned by DARD for survey, analysis, evaluation, checking, and inspection of agriculture extension activities. - Consult and provide service to economic organizations, enterprises regarding agricultural extension

Source: AEC

(2) Work and Budget of AEC

The agricultural extension program (2016 - 2020) approved in July 2015 has been prepared to achieve the following objectives.

- To increase major agricultural and livestock products production by 10-15% and marine products production by 40% by the year 2020, while promoting improvement of production system that meets food quality and safety standards.
- To proceed with the construction of an agricultural diffusion model, verify and evaluate effective models, explain to local governments, and promote dissemination of the model.
- To contribute to sustainable and environmentally compatible production activities in each region through the dissemination of advanced technologies necessary for producing quality and valuable agricultural and livestock products.
- To transmit proper information to stakeholders through newspapers, radio and the Internet.
- To establish training opportunities for all employees and stakeholders involved in agricultural extension to learn dissemination technique and promote acquisition of advanced technologies related to agriculture, forestry, animal husbandry, fishery, etc.

The table below summarizes the outline of the agricultural extension program (2016-2020). The total project cost for the five years of the plan, consisting of three major dissemination programs, is set at 95,140 million VND, of which 73,650 million VND is covered by public funds and the remaining amount is borne by the beneficiary companies and farmers. There are five fields of model construction projects: agriculture, livestock farming, forestry, fishery and industrial promotion, and each project has been formed to build a dissemination model. Taking agriculture as an example, nine model building projects are formed to develop dissemination model regarding 1) measures for climate change, 2) safety crop production, 3) production according to market needs, 4) raw material production for processing and export, 5) application of advanced technology and 6) agricultural mechanization.

Table 3.37 Outline of the Agricultural Extension Program

Program	Number of projects	National Budget (Million VND)	Total Budget (Million VND)
A. Model building Program	26	35,780	57,270
1. Crops	9	10,000	16,150
2. Husbandry	7	6,380	9,020
3. Forestry	3	6,000	8,500
4. Fishery	4	7,400	12,000
5. Industry	3	6,000	11,600
B. Agricultural Extension Training Program	5	30,250	30,250
C. Public Information Program	10	7,620	7,620
Total	39	73,650	95,140

Source: AEC

(3) Issues Regarding Agricultural Extension

From the viewpoint of "FVC development based on contract agriculture", the issues of AEC capacities regarding 1) planning capability, 2) project operation and management and 3) technical capability are evaluated as follows.

1) Planning Capabilities

In the planning stage of the model project, the relevance of the market has not been thoroughly considered. In AEC's dissemination model building project, AES officials in each city, district, town prepare and submit a proposal of model project to AEC by October every year, and based on this plan, AEC conducts the narrowing down of projects and budgeting of selected projects. This plan consisted of only the target crop, objectives, scale, duration, expected outcome and assumed project cost to be covered, and the consideration on markets as an exit strategy of agricultural and livestock production model is not sufficient. The agricultural extension program mentioned above also includes projects to build agricultural and livestock production models that meet market needs, but it is not sufficiently considered on the anticipated sales destinations and market needs. As a result, even if the technology transfer succeeds, there are the cases causing difficulty in selling the products produced by the transferred technologies. Similar findings have been reported in the OXFAM survey report, and the improvement is needed to enhance the usefulness and efficiency of the model building project.

2) Project Operation and Management

Collaboration with city, district, town, each commune, affiliated company and local community at the stage of model project implementation is insufficient. In the current system, city, districts, towns and communities are responsible for disseminating models built by AEC. Therefore, it is necessary for AEC to facilitate those stakeholders to participate in the activities of model building project for better understanding. There are also excellent models developed in cooperation with local public institutions and related companies, so it is necessary to verify and evaluate those projects and to develop appropriate project management and operation system.

3) Technical Capabilities

The ability of extension staffs to carry out appropriate cultivation planning and guidance based on market needs (standards, quality, price, etc.) is not sufficient. Many extension staffs have fundamental knowledge and guidance abilities related to the cultivation of various crops, and it is possible to conduct lecture and practical training, etc. However, in order to promote agricultural production based on market needs, the extension staffs should have capacity to find flexible solution which is not clarified by manual or conventional practices. Thus, It is necessary to strengthen the ability of extension staffs to make proposal for filling the gap between consumer needs and product supply capacity of producers.

In addition to the above three points, the general issues such as shortage of budget related to

agricultural extension services and low allowance of extension workers causing lower motivation, and lack of various facilities necessary for extension activities need to be improved in this target area

3.4.2 Research and Development

(1) Agricultural Science Institute of Northern Central Vietnam

In national level, Vietnam Academy of Agricultural Sciences (VAAS) plays a key role in agricultural research and development. The VAAS has regional institute named Agricultural Science Institute of Northern Central Vietnam (ASINCV), which covers 6 provinces including Nghe An.

The ASINCV has Phu Quy Fruit and Industrial Plant Research Center; Technology Transfer and Extension Center in Nghe An; and Hue Agricultural Development and Research Center. These institutes breed many varieties of rice, groundnut, maize, sweet potato, mung bean, cassava, citrus, banana, rubber, coffee, sugarcane, etc. and demonstrate various crop production techniques.

The ASINCV has 140 staffs, including 2 PhDs, 40 Masters and the rest is bachelors. They have 170 ha for research and seed production, in which: 5,000m² net house, 40 ha paddy rice field (1-2 ha research for paddy rice), 90 ha fruit tree and industrial plant, the rest for other plants.

The ASINCV gets research projects in 3 ways: Budget from Government, Grants-in-aid for scientific research, or order from domestic and abroad enterprise. Main resource of the research budget is from Government, it reaches 14 billion VND per year; Budget from cooperation with enterprises reaches 3-4 billion VND. DARD and DOST get research needs from producers through their own activities such as seminar and workshop. Then they make research project ideas, assign appropriate institute including Plant Seedling Center for each project to avoid duplication.

The ASINCV cooperates with many universities and institutes in Vietnam, such as Vinh University, an Agricultural university, 19 other institutes belong to VAAS. They also cooperate with enterprises in Nghe An, such as Nghe An agricultural materials corporation, Vinh Hoa, TH, Nghe An plant seedling center, etc. The ASINCV conducts technology transfer activities 9 times in 2017 with their Technology Transfer and Extension Center or socialization channel. The ASINCV trained 60 extension workers, 190 farmers and 1 enterprise.

(2) Nghe An Plant Seedling Center

In Nghe An province, Plant Seedling Center was established under DARD. The center has 3 departments for high technological seed research, testing seed, and trial. There are 69 staffs in total, including 11 Masters, 46 Bachelors. The Center gets research projects by same ways as ASINCV.

The main research topic is seed in general, which includes collecting new breeding lines and producing/spreading new lines. They also propagate plant in order to maintain and preserve important current varieties. New early maturing variety of rice DCG72, which was developed in the JICA technical cooperation project, is tested and disseminated in Nghe An under its responsibility. Main resource of the budget for research is from Government, it reaches 2 billion VND per year. Plant Seedling Center cooperates with Extension of DARD to multiple the models and distributes to extension station in each district. They have 45 ha in Do Thanh commune, Yen Thanh district, in which: 5 ha for research, 10 ha for demonstration models, 30 ha for production.

Normally they do not conduct extension work, but they do some technology transfer activities for farmers or organizations, which have demand.

Nghe An plant seedling center have many issues in operation process: Facilities are too old and not good enough for high tech research; land for production and research is lack; budget is limited; climate in Nghe An is too hard for research and production; Awareness of farmers is low, difficult to access science and technology.

(3) Institute of Agriculture and Resources, Vinh University

Vinh University is a unit of public service under the Ministry of Education and Training. Institute of

Agriculture and Resources, Vinh University has 3 departments such as crop science, rural development and fishery. The main research topics are Evaluation of new crop variety, Conservation of local variety, Soil improvement/conservation, Pest and insect control.

The Institute has 30 lecturers and 8 researchers, 2 officers including 10 PhDs, 25 Masters, 5 Engineers. Besides, there are approximately 2,000 students including undergraduate and master. Total field for research is 25 ha. Institute of Agriculture and Resources has a good relationship with more than 20 companies work in agriculture, the institute sends student to the companies as internship. The Institute carried out some projects and received some awards. Vinh University has 20 projects from Ministry of education and Ministry of agriculture, 73 projects from Nghe An province and Vinh University, 2 projects in cooperation with TH Group and 2 Vietnamese VIFOTEC awards in 2017. Vinh University also has a good relationship with agricultural extension center. The institute conducts 1-2 times of technology transfer activity per year and trains approximately 20 extension workers.

3.4.3 Food Sanitation Management

(1) Law Concerning Food Sanitation Management

In Vietnam, the Food Safety Law (Decree No.55/2010/QH12) was issued in June 2010 and has come into effect in July 2011. Decree No.38/2012/ND-CP delivered in April 2012 stipulates the authority and roles etc. of MOH, MARD and MOIT related to food sanitation management (table below). According to this, the agency responsible for food hygiene management basically differs depending on the target food items, and each ministry has developed a system for food sanitation management with respect to the target items.

Table 3.38 Role of Related Ministry in Food Safety Law

Ministry	Responsibility
MOH	General Responsibilities: Presiding over the development, promulgation and implementation of national strategies and master planning on food safety; Promulgating national technical regulations on criteria and safety limits in respect of products, tools and materials used for packing and containing food Responsibilities for Management of the Sector: Managing food safety during production, primary processing, processing, preservation, transportation, export, import and trading of <u>food additives, substances assisting food processing, bottled water, mineral water, functional food and other food</u> in accordance with the provisions of the Government. MOH is responsible for regulating most pre-packed and processed food products.
MARD	General Responsibilities: Presiding over the formulation, promulgation of policies, master plan, and regulations on food safety within the sector. Responsibilities for Management of the Sector: Managing food safety during production, collection, slaughtering, primarily processing, processing, preservation, transportation, export, import and trading of <u>cereals, meat and meat products, aquaculture and aquatic products, vegetables, bulbs, fruits, eggs and egg products, fresh milk used as an input, bee's honey, and honey products, genetically modified foods, salt, and agricultural foods</u> in accordance with the provisions of the Government.
DOIT	General Responsibilities: Presiding over the formulation, promulgation of policies, master plan, and regulations on food safety within the sector. Responsibilities for Management of the Sector: Managing food safety during production, collection, slaughtering, primary processing, processing, preservation, transportation, export, import and trading of <u>alcohol, beer, beverages, processed milk, vegetable oil, products used as materials for production of powder, starch, and other food</u> in accordance with the provisions of the Government.

Source: Decree No. 38/2012/ND-CP

(2) Food Sanitation Management System in Nghe An Province

In accordance with the decree mentioned above, DOH, DARD and DOIT in Nghe An province conduct the management work related to the production, processing, distribution, sale, etc. of each target item. In the example of DARD, the four organizations (Sub-Department of Plant Protection, Sub-Department of Veterinary / Animal Health, Sub-Department of Aqua-culture, Sub-Department of Agro-forestry-fisheries quality assurance) in DARD are responsible for this task. These organizations conduct inspections related to the production facilities of the target items and issue safety certificates to individuals, unions and companies that meet the food sanitation management standards stipulated in the regulations. However, the safety certificate issued by DARD only guarantees that it meets the

necessary conditions for producing safe food. In other words, it does not guarantee the "safeness of produced food" like Viet GAP.

(3) Safe Food Certification

Safety of agricultural products including processed goods became a social problem in Vietnam countries more than 10 years ago, many health problems are reported due to hazards such as in particular harmful microorganisms, environmental pollutants, agricultural chemicals and veterinary drugs of fresh agricultural and livestock products. Therefore, MARD introduced a standard of safety production and certification called Viet GAP for agriculture products in Vietnam in 2008, Vietnamese GHAP for animal products in 2013 and Viet GAP for fishery products in 2014. Additionally, MARD decided to enable provincial DARD to issue a certificate as "Compliance with Safety Regulation" for agricultural products produced in accordance with the Basic GAP standards in 2014. Including the organic agricultural production promoted by MARD lately, the current situation, problems and possible measures of the safe food certification are described as follow.

1) Viet GAP/ Viet GAHP

Viet GAP in 2008 prescribes separately for vegetables, fruits, tea leaves, rice and coffee. For example, the standard for vegetables and fruits consists of 65 control points classified into 12 categories such as production technology, remaining amount of agricultural chemicals at harvest stage, production environment, traceability etc. Regarding Viet GAHP, there are 29 control points for chicken and pork respectively.

According to the list published by PPC Nghe An, the first organization or individual who acquired Viet GAP was a food company in Vinh city in 2012 and only 6 organizations which had validity certification were registered as of 2016. However, as of the end of October 2018, a total of 18 producers' company, cooperative and individuals including 10 groups in vegetable production, 2 groups in tea leaf production, 2 groups in orange production, 2 poultry farming, guava production, 1 municipal product in mushroom production obtained the safe food certificate due to increase of the interest in food safety not only by food market but also by schools, hospitals and cafeterias etc.. At present, the governmental authority at district level encourages farmers to obtain Viet GAP/Viet GAHP in response to the demand for safe food.

As challenges to be solved, many control points should be confirmed strictly for Viet GAP and/Viet GAHP, but it is hard to control the standard because products can be easily damaged by chemicals sprayed in the neighboring farms. Additionally, it takes time because few organizations can issue the certificate officially and it is costly to acquire. Indeed, it costs VND 50 million for 4 orange farmers with 10 ha in Quy Hop and VND 120 million for a vegetable producer's cooperative with 22 members with 9.57ha in Dien Chau in order to obtain Viet GAP certificate. As for the Viet GAHP, it costs VND 20 million per farmer but different from crops, the profit of certified products is not very high compared to uncertified ones because the certificate is not recognized well as of now. Therefore, it is necessary and to improve farm environment by community-based effort and to support farmers in terms of funds and advertisement of the certificate in order to promote obtaining Viet GAP/Viet GAHP.

2) "Compliance with Safety Regulation" Issued by DARD

"Compliance with Safety Regulation" is a certification (referred to as "DARD certificate") for producers (groups) who have met to certain standard which is issued by Quality Assurance Sub-Department of DARD at the provincial level.

Observing that the Viet GAP for vegetable and fruit had not been dissimilated because producers hardly satisfied all 65 control points of the standard, from which 25 control points are designated as a "Basic GAP". Thereafter, aiming at simplification of production and certification of safety vegetables, MARD promulgated the Decision No.2998/QĐ-BNN-TT on the "Basic GAP Guidance

for Vegetable Production in Vietnam" (Basic GAP standard)" in 2014. Even though Basic GAP is simpler than Viet GAP, only agriculture products which are produced in the areas where the contents of residual agricultural chemicals (by insecticide / herbicide), the number of microorganisms / parasites residual nitrates, residual heavy metals are within the permissible range in the irrigation water and soil can be approved.

On the contrary, as for the DARD certificate for animal products, the number of control points are more than Viet GAHP (67 control points). Considering the labor and expense for applying the Viet GAP official authorities, however, the certificate issued by DARD is high convenient because it is inexpensive to apply to DARD in the center of the province and it even is valid for 3 years. As a result, 88 producers of crop and livestock producers organizations acquired the DARD certification in private or organization at the end of October 2018 in Nghe An province, of which 34 organizations are vegetable and fruit producers, 47 organizations are tea leaf producers, 1 organization is rice producer and 6 organizations are for livestock producers.

However, there is a challenge such as the reliability of the inspection and analysis results to issue the certificate because the inspection system within the province has not been developed and the water and soil samples must be sent to an authorized laboratory far from the Nghe An province, and thus it takes time to investigate residual agricultural chemicals and the environment condition. Additionally, DARD certificate is not recognized for consumers as much as Viet GAP as proof of food safety. As possible measures, it is necessary to prepare a system that can handle simple inspections and analysis at DARD level and to increase the frequency of investigations for ensuring the minimum safety of agricultural products. At the farmers' level, branding certificated products or traceability system can be also considered as measures to increase the product name recognition.

3) Certification for Organics Products

Although the government of Vietnam has published guidelines on the production of organic agricultural and livestock products in 2006, a public organic certification system has yet to be created. There is a system to certify the quality of organic agricultural products for the domestic market at the private level called "Participatory Guarantee Systems (PGS)". Five group companies concerning vegetable and fruit production participate in the PGS involving more than 350 farmers in Vietnam as of 2017¹⁰.

Currently, there are movements to promote organic agriculture even in Nghe An province, but there are no organizations which have obtained PSG certification for now in the province. As an effort, several farmers or company produce oranges in Quy Hop and Thang Choung without any chemical fertilizer and chemicals. Unexpectedly farmers in mountainous areas can raise local animals feed made by farmers using crops residues because formula feed in the market is expensive.

In any case, PGS is not a public certification system and not well recognized both in domestic and international market. In addition, the PGS has original detailed norms of organic foods according to the government's guidelines. Additionally its certification costs VND 20 million per farmer and VND 250 thousand as annual membership, so it is hardly to be dissimulated to the farmers. Especially in the Nghe An province, before talking about the certification, there is since few kinds of the organic fertilizers and biological pesticide. If farmers produce products just without chemical fertilizers and chemicals, and products can be easily affected by pests and diseases and the safety can become uncertain. Therefore the introduction of the organic production should be cautious.

(4) Issue

After the enforcement of the Food Safety Act as mentioned above, in principle, all stakeholders concerning food production are required to comply with the food sanitation management standards

¹⁰ Outline Report, Regional Workshop on Participatory Guarantee Systems (PGS) for organic agriculture in the Greater Mekong Sub-region (GMS): Lessons Learnt and the Way Forward, FAO

prescribed by the government. On the other hand, the applicant side needs to pay the examination fee, and its financial burden is not small for many agricultural enterprises/organizations in order to obtain the safety certificate. Generally, the presence of safety certificate is not the issue for the transaction when the producers sell their products to the retailers working in wet market. However, nearly all consumers cite acquisition of safety certificate as one of the transaction conditions when the producers sell their product to the buyers such as supermarkets, hotels and restaurants. In establishing the FVC of the agricultural and livestock products, it is essential for producers to acquire the safety certificates issued by the administrative agencies, and to set a mechanism to support the acquisition of safety certificate.

By obtaining food safety certificate, it is possible to sell to many domestic consumers who consider it as one of the terms of the transaction. On the other hand, in the case of overseas exports, it is necessary to meet the food sanitation standard prescribed by the exporting partner country. Under the management system prescribed by the administration, it is difficult to export to countries that have stricter management standards. For individuals and organizations dealing with food items that are supposed to be exported, there is a need to strengthen capacity on food sanitation management based on the food sanitation standard prescribed by the exporting partner country.

3.4.4 Veterinary Service

Veterinary services in Nghe An province are carried out by Sub-department of VAH under DARD as a part of livestock administration. They have a wide variety of tasks and there are many problems that are not easy to solve. VAH has a headquarters office in Vinh city, two (2) animal quarantine stations and eleven (11) veterinary stations in district level, and there are 181 employees in total (as of 2016). However, the volume of their work too large and the jurisdiction area is too wide to cope with the problems in the field level. Their major tasks are as follows.

Table 3.39 Major Tasks of Sub-Department of Veterinary and Animal Husbandry

	Content of task
1	Veterinary services and extension of livestock techniques for farmers
2	Training and registration of AI technicians
3	Inspection and registration of DARD safety certificate for livestock farmers and companies
4	Animal quarantine at border and animal check point
5	Livestock disease prevention, vaccination and disease test for diagnosis
6	Report and treatment at the time of occurrence of animal disease
7	Monitoring of livestock transportation and issuance of animal health certificates
8	Monitoring of slaughterhouse, poultry processing facility, livestock market, meat wholesale market and live poultry trading at wet market
9	Securing environmental hygiene and safety derived from animal husbandry
10	Monitoring processing and sales of livestock products
11	Monitoring distribution, sale and use of veterinary drugs
12	Supervision and registration of business operators dealing with livestock materials
13	Supervision and registration of feed producers and retailers
14	Investment promotion on livestock-related business for private sector

Source: THÀNH LẬP CHI CỤC CHĂN NUÔI VÀ THÚ Y TRÊN CƠ SỞ TỔ CHỨC LẠI CHI CỤC THÚ Y VÀ PHÒNG CHĂN NUÔI THUỘC SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN (Số: 29/2016/QĐ-UBND)

Regarding the occurrences of important livestock diseases in 2017, there were Highly Pathogenic Avian Influenza (6 cases/ 11,986 deaths in Đô Lương, Diễn Châu and Vinh), Foot and Mouth Disease (Widespread in Quế Phong, Diễn Châu, Quỳnh Hợp, Con Cuông, Kỳ Sơn, Thái Hòa, Anh Sơn, Nghi Lộc and Vinh), Hog Cholera (3 cases/ 80 deaths in Yên Thành, Hoàng Mai and Cửa Lò), as well as dead case of 6 people on Rabies caused by dog bites.

On the plan of VAH until 2020, they have planned to control the illegal distribution and import of livestock and animal products properly, as they are the cause of intrusion of livestock diseases and a decline in the price of livestock products in Nghe An.

Veterinary services to livestock farmers in the field level are mainly handled by veterinary technicians assigned in each commune. As of 2016, there are 473 veterinary technicians in total at commune and ward level to carry out vaccination and basic veterinary treatment. However, VAH has pointed out the problems on the veterinary technicians such as non-uniformity of professional qualifications and non-leveling of practical ability.

On the other hand, there is Animal Husbandry Breeding Center (AHBC) under DARD of Nghe An province. They have 9 stations in the plain area of the province, and their major task is to provide AI service to livestock farmers. The number of staff is 120, though, 85 of them do not receive salary from the government and they earn income only from AI service fee collected from farmers. Animal semen for AI is supplied from National Institute of Animal Science (NIAS) in Hanoi, and the main semen is imported breed of beef cattle, dairy cattle and pigs. However, it is necessary for staff to purchase equipment for AI by themselves such as AI gun, motorcycles, gasoline, etc., thus their activities are very limited because of the shortage of budget. They also have conducted vaccinations and basic treatment for livestock at field level.

In each district, there is also a veterinary station under the VAH as mentioned above, and it seems that many of their tasks are overlapped. However in practice, the staff of veterinary stations is assigned administrative duties mainly, and the staff of AHBC is assigned technical duties in the field level.

3.4.5 Plant Quarantine

(1) Plant Quarantine Service in Nghe An

Plant Quarantine Center (Area IV) under MARD has several services for plant quarantine. On the other hand, DARD has only responsibility for pest control of crops in Nghe An, hence their role is restrictive. The current situation and issues of Plant Quarantine Center (Area IV) in Nghe An are described in the next part.

1) Plant Quarantine Center Area IV

Plant Quarantine Center (Area IV) located in Vinh city, Nghe An province covers 4 provinces (Nghe An, Thanh Hoa, Ha Tinh, Quang Binh provinces) in the north central region. The Center has several relevant stations; Cau Treo Plant Quarantine Station in Huong Son district, Ha Tinh province; Nam Can Plant Quarantine Station in Ky Son district, Nghe An province; Cha Lo Plant Quarantine Station in Minh Hoa district, Quang Binh province. Every station located in the border between Vietnam and Laos, are important for plant quarantine. The fee for plant quarantine regulated by the Decision 231/2016/TT-BTC.

Table 3.40 Number of Staffs at Plant Quarantine Center (Area IV)

Type of Staffs	Number of staffs (2017)	Demand of staffs (2018)
Total	27	29
Permanent Staffs	12	13
Contract Staffs	13	14
Definite-Term Contract Staffs	2	2

2) Current Situation of Plant Quarantine Center (Area IV)

The plant quarantine center has responsibility for inspection of agricultural products with law and issuing the certificate of plant quarantine, especially for import and export. The results of implementing of plant quarantine for import and export are as follows.

- Number of quarantined shipments: 19,790 (830 for export and 18,960 for import) in 2017
- Total weight of quarantined shipments: 3,480,000 tons (2,264,000 tons for export and 1,216,000 tons for import) in 2017. It is increased by 168 % in comparison with 2016.

The major quarantined products for export are woodchip, wood, sedge, tea, etc. The major quarantined products for import are wood, corn, rice, cassava slice, coffee, and fruits. Nghe An province exports the products to China, Laos, Thailand, United States, Indonesia, Iran, Pakistan, Taiwan, Korea, Japan, Russia, Singapore and etc., meanwhile imports the products to mainly Thailand, Lao, China. The products from Lao and Thailand including fresh fruits (longan, mangosteen, durian, etc.), rice, coffee, corn, and cassava have been inspected for food safety in accordance with the law. The number of shipments for food safety inspection is approximately 17,000 in total and its weight is approximately 1,100,000 tons. It is increased by 177 % in comparison with 2016.

3) Current Issues of Plant Quarantine Center (Area IV)

It is difficult for the Plant Quarantine Center and Stations to cover all the products for export and import in mountainous areas. In particular, the stations in remote mountainous areas where living condition are at poor level, hence they have to prevent the severe climate and difficulties in transportation, especially in the rainy season. In addition, according to the center, there are several issues such as lack of the budget, lack of the equipment, lack of human resource due to the recent increase the volume of plant quarantine year by year. However, the national government has broad authority regarding the budget. For this reason, the authority of the center is limited.

3.4.6 Management and Control of Agricultural Input

(1) Management and Control System and Current Situation

As mentioned above, it is important to manage and control illegal agricultural inputs in order to increase the profit from agriculture and to secure the safety of agricultural products. For that reason, MARD, MOST, MOIT and MOH issue decrees and decisions, and measures are taken at the county and commune level from the province. At the provincial level, Sub-department of Crop Production and Plant Protection of DARD has the responsible mainly for the management and control of the inputs, and inspect and examine agriculture input suppliers and their merchandises (inputs) with DPC and CPC regularly and randomly except chemical fertilizer which are done by Sub-department of Standardization, Metrology and Quality Control of DOST. As for the veterinary medicines and animal feed, under the Sub-Department of Veterinary and Animal Husbandry is mainly responsible for the control and Veterinary Station is in charge of it at the district level in collaboration with DPCs. The department in charge of management and control and related decrees and decisions differs depending on the type of input goods as shown in the table below.

Table 3.41 Decrees and Decisions for Management and Control of Agriculture Inputs and Governmental Authorities in Charge

Agriculture Inputs	Decision, Decree, or Law	Regular inspection/examination	Periodic inspection/examination
Seed and seedlings	Decision 67/2009/QĐ-UBND PPC Nghệ An in 27th July 2009	DPC, CPC	DARD
Chemical fertilizer: and foliar	Decision 31/2015/QĐ-UBND of PPC Nghệ An*	DOST	DOST
Organic fertilizer:	Decree 108/2017/NĐ-CP of Viet Nam government in 20th September 2017	DPC, CPC	DARD
Chemicals	Decision 03/2018/QĐ-UBND of PPC Nghệ An in 10th January 2018	DPC, DARD	DARD
Veterinary medicines and animal feed	Decision 29/2016/QĐ-UBND of PPC Nghệ An in 16th March 2016	DPC, DARD	DARD

Source: Sub-dept. of Crop Production and Plant Protection and Sub-Dept. of Veterinary and Animal Husbandry, DARD

Regular inspection and examination are set at least three times a year and the periodic ones are set to be about four times a year. Seeds, fertilizers and agricultural chemicals are often carried out collectively. The inspection and examination are mainly done targeting to agricultural inputs suspected to be expired the expiration date and/or to be different the contents as label shows. If the agriculture

inputs being sold is unauthorized, expiration date is expired, or false with the label are confirmed with or without in the sample test, chairman of PPC, DPC or CPC may impose a suspension order or a fine of up to VND 100 million dong from the suppliers who sell those illegal inputs. The number of suppliers for crop production subject to disciplinary punishment was 14 in 2015 which increased 3times more than in 2010 and 19 in 2018, while 10 and 4 suppliers were respectively exposed for the veterinary medicines and animal feeds.

(2) Issues and Countermeasures for Management and Control System

Current agricultural inputs management and control system has the following challenges. It is said that illegal agricultural inputs are increasing nationwide as well as in Nghe An province every year, so countermeasures should be taken immediately.

1) Role Duplication of Supervisory Department and Change of Laws and Regulations

As mentioned earlier, MARD, MOST, MOIT and MOH are focusing on the management and control of agricultural inputs. It is clear that the working environment of the input manufacturing company should be controlled by MOIT, sanitation of agriculture products for cooking in restaurants and hotels are supervised by MOH. The agricultural inputs, however, the suppliers and their merchandise are controlled by MARD and MOST.

According to the latest decision, sub-department of Crop Cultivation and Plant Protection of MARD (DARD) were decided to conduct a comprehensive inspection and examination including chemical fertilizers, but DOST is still in charge of chemical fertilizer inspection in Nghe An province at present. It is practically a transitional phase and formal decision has not promulgated yet.

In this manner, because the government changes a lot the supervisory authorities, the role of each authority and regulations regarding management and control of agricultural inputs, not only farmers and input goods dealers, even agricultural staff of DARD, DPC and CPC hardly follow the changes. Therefore, it is necessary to communicate to the local governmental authorities and suppliers from national government and also to consider staffing in the department in charge etc. every time the decree or decision change in order to strengthen the management and control of agricultural inputs.

2) Vulnerable Management and Control System of Agricultural Input

As above mentioned, staffs of DARD and agricultural officers of DPC and CPC are mainly engaged in the management and control of agricultural inputs. Precisely, sub-department of Veterinary and Animal Husbandry is in charge of veterinary medicines and animal feeds and sub-department of Crop Production and Plant Protection is in charge of inputs for crop production. Both sub-departments are suffering from lack of staff. For example, the inspection office of the latter sub-department has 5 inspectors and the crop production office has 8 staff, who should cover all districts. Agricultural officer at the district level is still less assigned. Moreover agriculture officers cannot sometimes go and check the situation in the hilly and mountains areas where the most illegal agricultural inputs are distributed because the budget for the management and control of agricultural inputs is limited.

The fundamental reason for such circulation of illegal agricultural inputs is immaturity of the consciousness and knowledge of each actor related to agricultural production, processing and distribution in rural area.

In general, authorized input inputs are more expensive than unauthorized ones and are difficult to be accessed for farmers in rural areas. For these reasons, they tend to buy and use unauthorized inputs which are cheaper and sold near their fields believing in catchphrases of "effective for new pest damage" and "effective for diseases in livestock". However, since staff in responsible departments is limited in the DARD and agriculture officers themselves have less chance to build capacity concerning examination and inspection of the input in the DPCs and CPCs, farmers barely obtain the appropriate information of such inputs. It is desirable, therefore, to develop more effective system on agricultural input management and control by building administrative capacity related to the inspection of illegal inputs in the DARD and DPCs first of all, and then by improving farmers' knowledge enhancing change of their awareness. It will be 'kill two birds with one stone' if farmers get enough knowledge of illegal inputs, they can also not buy and use illegal inputs and improve their function as an important information source of illegal inputs for governmental authorities.

3) Lack of Laboratory

Currently, DOST can implement a simple inspection of fertilizer components in Nghe An province, and it is supposed to send other all samples should be sent to laboratory designated by MARD in all other provinces. As of 2018, to support inspection, there are 10, 12 and 11 authorized laboratories for seed, fertilizer and agricultural chemicals respectively.

The results of the unauthorized laboratory are not recognized as formal inspection results. Accordingly, it is impossible to obtain inspection results immediately and to stop immediately the business of the supplier who sell illegal inputs. Additionally, since the inspection fee and its shipping fee are expensive, the number of samples which can be inspected within the budget is limited.

Although the establishment of a designated laboratory is not realistic in Nghe An province, it would be desirable to introduce inspections up to simple ingredients of fertilizer active ingredients, trace elements, heavy metals, pesticides, with simple inspection equipment and kits, etc. at DARD and DPC level. This can enable to know the analyzed data on environmental condition and substances of suspicious inputs instantaneously, and to maintain or improve agricultural environment and to stop the damages by illegal inputs immediately.

3.4.7 Weather Information Service

(1) National Centre for Hydro-Meteorological Forecasting

National Centre for Hydro-Meteorological Forecasting (NCHMF) is a governmental organization affiliated with Vietnam Meteorological Hydrological Administration (VMHA). They provide weather forecast and warning information such as weather, maximum and minimum temperature, flood, heat wave, cold wave, etc. up to 10 days ahead in provincial level through their website. However, forecast per hour of the day and information of more specific area is not provided.

(2) North Central Regional Hydro-Meteorological Center

North Central Regional Hydro-Meteorological Center is an organization established under VMHA. Currently, the center has 9 weather stations in Nghe An (Quy Chau, Quy Hop, Tay Hieu, Tuong Duong, Quynh Luu, Con Cuong, Do Luong, Vinh, Hon Ngu), 2 stations will be established in Muong Xen and Que Phong by 2020. They collect climate information such as weather, maximum, minimum and mean temperature, precipitation, sunshine hours, humidity, and evaporation. The information was summarized in the statistical yearbook published by the Department of Statistic in Nghe An as monthly data. The center has more detail information, but it is not published.



Figure 3.37 Location of Weather Stations in Nghe An

3.4.8 Agricultural Finance

Main loan sources for agriculture available in Nghe An are Bank for Agriculture and Rural Development (Agribank), Vietnam Bank for Social Policies (VBSP), Vietnam Association of People's Credit Fund (VAPCF), Cooperative Bank (Coop Bank), etc. The loan services of these financial institutions are summarized in the following table.

Table 3.42 Main Loan Sources for Agriculture Available in Nghe An

Lending object	Loan type	Lending Interest	Loan size	Loan term
Bank for Agriculture and Rural Development (Agribank)				
State enterprises, cooperatives, Ltd. companies, stock share companies, legal foreign investment enterprises, individuals, families, cooperation groups, private entrepreneur, joint ventures.	Mortgage loan	Current commercial loan regulation	Based on the business plan and agreement between the bank and the borrower	Agribank and the borrower agree on a relevant loan term
	Non-mortgage loan	Current commercial loan regulation	Max. 50 mil. VND to individuals, families, cooperation groups in field of agricultural production, Max. 200 mil. VND to family businesses in field of agricultural marketing and services Max. 500 mil. VND to cooperatives, agricultural production farm owners	Agribank and the borrower agree on a relevant loan term
Vietnam Bank for Social Policies (VBSP)				
Small and medium enterprises, cooperatives, cooperation groups, family business, individuals	Lending under trust groups (no mortgage required)	To enterprise: Rate for poor families regulated by Prime Minister; To people of ethnic minority, with disabilities, and in critical difficulties; enterprises that use more than 30% employees of people above: Rate of 50% of that for the poor families	To enterprise: max. 1 bil. VND per project, not exceed 50 mil. VND per employee; To individual: max. 50 mil. VND per person	VBSP and the borrower agree on a relevant loan term. Not exceed 60 months
Vietnam Association of People's Credit Fund (VAPCF), Cooperative Bank (Coop Bank)				
2014: 55 communes in Nghe An has People's Credit Funds, with 83,162 members and total fund of 2.741 bill. VND lending	Coop Bank provides capital for people's credit funds to lend its members	Interest rates are defined by cooperative bank on principle of agreeing between the bank and its members		Coop Bank can decide to provide the loan term (short, medium, long)

Source: Decree No. 41/2010/ND-CP of the government, and Document No. 3798/NHCS-TDSV of Vietnam Bank for Social Policies

According to the information obtained from Nghe An Branch of the State Bank of Vietnam, many other commercial banks also provide credit/finance services for agricultural and rural development as of July 2018. Currently, there are seven loan programs and each program is summarized as follows.

(1) Lending for Agricultural and Rural Development

In accordance with Decree No. 55/2015/ND-CP (09/6/2015) and Decree No. 41/2010/ND-CP (12/4/2010) on credit policy for agricultural and rural development, Circular No. 10/2015/TT-NHNN (22/7/2015) guiding the implementation of Decree 55, Circular No. 14/2010/TT-NHNN (14/6/2010) guiding the implementation of Decree 41 by the Government and the guiding document, the credit institutions are encouraged to appropriate 20% of total balance of lending for agricultural and rural sector. Those credit institutions who are not qualified for disbursement shall transfer the equivalent amount to Bank for Agricultural and Rural Development

to proceed.

Up to 31/12/2017, the loan balance lending for agricultural and rural development sector in accordance with Circular 10 was VND 64,063 billion (making up 38% of the total balance of lending in the whole area), increasing VND 31,191 billion (equivalent to 95%) in comparison to that of 2013. This rapid expansion was largely owing to two banks: North Asia Commercial Joint Stock Bank (NASBANK) and Agribank (including Nghe An Branch and West Nghe An Branch).

NASBANK, which is one of commercial banks based in Nghe An, is a leading bank in lending for rural area. NASBANK is also known as a bank with credit strategies toward the agricultural and rural sector and high-technology agriculture, contributing to change the agriculture of Nghe An. The balance of lending for the agricultural and rural sector of NASBANK as of 31 December 2017 was VND 29,476 billion, accounting for 46% of that of the province, going up VND 12,040 billion equivalent to 69% compared to 2013.

Agribank has a wide-spread branch system in all districts, cities and towns and strictly followed the programs and plans on lending for agricultural and rural development sector in close collaboration with political and social organizations. As of 31 December 2017, the loan balance of Agribank in Nghe An was VND 18,832 billion, accounting for 29% of the total lending amount, increasing by VND 11,959 billion (equivalent to 174%) compared to that in 2013.

Apart from the regulations on lending under Decree No. 55, VBSP of Nghe An has made significant contribution in lending to the target beneficiaries. The balance of loan granted by VBSP in Nghe An reached VND 7,199 billion up to 31 December 2017, rising VND 1,116 billion equivalent to 18% compared to 2013.

(2) Lending to Reduce Losses in Agricultural Production

Currently, this loan program is provided to reduce losses in agricultural production under Decision No. 68/2013/QĐ-TTg (14/11/2013) and Circular No. 13/2014/TT-NHNN (18/4/2014) to support the enterprises, collectives, cooperative group, households, and individuals to purchase machinery and equipment in order to reduce losses in agricultural production. As of 31 December 2017, the balance of this loan program was VND 311 billion, going up by VND 190 billion, equivalent to 157% compared to 2015.

(3) Lending under National Target Program on New Rural Development

National Target Program on New Rural Development is executed following the guidance of the Prime Minister under Decision No. 800/QĐ-TTg (4/6/2010) on approval for National Target Program on New Rural Development for the period 2010-2020 and Directive No. 18/CT-TTg (15/7/2014). This program is implemented at the town level and is widespread all over the country from 2010 to 2020 with the aim of comprehensive rural development, covering wide-ranged contents pertinent to the fields including economy, culture, environment, and political system at grass root level. Up to 31/12/2017, the loan balance was VND 61,766 billion, seeing an increase of VND 38,965 billion, equivalent to 171% compared to 2013.

(4) Lending for Aquaculture Development

The lending program for aquaculture development operates: Decree No. 67/2014/ND-CP (07/7/2014) on several policies for aquaculture development. Decree No. 89/2015/ND-CP (07/10/2015) adjusting and supplementing Decree 67, Decree No. 17/2018/ND-CP adjusting and supplementing several articles of Decree 67, Circular No. 22/2014/TT-NHNN (15/8/2014) by the State Bank; Circular No. 12/2018/TT-NHNN adjusting and supplementing several articles of Circular No. 22/2014/TT-NHNN. As of 31/12/2017. The loan balance disbursed according to Decree 67 was VND 830 billion and 104 ships.

(5) Lending for High-Technology and Clean Agriculture;

The lending program is available for high-technology agriculture development according to

Resolution No. 30/NQ-CP in 2017 of the Government and Decision No. 813/QĐ-NHNN (24/4/2017) of the State Bank of Vietnam in response to the demand on fund for implementation of plans, methods of high-technology agriculture production and trading, clean agriculture based on criteria for determination of those programs and plans under Decision No. 738/QĐ-BNN-KHCN (14/3/2017) of the Ministry of Agricultural and Rural Development. As of 31/12/2017, the loan balance disbursed for high-technology agriculture development and clean agriculture was VND 18,854 billion.

(6) Lending for Collective Economic Development

Lending for collective economic development is in compliance with Dispatch No. 692/NHNN-TĐ (04/02/2016) of the State Bank of Vietnam on continuing fulfilling responsibility of banking sector to collective economy, supplying concrete guidance to the credit institutions and their branches in the province to comply with regulations of the State Bank, facilitating the farmers and enterprises with regard to lending procedures for development of agriculture and rural area, clean agriculture, high-technology agriculture, sustaining and developing collectives system in accordance with guidance of the State Bank of Vietnam to implement Scheme on development of 15,000 collectives, agricultural cooperatives with effective operation toward 2020 under Decision No. 461/QĐ-TTg (27/4/2018) by the Prime Minister. The balance of loan to cooperative economic sectors in the province constitutes a fairly small proportion in the total balance of loan for agricultural and rural development sector.

(7) Lending to Small and Medium-Sized Enterprises Farming Shrimp and Catfish

The lending program is for those who farm shrimp and catfish pursuant to Decision No. 540/QĐ-TTg (16/4/2014) by the Prime Minister.

Available loan programs are different by branch with the same bank. The table below shows a list of banks with branch by available loan programs.

Table 3.43 List of Banks Providing Loans for Agricultural and Rural Development in Nghe An

Bank and Branch Name	Loan Program*						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Agribank – Nghe An	X	X	X	X		X	
Vietinbank – North Nghe An	X		X	X		X	X
Agribank – West Nghe An	X	X	X			X	
Vietinbank – Vinh City, Vietcombank – Nghe An	X		X	X		X	
BIDV – Phu Dien	X		X	X			X
BIDV – Nghe An	X		X	X			
NASBANK	X		X		X		
BIDV – Phu Quy	X		X			X	
Vietinbank – Nghe An, BIDV – Vinh City, VBSP – Nghe An, Sacombank – Nghe An, VPBank – Nghe An, Techcombank – Nghe An, MBBank – Nghe An, SHB – Nghe An, ACB, Coop Bank, Central People’s Credit Fund (including 59 funds)	X		X				
Eximbank – Nghe An, OCB	X						
Bao Viet Bank, Lien Viet Post Bank, GPBank, VDB			X				
SeaBank						X	

Note: * Number of loan programs are corresponding to the descriptions above.

Source: Information provided by Nghe An Branch, the State Bank of Vietnam, in July 2018

Recent performance data of agricultural and rural finance are summarized by the program as shown below.

Table 3.44 Recent Loan Performance Data in Nghe An by Program

Year	Content		Loan Program*						
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
2013	Loan balance (mil. VND)		32,872,399		22,800,398				
	No. of loan users	Individuals	465,794		346,001				
		Enterprises	585		192				
		Others**	203						
2014	Loan balance (mil. VND)		44,192,275		31,747,757				1,189
	No. of loan users	Individuals	454,012		335,450				
		Enterprises	650		285				2
		Others**	199						
2015	Loan balance (mil. VND)		49,079,989	121,054	47,955,123	88,440		13,495	1,571
	No. of loan users	Individuals	181,447	665	141,200	21			
		Enterprises	1,085		969				2
		Others**	1,758		274			42	
2016	Loan balance (mil. VND)		57,170,534	233,043	59,385,056	497,808		47,248	
	No. of loan users	Individuals	199,310	1,146	350,691	67			
		Enterprises	1,573		877				
		Others**	1,266		72			152	
2017	Loan balance (mil. VND)		64,063,398	311,509	61,765,525	830,346	18,853,586	39,111	
	No. of loan users	Individuals	215,119	1,356	366,185	104	292		
		Enterprises	1,549		755				
		Others**	1,689		47		3	94	

Note: * Number of loan programs are corresponding to the descriptions above.

** Others include farm owners, cooperatives, cooperative union and cooperative group.

Source: Information provided by Nghe An Branch, the State Bank of Vietnam, in July 2018

Only two programs, namely (1) and (3), have data for the last five years (2013-2017), which means that other five programs seem to be relatively new ones. Furthermore, the (1) and (3) programs have quite large amounts of loan balance as well as loan users in comparison with other programs. The amounts of loan balances of these two programs exceeded 60 trillion VND and 99.7% of loan users, over 580 thousand users, were beneficiaries of these two programs in 2017. Thus both (1) and (3) programs seem to be the main financial tools for the agricultural and rural finance sector in Nghe An.

3.4.9 Trade and Sales Promotion

(1) Viet Nam Trade Promotion Center for Agriculture (Agritrade)

Agritrade is a business unit under the MARD with the functions and responsibilities as the focal point of trade promotion of agriculture, rural development and management of the Agricultural Exhibition in Vietnam. Agritrade has branch in each province under the DOIT.

Their main trade and sales promotion activities are as follows:

- Organize exhibitions, trade fairs, seminars for marketing and advertising in the agricultural sector in domestic and abroad.
- Organize trade promotion activities on agricultural and rural development
- Organize investigation and research market program in abroad
- Organize training course for units, enterprises in agricultural sector
- Support enterprises in building trademark promotion
- Provide agricultural news

They organize approximately 10 domestic events and 3-4 abroad exhibitions related agricultural sector per year.

(2) Vietnam Chamber of Commerce and Industry (VCCI)

VCCI is a national organization which assembles and represents business community, employers and business associations of all economic sectors in Vietnam. The purpose of VCCI is to protect and assist business enterprises, to contribute to the socio-economic development of the country and to promote economic, commercial and technological co-operation between Vietnam and the rest of the world on the basis of equality and mutual benefit. VCCI is an independent, non-governmental, non-profit organization having the status of a legal entity and operating with financial autonomy. Their representative office is in Khanh Hoa and Binh Thuan. They have 7 branch offices in Vietnam. One of the branch offices is in Vinh city, Nghe An province.

Their main trade and sales promotion activities related to agriculture are as follows:

- Business matching among the enterprises in neighbor countries and Vietnamese enterprises
- Provide information, guide and consultation for enterprises
- Market research and investigation
- Organize workshops, seminars for training on business planning for medium and small enterprise and cooperatives
- Organize domestic exhibitions, fairs, and advertisement
- Support delegation to participate in abroad exhibitions, fairs and matching events
- Support for registration and protection of intellectual property rights and technology transfer in Vietnam and abroad

(3) Issues on Trade and Sales Promotion

Issues on trade and sales promotion are as follows:

- There are several overlapping functions between the Agritrade and VCCI, but there is a lack of communication between them. Cooperation such as exchange of information and cosponsor of events are not held.
- Business matching events held by both organization target on only enterprises, but agricultural cooperatives and farmers' group are not covered.

MARD publishes the market price information of agricultural and livestock products collected by the Center for Informatics and Statistics (CIS) under their respective on their website. However, the market price is limited to a few agricultural products, thus the information of Nghe An is not included.

3.4.10 Investment Promotion

(1) Special Economic Zone/ Industrial Park

There are 16 coastal special economic zones in Vietnam. Dong Nam economic zone is one of the coastal special economic zone in Nghe An which has 20,000 ha in total. In particular, Nghe An PPC promotes 3 industrial parks in Don Nam economic zone as follows.

1) Vietnam Singapore Industrial Park

Vietnam Singapore Industrial Park (VSIP) is 1,467 ha located in Hung Nguyen district 3 km from Vinh city. The management company is Vietnam Singapore Industrial Park Joint Venture Co. Ltd. Major industry is textile, footwear, food and beverage manufacturing, precision machinery, electronic, subsidiary industry, etc.

2) Hemaraj Industrial Park

Currently, Hemaraj Industrial Park is under construction. The industrial park will be 500 ha by the

end of 2018 and 3,200 ha in the future. The industrial park is located in Nghi Loc district 7 km from Vinh city.

3) Hoang Mai 1 Industrial Park

Hoang Mai 1 Industrial Park is 286 ha located in Hoang Mai district about 80 km from Vinh city and 200 km from Hanoi. The nearest port is Dong Hoi port in Quynh Luu district that has 19 piers for receiving ships of 30,000 to 50,000 DWT.

(2) Current Situation of Investment Promotion

1) Investment Incentives in Special Economic Zone

There are several investment incentives including application of reduced tax rate for cooperate income taxes, exemption of import duties, reduction and exemption of land use fee and land tax, etc. These incentives are basis of the Decision 67/2014/QH13 announced in November 2014. In addition, the incentives are regulated by the Decision 14/2008/QH12 regarding the cooperate income tax, the Decision 46/2014/ND-CP regarding the land management, etc.

The special economic zone in Nghe An is one of the provinces applied the highest investment incentives that are applied 10% of cooperate income tax for 15 years at most, exemption of income tax for 4 years at most and 50 % of tax reduction for next 9 years, and exemption of import duties for 5 years.

2) Investment Incentives for Agriculture Sector

Nghe An province promotes investment in infrastructure development for tea, rubber tree, fruits tree (orange, mandarin orange, pineapple, banana, passion fruits), land for forage crop over 100 ha, and shrimp farm over 50 ha or the capable of 20 million shrimp. This promotion is basis of the Decision 26/2016/NQ-HDND. The contents and target of the investment incentives for agriculture sector are shown in the following table.

Table 3.45 Investment Incentives for Agriculture Sector

Subject	Investment Incentive
Land rental	Exemption or reduction (5 years)
Land consolidation	20 % of land rental fee (5 years) or 20 million VND/ ha
Land consolidation	20 % of land rental fee (5 years) or 20 million VND/ ha
Credit loan	Interest rate subsidies (8 years) and loan up to 70 % of total investment of a project
Research and transfer of high-tech agriculture	80 % of the cost or 300 million VND/ ha
Personal training and market development	5 billion VND
Investment in agricultural products processing and storage facilities, slaughter house, manufacturing of agricultural machinery and etc.	15 billion VND
Investment in cattle and dairy farms	5 billion VND for facilities and 10 million/ cattle
Enterprise providing public services and investing in infrastructure in rural area	Negotiable with Vietnamese government

Source: Nghe An PPC

3) Abundant and Moderate Labor Force

Legal minimum wage in Nghe An is approximately 130 USD per month. It is 30% lower than Hanoi and Ho Chi Minh City and lower level comparing with the cities in Southeast Asia (Table). Currently, it is one of the advantages. Vietnamese government regulated the legal minimum

monthly wage categorized four classes (Decision 122/2015/ND-CP). Hanoi and Ho Chi Minh City are categorized as class I, Nghe An province is categorized as class IV. The population of Nghe An is fourth biggest province, it is approximately 3.2 million. The labor force population in Nghe An is approximately 1.9 million with abundant labor force.

Table 3.46 Legal Minimum Wage of Nghe An and Cities in Southeast Asia

City	Legal Minimum Wage (USD)
Nghe An	130
Ha Noi	178
Phnom Penh	170
Jakarta	272
Bangkok	280
Manilla	283
Shanghai	355

Source: JETRO, Nghe An PPC

(3) Current Issues of Investment Environment

1) Increasing Labor Cost

According to the JBIC survey in 2017, the biggest issue of investment environment in Vietnam is increasing the labor cost. In fact, the labor cost is gradually increasing every year as shown in the table below. The average rate of the wage in Vietnam is 6.5 %, however the rate in Nghe An as class IV is 7.0 % in 2018. There is a possibility to lose the advantage if the minimum wage continues to increase in the future.

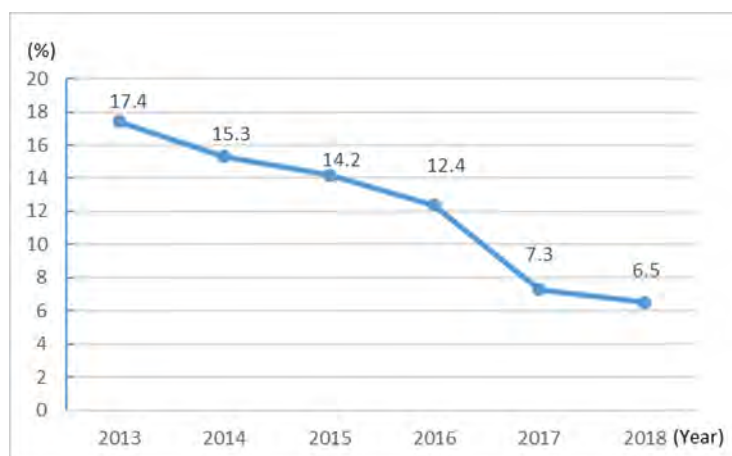


Figure 3.38 Average Rate of Legal Minimum Wage in Vietnam

2) The Other Issues

The other issues are uncertainty of the operation of legislation, intense competition with other companies, difficulty in securing human resource for managerial position, and lack of infrastructure development, according to the JBIC survey in 2017.

3.4.11 Infrastructure Development

Infrastructure physically connects from production to distribution and plays an important role in developing food value chain. For that purpose, "New Rural Development 2016-2020" program is being implemented in Nghe An province based on Decision No. 6076 / QD-UBND dated December 02, 2016 according to Resolution No. 1600/QD-TTg issued by the Prime Minister on August 16, 2016. For the 431 target communes, this programme consists of five major categories related to rural development namely; i) planning, ii) infrastructure improvement, iii) economic improvement of households, iv) local social

environment, and v) regional governance system. The five categories are further divided into 19 items and achievement goals are set for each item.

Regarding rural infrastructure related to food value chains such as agricultural production and distribution, the achievement goals, and criteria are set for rural road construction, irrigation facilities and electrification coverages, etc. in the second category ; ii) infrastructure improvement. The achievement degrees are tabulated every year. The transitions of the achievement are shown in the table below with the achievement criteria.

Table 3.47 Status of Rural Infrastructure Development and Achievement (among 431 communes)

Item	Target Criteria	2010	2015	2016	2017	2018
Rural road	- Commune road from centre of commune to main road: 100% - Accessibility of inter- rural road throughout the year: more than 70% - Lane is clean and not muddy in rainy season: more than 70% - Interior trunk road ensures convenient transportation throughout the year	0 (0%)	135 (31%)	172 (39.9%)	220 (51%)	255 (59%)
Irrigation	Agricultural land being irrigated and drained is 80% or more	4 (1%)	200 (46%)	277 (64.3%)	350 (81.2%)	360 (84%)
Electricity	- Standard electrical system:100% - Percentage of households using electricity regularly and safely from sources: more than 99%	134 (31%)	329 (76%)	370 (85.8%)	378 (87.7%)	383 (89%)
Commercial facilities	Existing rural markets or places where they buy, sell or exchange goods	31 (7%)	218 (51%)	264 (61%)	-	-

Source: Report No: 746/BC-UBND dated November 29 2018 of Nghe An PPC

According to the above table, approximately 60% of communes have achieved rural road construction and 80% has developed irrigation facilities as well as of electrified in 2018. Besides, the commercial facilities such as market and pick up center have been constructed in 60% of communes. At present, the irrigation canals for rice cultivation are being developed under loan assistance of JICA. However, it is said that farmers do not have sufficient facilities such as irrigation canals and drainage systems for horticultural crops and the water supply system for animal husbandry and fishery in the province.

As for the distribution infrastructure, rural road (track) connected to the main road has not well developed in the higher altitude district on the west side of the province. In particular, from Con Cuong via Thoug Dong to Ky Son, there are rivers but many of them are not managed sufficiently, and several roads are closed due to overflow from rivers when heavy rain comes. There is much road truck traffic from Quy Hop via Quy Chau to Que Phone in narrow space, thus the road condition is worsen. Besides, collection and pick up centers and warehouses specialized in agricultural products are not established even in the capital of the district.

The urgent challenges of the infrastructure condition and maintenance in the province of Nghe An are: i) shortage of irrigation and drainage facilities for year-round production, ii) lack of infrastructure development plan, iii) lack of infrastructure to improve distribution efficiency.

(1) Lack of Irrigation, Water Supply and Drainage Facilities for Year-round Production

Irrigation and water supply facilities are indispensable especially for vegetables and fruits production which are highly cashable. These crops are hardly grown due to high-temperature drying strong wind

at the beginning of the summer. Additionally, flood due to heavy rains in July and August damages the quality of products or sometimes ruins all products especially urban areas located low altitude place in the province. It will be possible to grow vegetables in off season in the summer and to prevent the quality degradation of crops in particular fruits, if irrigation and facilities for water supply and drainage are developed, which enables to irrigate complementary and control flood.

(2) Lack of the Plan for Infrastructure Development

As above mentioned, the governmental authorities are promoting the modernization of rural infrastructure. The Economic and Infrastructure Managements Office is in charge of rural infrastructure situation at the district level, but some of district offices barely have a plan for new infrastructure development and/or even maintenance of existing infrastructure due to budget limitation. Among infrastructure, development of rural roads is essential to supply agricultural inputs and to distribute the products properly, but 80% of rural roads are not well developed. Additionally, some main roads need to be rehabilitated or up-graded in the mountainous areas. Considering this situation, it should be planned for rehabilitation of main roads and development of rural roads.

(3) Lack of Infrastructure Facilities to Improve Distribution Efficiency

Many of the agricultural products produced in each district in the Nghe An province are collected in the bus terminals in the capital of district and shipped to markets in- or out of district or province. It is said that the post-harvesting loss is about 10 - 30% in Vietnam during the transportation and it is a possible to have further loss in the province of which most of part is hot and humid. In fact, it is said that leafy vegetables of which freshness is important will shrink and become unsold even after several hours during the day.

However, even for crop production and shipping points, public adjustment / pickup stations with wash places and packaging facilities. Slaughterhouses and meat processing facilities have been established but most of them are modernized; the houses are old and the surfaces of the ground are not covered with concrete. Additionally, cold chain system with cool/cold storages and refrigerated vehicle are not developed yet to keep freshness of crops and processed meats.

There are many commodities of which value chain can be developed in the future such as citrus fruits in hilly areas and rare agricultural products. In order to transport and sell them kept freshness and reduced loss, it is necessary to set up a logistics base and system including related facilities development along main roads.

3.5 Current Situation of Contract Agriculture

3.5.1 Present Contract Agriculture

The general contract law of Vietnam is found in the Civil Code 2005 which expressly guarantees the freedom of the parties to undertake and agree on civil rights and obligations.¹¹ The Commercial Law 2005, which regulates commercial or profit-making activities in Vietnam, may also apply to contract agriculture.¹² On October 25, 2013, the Prime Minister issued Decision No. 62/2013/QĐ-TTg on the incentive policy for development of cooperation in agricultural production and marketing of crop products, and large crop fields, which provides the standard form for contracts involving "large crop field projects,"¹³ such as those between marketing enterprises whereby the marketing enterprises provide input materials to farmers or farmers' representative organizations, and between enterprises and farmers or farmers' representative organizations.

The project team obtained 14 precedent contracts in Vietnam: 12 of these contracts were signed from

¹¹ Article 4, Civil Code 2005.

¹² International Institute for the Unification of Private Law, Legal policies and regulations governing contract farming in Vietnam, July 2014 (prepared by Ms. Nguyen Thi Thu Trang), paragraph 2.2 (page 6).

¹³ "Large crop field projects" are production arrangements based on cooperation among farmers, companies and farmers' representative organizations linking the production, process and sale of agricultural products in the same area, with large scale crop fields.

November 2013 to April 2016 and two were undated.¹⁴ These 14 contracts may be categorized as: (i) Contracts on Agricultural Marketing wherein the products are sold to traders or enterprises (eight contracts¹⁵); (ii) "Investment contracts" whereby enterprises (as sellers) advance the supply farm inputs (rice seeds or fertilizers) to buyers for purposes of rice production, with an undertaking by the sellers to purchase the rice to be harvested (five contracts) (referred herein as "Contracts on Farm Input Marketing"); and (iii) Supply Contract for livestock (one contract).¹⁶ Almost all Contracts on Agricultural Marketing are two-party contracts, wherein the producers/suppliers are either individuals, representatives of the household/s or farmers' group, or representatives of the commune (village). One contract was multipartite, with the Agricultural Extension Station of the district (which will build the chili production unit and provide technical training to the farmers) and the commune People's Committee (tasked with supervising product collection) being also parties to the contract. For the five Contracts on Farm Input Marketing, all of the buyers of farm inputs were representatives of communes or collectives, which will guide farmers in the production of rice.

3.5.2 Conditions in the Preceding Contracts in Vietnam

In general, the preceding Contracts on Agricultural Marketing are quite brief and short, and most have broad provisions, except those relating to product specification and quality, price, and terms of delivery which are relatively detailed. The emphasis of the preceding contracts is mostly on the obligations of the producer/supplier. In Contracts on Farm Input Marketing, which have detailed terms and conditions compared to Contracts on Agricultural Marketing, the obligations of the parties are more defined and thorough. The precedent contracts may be improved by adding more details for purposes of clarity and transparency and by considering other matters (as discussed below) which are relevant in the context of contract agriculture. The recommendations, based on the UNIDROIT/FAO/IFAD Legal Guide on Contract Farming (2015),¹⁷ are general comments based on the review and comparison of the preceding contracts. The applicability of each recommendation to a specific contract needs to be examined further as it depends on several factors such as the kind of product or service concerned, type of parties, nature of relationship between the parties, the objectives of the transaction, and the applicable regulations.

(1) Commercial Risks: Market Price

Most of the 14 preceding contracts either specify a fixed amount or provide for a pre-established price calculation method, while some contracts take into account the market price of the goods at the time of purchase, and one contract provides for bonus based on product quality (dryness standard of the corn).

Recommendations:

- Include a provision that takes into account commercial risks that result arising due to price fluctuations by devising a price calculation that preserves profitability of all parties despite price fluctuations. One possible solution is to divide the produce or commodities into separate parts, whereby one part is at a fixed price or amount and the other part is left to market pricing, capturing in part the advantages of market prices. This is to lessen the producer/supplier's incentive to side-sell the produce or commodities to third parties.
- To minimize any misunderstanding, in cases wherein there is a transparent and clear process for determining the market price, for the contract to specify how and when the market price is to be ascertained.
- Consider fixing a specific percentage of increase in market price (e.g., 2 % or 5 % increase) which would automatically trigger an adjustment in (or a review of) the purchase price.
- Incorporate mechanisms for monitoring the purchaser/contractor's calculation of purchase price

¹⁴ The project team excluded two contracts of Big C for purchase of fruits and vegetables: No. 0437001-FL-2015 dated 15 May 2015 and another contract dated 30 May 2015.

¹⁵ Three contracts for fresh tea buds; one for fruits and vegetables; one for passion fruit; one for fresh chili; one for corn to be used as animal feed; and one for rice production)

¹⁶ One contract for supply of pork, beef and chicken

¹⁷ UNIDROIT, FAO and IFAD, Legal Guide on Contract Farming (2015) (hereinafter referred to as the "Legal Guide").

based on criteria such as quality of the products by allowing producers/suppliers to participate or verify the price applied, or through the intervention of a third party.

(2) Exclusivity

Two of 14 preceding contracts in Vietnam have an "exclusivity clause" expressly prohibiting the producer or supplier from selling to third parties and using the products other than to supply the purchaser/contractor. For the five Contracts on Farm Input Marketing, it is not very clear if the relationship between the two parties is exclusive.

Recommendations:

- Consider providing certain flexibility to producers/suppliers by allowing them to retain a small quantity for sale outside of the contract to avoid "side-selling" of the products or commodities to third parties.
- Consider providing for exceptions to the exclusivity clause, such as sale to third parties with the purchaser/contractor's consent.
- If the parties intend that there shall be prohibition against selling to third parties, such should be expressly stated in the contract for clarity, or in the alternative, expressly include a clause whereby the producer/supplier has an obligation to reserve all of its production to the purchaser/contractor and the latter has the undertaking to buy the whole production.

(3) Insurance

In general, many agricultural production contracts do not contain any provision on insurance either due to lack of availability or affordability.

Recommendation:

- For contracts involving substantial value, and in situations wherein the applicable insurance is available and can be obtained at reasonable costs, the parties should consider including insurance obligations in the contract, by specifying which party has an obligation to obtain insurance and the type of insurance to be purchased (i.e., insurance for crop and livestock, third party liability).

(4) Force Majeure

Majority of the 14 preceding contracts do not have a provision on force majeure events, and those, which have such clause, it only provides a minimum reference to force majeure situations.

Recommendations:

- Parties should agree on a reasonably detailed provision on force majeure specifically tailored to their transactions, such as by listing the events which may be considered as "force majeure," including events which are not usually included but are relevant in contract agriculture such as epidemics and pests, abrupt climate changes, and substantial fluctuations in market price of the products.
- The force majeure clause may also indicate: (i) whether it is applicable to only one or both parties' performance, (ii) the extent of the parties' liability, (iii) whether the obligation to perform is merely suspended for the duration of force majeure, (iv) the obligation to give notice of the force majeure event, and (v) whether the producer/supplier would still be liable for payment of the inputs received or restitution of any loans to the purchaser/contractor.

(5) Breach of Contract

Half of the preceding contracts do not have a provision in case of breach of its terms and conditions.

Recommendations:

- Consider specifying judicial and non-judicial remedies available to either or both parties in case of unexcused nonperformance. Remedies that may be considered by the parties, depending on

factors such as size of the producer/supplier and type of commodity, include the following:

- In-kind remedies such as specific performance; removal of defects by repairing it or through corrective actions; and replacement of non-conforming goods;
- Withholding of performance when one party breaches the contract before the other party has to perform pursuant to the schedule;
- Monetary remedies: damages (as a stand-alone remedy or in combination with other remedies), price reduction (which is a usual remedy in case of breach for non-conformity or for partial delivery);
- For serious breaches wherein there is no room to continue the contractual relationship: termination and monetary redress.

(6) Termination of Contract

It is not expressly clear in most of the preceding contracts whether either party has the right to unilaterally terminate the contract in case of breach. Only few preceding contracts specify the grounds for termination.

Recommendations:

- Clearly specify the grounds for termination of the contract, such as (i) automatic termination upon expiration of the specified term or complete performance of the contractual obligations, (ii) termination by mutual consent, (iii) termination for breach, and (iv) termination by one of the parties.
- Consider certain provisions that will survive the termination of the contract, such as those on accrued rights or liabilities, return of documents or technical equipment, or confidential or non-disclosure clauses.

(7) Dispute Resolution

Almost all of the preceding contracts have a general dispute settlement clause requiring discussion or negotiation by the parties in case dispute arises, to be referred to court if it remains unresolved.

Recommendations

- Consider other forms of dispute resolution such as mediation or conciliation, which may offer more appropriate solutions in the context of contract agriculture. In general, non-judicial methods of dispute resolution are suitable for contract agriculture as they are usually more timely and flexible than judicial proceedings.
- Specify the time-limit for any discussion, negotiation or mediation steps.

Chapter 4 Development Potential, Obstacles and Visions of Agriculture in Nghe An Province

4.1 Determination of Potential Zone for Agricultural Development

4.1.1 Background for the Determination of Potential Development Zone

As stated so far, Nghe An province possesses a diverse topography from coast to mountainous areas where the production activities of agricultural and livestock products suitable for each natural environment are being carried out. It is natural that the comparative advantages of agricultural and livestock products in each region are different, but considering that the M/P formulated in this project should clarify the FVC development potential in a specific area, it is necessary to consider regional characteristics such as food distribution environment and social environment as well as the product characteristics. Besides, it is appropriate to formulate the potential zone for FVC development based on these data and identify each development vision based on the characteristics of each zone. Therefore, the JICA Project Team develops a potential zone for FVC development based on relevant and available data.

4.1.2 Data Applied for Analysis

The data applied for the analysis to formulate the potential zone for FVC development are summarized in the table below. The collected information comprises the social conditions, crop cultivation conditions and livestock conditions of each city, district and town. Regarding social conditions, five items related to FVC development were selected, as well as crop cultivation conditions and livestock conditions were selected referring to the priority agricultural and livestock products prescribed by Nghe An province. The details of each such data are shown in Annexes.

Table 4.1 Data Applied for Analysis

Social Condition	Crop Production Condition	Livestock Husbandry Condition
- Population density*1	- Specialization index of rice cultivation area *1	- Specialization index of grazing number of cow*1
- Road density*2	- Specialization index of maize cultivation area *1	- Specialization index of grazing number of pig*1
- Farmland ratio in total land area*1	- Specialization index of sugarcane cultivation area *1	- Specialization index of grazing number of chicken *1
- Agricultural production value per unit area*1	- Specialization index of vegetable cultivation area *1	
- Poor rate*3	- Specialization index of peanut cultivation area *1	
	- Specialization index of fruit cultivation area *1	
	- Specialization index of tea cultivation area *1	
	- Specialization index of spice cultivation area *1	

*1 Calculated based on the Statistic book in Nghe An province (2016), *2 Calculated based on the data provided by DOIT,

*3 Nghe An PPC, Department of Labor, War Invalids and Social Affairs, 2016

Source: JICA Project Team

4.1.3 Principle Component Analysis

As a statistical method for analyzing and organizing a large number of acquired data, the JICA Project team summarized the data by applying the principal component analysis. For the analysis, JICA Project team used Excel Statistical tool of Windows from Social Information Service Co., Ltd. The table below shows the contribution rates and features of each principal component extracted by principal component analysis. As a result of the analysis, since the total contribution ratio of the 1st to 4th principal components accounted for 78.6% and hence, the principal component was set as a subject of further analysis. For features of each principle components, JICA Project team extract data with high absolute load values for each principal component. The results are summarized as follows.

Principal component 1: Cities, districts, and towns with high scores under Principal Component 1 are

areas with high road density, population density, agricultural land area ratios and agricultural output per unit area while poverty rate is relatively low. While specializing in peanut and vegetables, cattle, pigs and other breeding tend not to be conducted much.

Principal component 2: Cities, districts, towns with high scores under Principle component 2 have a high agricultural land area ratio and tend to specialize in fruit, tea and poultry farming. On the other hand, production of spices is not cultivated much.

Principal component 3: Cities, districts, towns with high scores under Principle component 3 are the area, which tends to specialize in cultivating sugar cane and fruit trees, whereas Maize and tea cultivation are rare.

Principal component 4: Cities, districts, towns with high scores under Principle component 4 tend to specialize in rice cultivation.

Table 4.2 Results of Principle Component Analysis

	Contribution ratio	Characteristics of social condition	Characteristics of crop production condition	Characteristics of livestock husbandry condition
Principal Component 1	38.4%	- Road density (positive) - Population density (positive) - Agricultural production value per unit area (positive) - Farmland ratio in total land area(positive) - Poor rate (negative)	- Specialization index of peanut cultivation area (positive) - Specialization index of vegetable cultivation area (positive)	- Specialization index of grazing number of cow (negative) - Specialization index of grazing number of pig (negative)
Principal Component 2	18.6%	- Farmland ratio in total land area (positive)	- Specialization index of fruit cultivation area (positive) - Specialization index of tea cultivation area (positive) - Specialization index of spice cultivation area (negative)	- Specialization index of grazing number of chicken (positive)
Principal Component 3	12.7%		- Specialization index of sugarcane cultivation area (positive) - Specialization index of fruit cultivation area (positive) - Specialization index of maize cultivation area (negative) - Specialization index of tea cultivation area (negative)	
Principal Component 4	8.9%		- Specialization index of rice cultivation area (positive)	

Source: JICA Project Team

Additionally, the principal component scores of each city, district and town are shown in the table below. This makes it possible to organize the characteristics of each city, district and town. For example, in the case of Cua Lo town, the score of principal component 1 is 5.1530 showing that the various features relating to Principal Component 1 in the table above strongly appear in Cua Lo town.

Table 4.3 Principle Component Scores of each City, District and Town

	Principal Component 1	Principal Component 2	Principal Component 3	Principal Component 4
Do Luong	-0.2007	0.4527	-1.7681	1.1086
Anh Son	-2.2518	2.9397	-2.7522	-1.7829
Cua Lo	5.1530	-1.3795	0.3248	-2.7823
Con Cuong	-2.1260	-0.2338	-0.1915	-0.6974
Dien Chau	2.0297	-0.3629	-0.8062	0.8915
Hung Nguyen	1.8329	-0.1446	0.0307	2.5562
Ky Son	-4.0601	-4.0273	-0.3529	-0.5117
Nam Dan	1.1667	0.9437	0.0346	0.4316
Nghia Dan	-1.0260	1.7075	2.7932	-0.0799
Nghi Loc	1.3724	-0.0116	-0.9064	0.5512
Quy Chau	-1.9658	-1.1048	1.2134	-0.3879
Quy Hop	-1.6387	2.0782	3.1477	-0.2098
Quynh Luu	1.7617	-0.0440	0.0532	0.7576
Que Phong	-2.3837	-2.7426	0.4693	0.9967
Tan Ky	-1.1460	1.2377	0.6845	-0.2610
Tuong Duong	-3.1031	-1.8764	-0.5055	-0.3512
Thai Hoa	0.2178	1.3400	1.5821	-0.1534
Thanh Chuong	-1.7698	2.0577	2.3575	-0.5417
Vinh	4.6982	-1.9123	-0.1954	-0.6353
Yen Thanh	0.9936	0.8989	-0.6792	2.0246
Hoang Mai	2.4456	0.1837	0.1817	-0.9235

Source: JICA Project Team

4.1.4 Cluster Analysis

Cluster analysis (Ward method) was carried out using the principal component scores related to principal components 1-4 of each city, district and town shown in the above table. For the analysis, JICA Project team used Excel Statistics for Windows from Social Information Service Co., Ltd. The figure below shows the dendrogram created by using cluster analysis. In this analysis, the Euclidean distance is divided by the point where the Euclidean distance is 8 or later, and it is arranged to be 4 clusters.

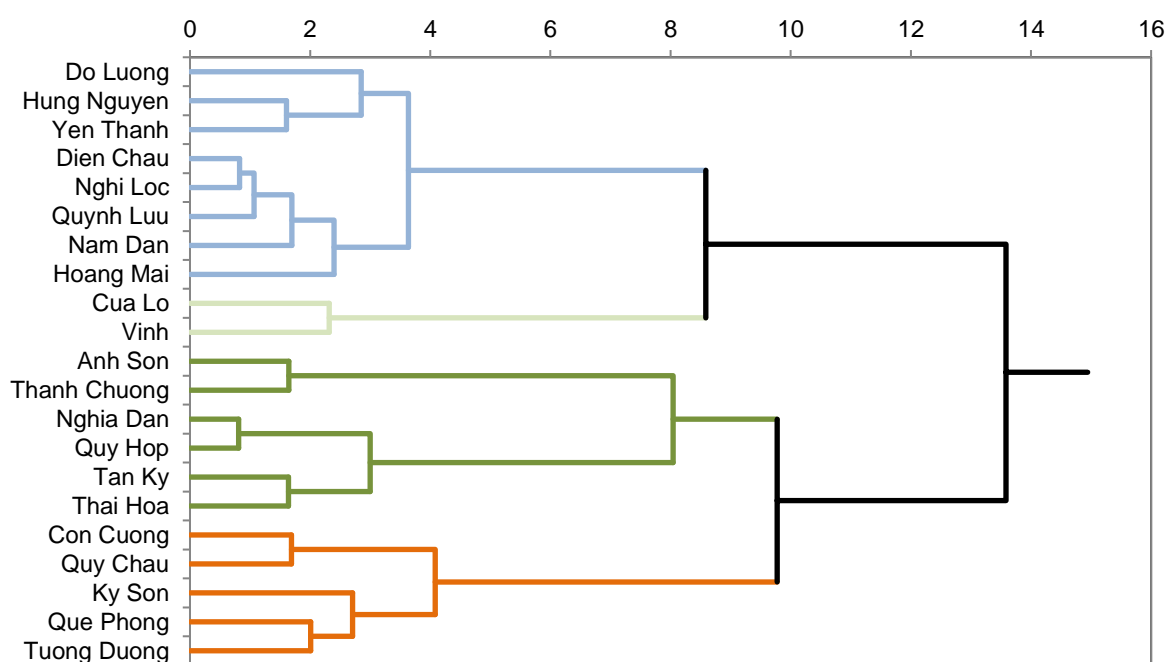


Figure 4.1 Dendrogram Obtained by Cluster Analysis

Source: JICA Project Team

Table 4.4 shows the average value of the principal component scores of each cluster. In result, the characteristics of each cluster are summarized as shown in the table 4.5.

Table 4.4 Average Value of Principal Component Scores of Each Cluster

	Principal Component 1	Principal Component 2	Principal Component 3	Principal Component 4
Cluster 1	1.425	0.239	-0.482	0.925
Cluster 2	4.926	-1.646	0.065	-1.709
Cluster 3	-1.269	1.893	0.516	-0.505
Cluster 4	-2.728	-1.997	0.127	-0.190

Source: JICA Project Team

Table 4.5 Features of each Cluster

	City, District, Town	Characteristic
Cluster 1	Do Luong, Hung Nguyen, Yen Thanh Dien Chau, Nghi Loc, Quynh Luu, Nam Dan, Hoang Mai	Applicable city, district and town to this cluster are under the comparatively favorable conditions regarding trading and sales of the products. Those areas have competitiveness regarding vegetable, peanuts and rice cultivation. Hence, the agricultural production value per unit area and farmland rate in total land are comparatively high.
Cluster 2	Cua Lo, Vinh	Applicable city, district and town to this cluster are under the favorable conditions regarding trading and sales of the products. Hence, the agricultural production value per unit area and farmland rate in total land are considerably high. Those areas have competitiveness regarding vegetable and peanuts production.
Cluster 3	Anh Son, Thanh Chuong, Nghia Dan, Quy Hop, Tan Ky, Thai Hoa	Although applicable city, district and town to this cluster are under the unfavorable condition regarding trading and sales of the products, the farmland rate in total land is comparatively high. Those areas have competitiveness regarding fruit, tea, and sugarcane and poultry production.
Cluster 4	Con Cuong, Quy Chau, Ky Son, Que Phong, Tuong Duong	Applicable city, district and town to this cluster are under the unfavorable conditions regarding trading and sales of the products. Those areas also show high poor rate. Those areas have competitiveness regarding spice, cow and pig production.

Source: JICA Project Team

4.1.5 Potential Development Zone

Based on the above analysis results, the development potential zones are summarized into 4 categories (right figure). In result, the geographical distribution of the categorized development potential zones is highly similar to the Agro-Ecological Zone classified by Nghe An province, which is described in Chapter 2, and it is considered that development potential and development inhibition factors can be summarized according to topographical condition in large part. That is, Cluster 1 is the coastal plain area, Cluster 3 is a hilly area, Cluster 4 is a mountain area, with the exception that Cluster 2, which includes Vinh City and Cua lo Town, is located in an urban area where population concentrates, and arrange them separately as urban-suburban areas. From then on, JICA Project team summarizes the development potential and development inhibition factors for these four zones.

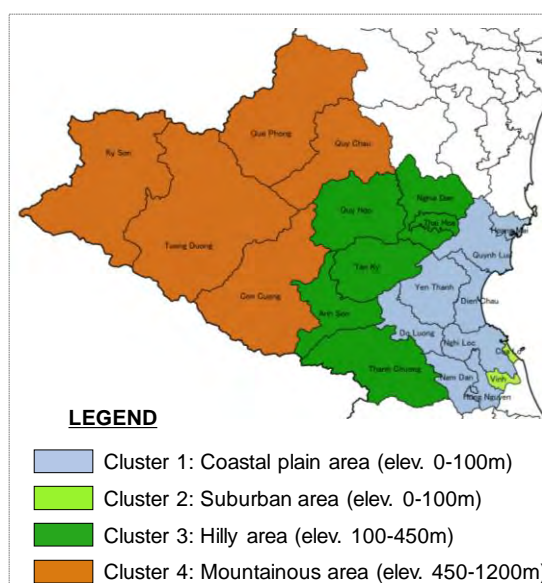


Figure 4.2 Geographical Distribution of each Cluster

4.2 Development Potential and Constraints

In this section, JICA Project team summarizes the development potential and development inhibition factors of the development potential zones categorized according to the above analysis, including the items described in chapter 2 and chapter 3.

4.2.1 Development Potential and Constraints for Each Zone

(1) Coastal Plain Area

The coastal plain area specializes in the cultivation of grains, vegetables and peanuts. In the domestic market, some producing areas already function as supply sources for food processing companies inside and outside the province and some agricultural cooperatives are beginning to work on contract farming. In addition, the area has the representative products such as rice and peanut having higher market competitiveness in international markets. The irrigation system, currently being improved by JICA loan aid cooperation, will strengthen the competitiveness in domestic and international markets for agricultural products in the region. On the other hand, 1) there are few products related to raw material supply and export, 2) cultivation and post-harvest treatment technology is immature and product quality is not stable, 3) agricultural land area per household is small and agricultural mechanization is not progressing 4) Some farmlands have problems such as insufficient irrigation and drainage facilities and there are situations where domestic and overseas demand cannot be fully met.

(2) Sub-Urban Area

The suburban area is located in large consumption areas such as Vinh city and Cua lo beach where tourists visit. In particular, it has high potential regarding sales of fresh vegetables. There are many high-income households seeking foods with higher value, including safety vegetables. The transportation costs for the distribution of fresh vegetables are also lower than other areas. Thus, it is in an environment where it is relatively easy for farmers to spend more cost to produce value-added products. In addition, the area has the comparative advantage regarding the access to various agricultural equipment materials and the situation that they can easily get the market information. On the other hand, there are several issues such as 1) the diversion of agricultural land is progressing due to urbanization and industrialization, 2) contaminated farmland areas exist due to population increase and waste management problems, 3) farmland are becoming miniaturized by population pressure and 4) There are other issues such as limited sales channels of high value-added products such as safety vegetables.

(3) Hilly Area

In the hilly area, there are products such as fruit trees and locally grown chickens that are already well known nationwide. Hence, large dairy companies are engaging in dairy farming and the demand for feed crops is quite high. In addition, large enterprises and small and medium enterprises are responsible for the production, processing and sales of tea and cassava, which are major export products of Nghe An province. These have a certain share in domestic and overseas markets meaning that those products already have relatively high market competitiveness. For further development of those products, it is necessary to promote branding, increase production efficiency and promote expansion of market share in the target market. However, there are several issues such as 1) lack of standardization of the cultivation style of each product, 2) productivity and quality of the products are not stable due to the insufficient irrigation and drainage facilities, 3) It is difficult to concentrate agricultural land and to utilize agricultural machinery effectively which limits the effective animal feed production.

(4) Mountainous Zone

The residents living in mountainous areas conduct slash and burn agriculture, rice cultivation at rice terraces, and breeding of various kinds of livestock. It is possible to produce agricultural products by making full use of the cool climate, which is the uniqueness of the highlands, and it is suitable for

producing fruit trees and medicinal crops as well as ginger and garlic, which are highly demanded from the both domestic and international market. It is also one of the strengths of the area that there are abundant unused fodder resources and grazing land that can be used as livestock. Although there are many ethnic minorities living in areas with high poverty, there are aspects that it is easy to receive public support aiming at poverty reduction. However, there are many problems beyond these development potentials such as 1) difficulty to develop irrigation system, 2) access to markets and agricultural materials is difficult due to poor road condition 3) insufficiency of agriculture extension and veterinary services, 4) There are unelectrified areas around the border between Vietnam and Laos and 5) High transportation cost when selling products to outside of the region.

4.2.2 General Constraints across Zones

The development inhibition factors commonly seen in each zone are as follows.

(1) Producer and Agricultural Cooperative

Although some issues are already described above, the quality and quantity of products to be shipped to target market are not stable and the farmers' perception of the market is still low. The agricultural cooperatives themselves who bundle farmers also have a remarkable lack of experience in commercial agriculture, and the production arrangement and cultivation standardization within the cooperative have not been well managed which makes it difficult for them to be attractive production areas for demanders. Recently, the importance of food safety is strongly pointed out in nationwide, but illegal agricultural materials are still circulating, and it is difficult to crack down on those distributions and use in the agricultural fields.

(2) Processing and Distribution

The farmers side can easily sell agricultural and livestock products through the middleman who is the major distributors engaging in the circulation of agricultural products as their business. On the other hand, the sales are strongly influenced by market conditions, and farming management often becomes unstable due to the lack of stable buyers. Food loss during the distribution process is also large, and technologies related to freshness preservation and infrastructure facilities such as cold storage are lacking. In addition, some food processors have insufficient hygiene control capabilities, and they have not been able to meet sanitary standards as required by customers.

(3) Sales and Marketing

The producer side has few opportunities to obtain information related to market demand (standards, quality, quantity, shipping timing, and price). Similarly, on the consumer side, means for accessing producer information is limited. The cheaper agricultural products are flowing in the domestic market from neighboring countries (especially China), and the measures to differentiate agricultural products which competes with those foreign products have not sufficiently been studied.

(4) Administration and Others

There are duplications and lack of cooperation in administrative agency operations, which makes it difficult to conduct various administration services effectively. It is significant in the departments related to agricultural research and agricultural extension, and related departments are promoting projects without mutual coordination, which makes the development of FVC for specific products difficult. Besides this, the Nghe An province is vulnerable to typhoons thus, making agricultural management more unstable. The financial burden, such as the grant of subsidies to the affected farmers, has also been increased.

4.3 Development Strategy for each Zone

4.3.1 Strategic Region for Promotion of Raw Material Production for Food Processing and Exporting

Main target region of promotion of raw material production is the coastal plain area in Nghe An province. The direction of FVC development in the area is provision of materials for domestic food processors and exporters. The main target crops are existing crops for processing and exporting in the province depending on the needs of customers. The short-term development strategy is proposed as follows.

- It is necessary to establish efficient and profitable farming model to produce agricultural products with cost and quality corresponding to the specification of processors and exporters by means of low-cost or high-yielding production methods. The strategy of this area is the establishment of production center of processing material and export products through scale-up of producers by means of various supports to agricultural cooperatives.

Table 4.6 SWOT Analysis for Coastal Plain Zone

External	Internal	Strengths <ul style="list-style-type: none"> • Large-scale irrigation system • Good access to consumption area • Good access to processors, traders and exporter • Availability of Agro-machinery and irrigation tools • Many large to small traders 	Weaknesses <ul style="list-style-type: none"> • Limitation of variation of cultivars • Low techniques on post-harvest handling such as drying and grading • Partly poor irrigation and drainage • Poor access to soil improving materials and organic matters • Poor logistic system for small-scale production
	Opportunities <ul style="list-style-type: none"> • Demands of tourists in Nam Dan district • Existence of supply chain of animal feed 	S-O Strategy <ul style="list-style-type: none"> • Production of raw materials for food processors • Collaboration with tourism sector 	W-O Strategy <ul style="list-style-type: none"> • Improvement of facilities and technologies of post-harvest handling
	Threats <ul style="list-style-type: none"> • Climate risks such as typhoon and flood • Unfavorable climate such as hot and humid in summer and lack of sunshine in winter 	S-T Strategy <ul style="list-style-type: none"> • Promotion of crop production in irrigation system area 	W-T Strategy <ul style="list-style-type: none"> • Improvement of small-scale irrigation and drainage facilities

Source: JICA Project Team

4.3.2 Strategic Region for Promotion of Safe Agricultural Production

Main target region of safe agricultural production is sub-urban area. This FVC development targets high to middle-income class in Vinh city and tourists, of which number is about 3 million a year. Priority products are fresh vegetables with comparative advantage in transportation cost and chicken eggs with low impact on environment. The expected outlets are supermarkets, hotels, restaurants used by target consumers. The short-term direction of this FVC development is as follows.

- It is forecasted that acquisition of public safety certificate and management of production records and shipping plan will be a specific condition of transaction, reflecting increasing awareness for food safety. In such circumstance, the production model of safe agricultural products shall be established through assistance to some leading cooperatives, and the model shall be extended sequentially.
- The demand for fresh vegetables becomes high during tourist season (June to September) because of a lot of influx of tourists. The main products in this hot season are

high-temperature tolerant crops such as watermelon and melon, instead of leaf vegetables. The production system corresponding with this tourists' demand shall be developed by introducing high-temperature tolerant varieties of vegetables and provision of sunshade facilities.

Table 4.7 SWOT Analysis for Sub-Urban Zone

Internal External	Strengths <ul style="list-style-type: none"> • Good access to urban market sensitive to higher quality and higher value-added • Easy and low-cost transportation to market • Easy transportation of soft vegetables • Good access to agricultural extension service and materials 	Weaknesses <ul style="list-style-type: none"> • Transformation of farmland to residential or industrial land • Risk of agro-chemical residue by overuse • Difficulty of reduction of production cost due to small size of farmlands
	Opportunities <ul style="list-style-type: none"> • Some retailers dealing with safe vegetables • Large demand for tourists in Cua Lo beach • Large and stable demand for schools, hotels, etc. 	S-O Strategy <ul style="list-style-type: none"> • Promotion of production and marketing of safe vegetables • Establishment of production system to meet tourists' demand or large-scale customers
Threats <ul style="list-style-type: none"> • Climate risks such as typhoon and flood • Unfavorable climates such as hot and humid in summer and lack of sunshine in winter • Difficulty of expansion of livestock industry due to awareness of environment 	S-T Strategy <ul style="list-style-type: none"> • Strengthening of research and extension of vegetable production methods suit for market needs • Support for high-value agricultural production system 	W-T Strategy <ul style="list-style-type: none"> • Maintaining and securing of farmland with low climate

Source: JICA Project Team

4.3.3 Strategic Region for Promotion of High-Value Added Agricultural Production

Main target region of high value-added agricultural production is hilly area. The well-known agricultural products in the hilly area shall be reinforced. The target consumers are high-income class of Hanoi, Ho Chi Minh, etc., and the marketing channel with supermarkets, hotels and restaurants shall be expanded and strengthened. The short-term strategy of this FVC development is as follows.

- There exist well-known agricultural products such as orange and tea in the hilly area. The processed foods and goods using them shall be produced and their marketing channels shall be developed. At the same time, the production center with strong brand power shall be established through introduction of authentic certificate of origin and standard specification.
- Livestock production shall be strengthened by establishment of efficient fodder production system, branding of local bread of livestock, safe meat production by using locally available organic feed, and so on.

Table 4.8 SWOT Analysis for Hilly Zone

Internal	<p>Strengths</p> <ul style="list-style-type: none"> • Special products such as orange and local chicken • Private food processing company equipped with freezing and juice extraction devices for domestic and international market • Potential lands for large-scale farming • Leading milk and sugar companies with modern mechanizing farming 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Inexperienced production and marketing system for branding • Lack of mechanization in fodder production • Lack of irrigation and drainage system causing unstable production and quality • Low competitiveness of orange in quality and yield 	
External	<p>Opportunities</p> <ul style="list-style-type: none"> • Large demand for fodder for large-scale dairy company • Many small to large manufacturers of tea 	<p>S-O Strategy</p> <ul style="list-style-type: none"> • Support of formation of brand strength and production center • Support for introduction of large-scale production system through consolidation of farmlands 	<p>W-O Strategy</p> <ul style="list-style-type: none"> • Reformulation of production and marketing strategy of citrus • Support for consolidation of small-scale farmlands
	<p>Threats</p> <ul style="list-style-type: none"> • Climate risks such as typhoon and flood • Unfavorable climates such as hot and humid in summer and lack of sunshine in winter 	<p>S-T Strategy</p> <ul style="list-style-type: none"> • Development of irrigation and drainage system 	<p>W-T Strategy</p> <ul style="list-style-type: none"> • Stabilization of quality and quantity of agricultural products through improvement of production methods

Source: JICA Project Team

4.3.4 Strategic Region for Promotion of Agricultural Products for Special Use

Main target region of promotion of agricultural products for special use is mountainous area. There is production potential of high demand agricultural products such as ginger, garlic, black pig, and silky fowl, although poverty rate is high and infrastructure is poor in the area. Promotion of special agricultural products with certain quality can bring income generation and poverty reduction. The strategy of FVC development is to strengthen production system of special agricultural products corresponding with domestic and international market needs and farm-to-market road development for better marketing channel of farm inputs and agricultural products. The short-term strategy of this FVC development is as follows.

- Regarding agricultural products with high international demand or unique characteristics, producers shall be organized and product control system shall be established for production corresponding to the buyers' specification, aiming at stable and higher profit of producers.
- Regarding Mong cow, black pig, and silky fowl, hygiene control and veterinary service during fattening period shall be strengthened, production cost shall be reduced by exploiting unused fodder resources and grazing land, and their brand value shall be established.

Table 4.9 SWOT Analysis for Mountainous Zone

External	Internal	Strengths <ul style="list-style-type: none"> • Cool weather in highlands suitable for certain crops • Some specialized fruits, medical plants and livestock • Huge sloping lands useful for agriculture purpose • Unused fodder and grazing land useful for livestock • Potential of natural farming due to scarce pest/diseases and soil fertility 	Weaknesses <ul style="list-style-type: none"> • Difficulty in irrigation development due to scattered farms on slope • Disadvantage in farming and transportation due to steep slope • Poor access to market and agricultural inputs • Some area without electrification
	Opportunities <ul style="list-style-type: none"> • Potential of tourist development • Supporting system for ethnic minorities 	S-O Strategy <ul style="list-style-type: none"> • Promotion of specialized agricultural products suitable for environment 	W-O Strategy <ul style="list-style-type: none"> • Rural development with combination of various support system • Improvement of farm-to-market roads
	Threats <ul style="list-style-type: none"> • Necessity of environmental conservation in hillside farming • Small market capacity in the area • Poor services of agricultural extension and veterinarian 	S-T Strategy <ul style="list-style-type: none"> • Support for highly profitable production system for small-scale farmers 	W-T Strategy <ul style="list-style-type: none"> • Introduction of effective extension and support system

Source: JICA Project Team

4.3.5 Whole Region of the Nghe An Province

In addition to regional strategies, the cross SWOT analysis for whole region of the Nghe An province was done as shown in the table below. The province has advantages in agricultural potential under various environments and sufficient infrastructure for export, but market-oriented production and marketing system is not fully developed yet. It is necessary to enhance information support service for FVC development, and various support for production, processing and trading corresponding with market needs. The short-term strategy for FVC development is as follows.

- Nghe An PPC shall establish an organization responsible for collection and sharing of market information to promote agricultural marketing from producers to consumers. Research and extension services to farmers on appropriate technologies for demanded agricultural products shall be strengthened. Technical and financial support for management of production, quality and hygiene shall be provided to processors and sellers. Support for infrastructure improvement on post-harvesting handling and food processing shall also be provided aiming at enhancing competitiveness in domestic and international market.

Table 4.10 SWOT Analysis for the Whole Area of Nghe An Province

<p style="text-align: right;">Internal</p> <p style="text-align: left;">External</p>	<p>Strengths</p> <ul style="list-style-type: none"> • Possibility of diversified production throughout the year using various climate and topographic condition • Good access to international market through airport, seaport and international road • Private companies with experiences of export 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Poor information on market needs • Low awareness of market needs • Few consecutive contract agriculture • Unstable quantity and quality of agricultural products • Insufficient farmers' skills to overcome climate change • Poor facilities for sanitary supervision, freshness keeping, etc. • Ineffective agricultural extension for stable production and quality control
<p>Opportunities</p> <ul style="list-style-type: none"> • Large population and food demand in Nghe An province • Expanding demand for safe foods 	<p>S-O Strategy</p> <ul style="list-style-type: none"> • Continuous control of production system corresponding with market needs • Support for export promotion of agricultural products 	<p>W-O Strategy</p> <ul style="list-style-type: none"> • Establishment of information system on market needs • Support for contract agriculture • Support for infrastructure of post-harvest handling and food processing
<p>Threats</p> <ul style="list-style-type: none"> • Poor skill and number of extension officer in district level • Limited access to financing services • Low reliability on certificate systems of GAP, etc. • Difficulty in control of traders dealing with fake farming materials • Competitiveness with low-cost foods imported from China, etc. 	<p>S-T Strategy</p> <ul style="list-style-type: none"> • Continuous support for public certification system of agricultural products • Development of agricultural products with high competitiveness 	<p>W-T Strategy</p> <ul style="list-style-type: none"> • Establishment of extension service regarding safety and quality control of agricultural products • Expansion of financing services for introduction of new technologies

Source: JICA Project Team

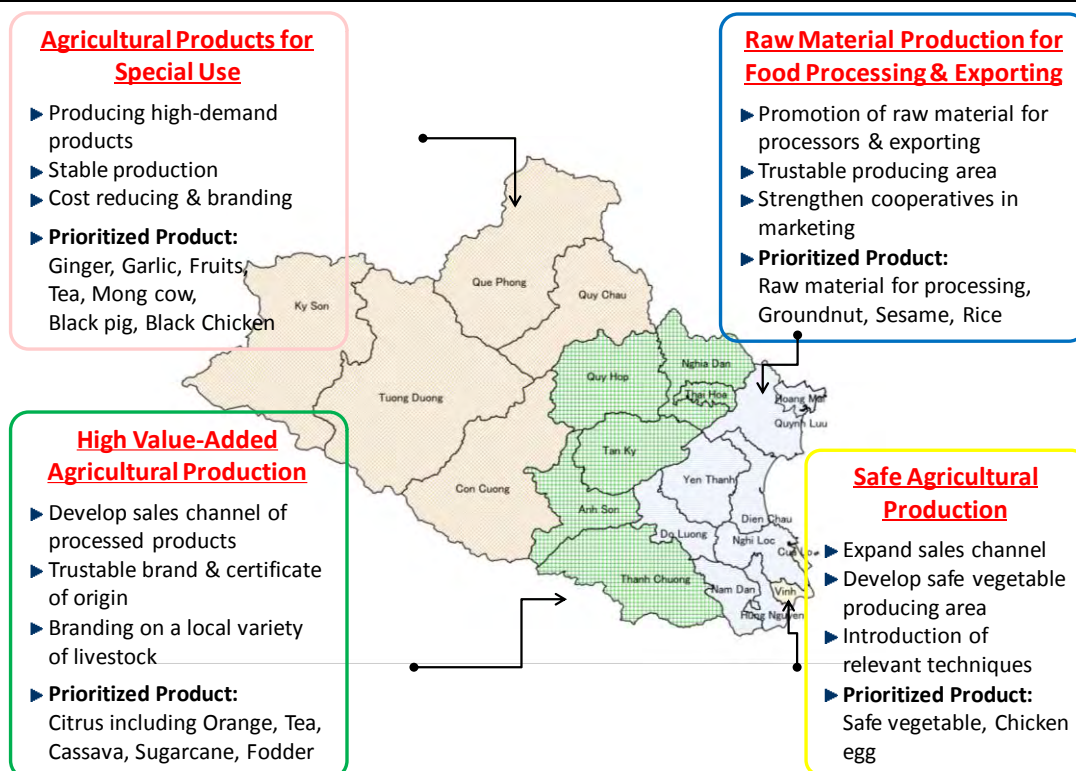


Figure 4.3 Strategy of FVC Development by Zone

4.4 Verification Method for the Hypothesis

The JICA Project Team carried out the following verification studies to evaluate the validity of above-mentioned development strategies.

4.4.1 Establishment of Collection and Distribution System for the Market Information

Development of FVC development requires function of needs assessment of target markets, information sharing with producers, business-matching support with buyers and so on. In this Study, Agricultural Marketing Platform (AMPF) was established by DARD and other related departments and capacity development for its staffs was done through training in Vietnam and Japan as well as OJT, aiming at collection and sharing of market information in Nghe An province. The results of the verification activities are described in Chapter 5.

4.4.2 Pilot Project Regarding Contract Agriculture

The validity of the above-mentioned FVC development strategy for each strategic region was verified by the implementation of various pilot projects presupposing contract-based transaction. The results of the pilot projects are described in Chapter 6.

Chapter 5 Agricultural Marketing Platform

5.1 Objective of AMPF Establishment

Based on the results of survey conducted throughout the project period, it is found out that most of local farmers and cooperatives in Nghe An province find difficulty to grasp market information including buyer's needs. To facilitate the development of FVC through contract agriculture, the opportunity for producers to clarify buyer's needs should be created, while the improvement of production and distribution system is also indispensable to create and deliver the value to the end users. There are several private companies providing service to match the requirements of agricultural producers and buyers in large cities such as Hanoi. However, such services are still in the developing stage and require more time to be expanded throughout Vietnam. Hence, the local area such as Nghe An province does not have many buyers of agricultural products, which could be the major constraints to generate such private service. Thus, the Project Team has supported PMU to establish AMPF providing administration service to create an opportunity for producers and buyers to match each other by referring in Ibaraki prefecture conducting similar activities. In this chapter, AMPF activities, outcomes and lessons obtained throughout the project period are summarized, while the future vision of AMPF as an administrative organization after the termination of the project is proposed.

5.2 Organization Structure and Responsibilities of AMPF

The AMPF was formally established through an instrument vide the Letter of Decision issued by the PPC of Nghe An on June 15, 2016. The AMPF is a special unit under PMU to provide the platform functions to various actors involved in the agricultural product value chain. In September 2018, 8 staffs were engaging in AMPF activities. The list of members is shown in the table herein below.

Table 5.1 Staff List of AMPF

	Name	Affiliation / Position	Remarks
1	Truong Minh Chau (Mr.)	Head of Crop Production Division, Project Vice Standing Director	Assigned from June 2016
2	Pham Hoai Duc (Mr.)	Head of Financial Planning Division, Department of Industry and Trade, Project Vice Director	Assigned from June 2016
3	Nguyen Quang Loi (Mr.)	Deputy Head of Agricultural Science and Rural Development Division, Department of Planning and Investment, Project Officer	Assigned from June 2016
4	Nguyen Quy Linh (Mr.)	Director of Agricultural Extension Centre, Project Officer	Assigned from June 2016
5	Nguyen Van Hoi (Mr.)	Officer of Crop Production Division, Project Officer	Assigned from June 2016
6	Le Van Khanh (Mr.)	Deputy Head of Scientific Management Division, Department of Science and Technology, Project Officer	Assigned from June 2017
7	Hoang Duc Chung (Mr.)	Officer of Business Tourism Division, Department of Tourism, Project Officer	Assigned from June 2017
8	Nguyen Sy Vinh (Mr.)	Deputy Head of Consultancy Service Division, Agriculture Extension Center	Assigned from January 2018

Source: JICA Project Team

The following figure shows the organization structure and roles of AMPF in the project. As described above, AMPF is assigned under the PMU, and just below to it, agricultural extension station in each district and town are allocated. The role of AMPF in this project is as follows.

- To create database related to actors of FVC of agriculture and livestock products in Nghe An province,
- To promote marketing activities of agriculture and livestock products in Nghe An through the exchange of views among FVC stakeholders,
- To collect the needs of agriculture and livestock products in domestic and overseas market

- To transfer the market needs to producers and to support agricultural and livestock products that meet such needs

JICA Project Team regarded above stated main roles as hypothetical duties of AMPF in the future. Hence, it is expected to improve the capacity of AMPF staffs and to consider the future vision of AMPF as an administrative organization through the implementation of various activities and conduction of on the job training.

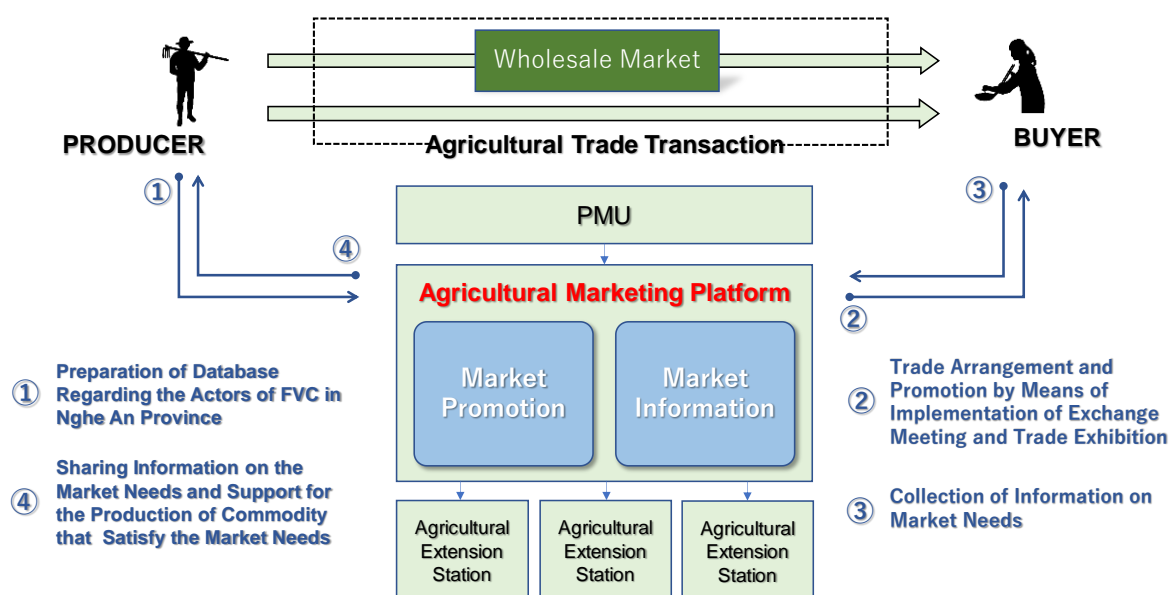


Figure 5.1 Organization Structure and Role of AMPF

5.3 AMPF Activities and Outcomes

5.3.1 Development of Database on Actors of FVC

The table below shows the data collected for the development of the database. In September 2018, data collection and development of database was completed successfully. This database is utilized in the following cases.

- Selection of interviewees of the hearing survey on the needs of demander.
- Selection of agricultural producers and cooperatives having capacities to produce and deliver the agricultural products satisfying required specification from specific demander.
- Selection of participants of matching event and opinion exchange meeting held by AMPF.

In addition, updating of the database is not supposed to be conducted periodically but requires update whenever AMPF staffs find the change of information in the database due to the large quantity of data and limited budget and staffs in charge of database management in AMPF. Although Ibaraki prefecture also manages the similar database, the periodical update of the database is not conducted but update each time whenever necessary.

Table 5.2 Status of AMPF Database Prepared

Actor	No. of Data	Method to Collect Data
Producer (Agricultural Cooperative)	387	Collected by JICA Expert
Producer (Farmer’s Group)	143	Collected by Agricultural Extension Staffs
Producer (Agricultural Enterprise)	24	Collected by JICA Expert
Transportation Enterprise	82	Collected from Department of Transportation
Processors and Traders	99	Collected by Agricultural Extension Staffs
Others (Hotel, Restaurant etc.)	69	Collected from Department of Industry and Trade

Source: JICA Project Team

5.3.2 Promotion of Nghe An Agricultural Products

(1) Participation in Trade Exhibition

To exploit new buyers of agricultural products in Nghe An province, AMPF secured an exhibition booth in trade exhibition held by MARD and MOIT. The table below shows the location of the exhibitions and products displayed in the exhibition booth. Followings are the lessons and learned through the participation of such trade exhibitions.

- Displaying daily foods such as safe vegetable and eggs is adequate to promote in trade exhibition since most of the attending customers are general consumers. However, most of the displayed processed products did not attract consumers well due to the insufficiency in differentiation regarding products appearance and values addition. AMPF should consider to improve the quality of processed products in regards to appearance and distinct value such as proofing safety by food safety certificate.
- There was a case that the manager of the restaurant showed his interest to buy one of the displayed products as an ingredient for his restaurant. However, such kind of case was less in general, and this approach to exploit new buyers is not effective.

Table 5.3 Trade Exhibitions that AMPF Participated

Date	Place	Products Exhibited
June 16-24, 2017	Cua Lo Town, Nghe An Province	Matcha Products, Nhut, Black Garlic, Chicken Egg, Safe Vegetable, Processed Orange Products, Peanut, Peanut and Sesame Oil
August 5-10, 2017	Quang Binh Province	Matcha Products, Nhut, Black Garlic, Rice Seed, Processed Orange Products, Peanut, Peanut and Sesame Oil, Tea
September 21-24 2017	Ho Chi Minh City	Matcha Products, Rice Seed, Processed Orange Products, Peanut, Peanut and Sesame Oil, Tea
December 1-7, 2017	Vinh city, Nghe An province	Orange Products, Black Canaliium, Nhut, Rice Noodle, Matcha Products, Chicken Egg, Shochu
August 1-7 2018	Vinh city, Nghe An Province	Orange Products, Nhut, Rice Noodle, Shochu, Peanut oil, Silk Products

Source: JICA Project Team

Additionally, AMPF has established permanent booth for displaying Nghe An products in exhibition hall located in Hanoi. This exhibition hall itself is the property of trade promotion center for agriculture under the jurisdiction of MARD although private company called An Viet conducts its management. The tenant has payment duty to consign An Viet Company for the management of exhibition booth including sales promotion of the products. AMPF displayed processed products such as Shochu, orange peel and Nhut developed through pilot projects and other specialties of Nghe An province.

(2) Matching Event and Opinion Exchange Meeting

AMPF organized (or co-organized) matching event and opinion exchange meeting to facilitate the communication between agricultural producers and buyers. The target buyers were not only retailers and food processing companies in Vietnam but also the Japanese companies having the intention to expand their business in Vietnam. The table herein-below shows the details of various events that AMPF has organized during the project period.

Table 5.4 Matching Event and Opinion Exchange Meeting Organized by AMPF

Date	Title	Place	Activities	Participants
July 7-8 2016	Program of site survey for expanding business in Vietnam	Vinh City	Opinion Exchange, Products Display, Site survey	7 Japanese enterprises, Vietnamese enterprises, PPC, DARD and AMPF
December 14-15 2016	Kyusyu- Vietnam Agri-business mission in 2016	Vinh City	Opinion Exchange, Products Display, Site survey	8 Japanese enterprises, 15 Vietnamese enterprises, PPC, DARD and AMPF
February 28 2017	AMPF Workshop on the Introducing Agricultural	Vinh City	Matching, Products Display	Producers, Agricultural Extension Staffs, Local retailer, Restaurant,

Date	Title	Place	Activities	Participants
	Products of Localities in Nghe An Province			Hotel, Processing Company and AMPF
December 14-15 2017	Kyusyu- Vietnam Agri-business mission in 2017	Vinh City	Opinion Exchange, Products Display, Site survey	6 Japanese enterprises, 6 Vietnamese enterprises, PPC, DARD and AMPF
June 25 2018	1 st Producer – Buyer Matching Event in 2018 (in cooperation with VCCI)	Vinh City	Matching, Products Display	22 Local Producers, 31 buyers, VCCI and AMPF
November 22 2018	2 nd Producer – Buyer Matching Event (in cooperation with VCCI)	Vinh City	Matching, Products Display	32 Local Producers, 25 buyers, VCCI and AMPF

Source: JICA Project Team

Followings are the lessons learned through the organization of those matching event and opinion exchange meeting.

- Through the conduction of three (3) times opinion exchange meetings between Vietnamese and Japanese companies, several Japanese companies showed their interest to expand business in Nghe An province. One of the Japanese companies has received subsidies from JICA to develop new business in Nghe An province.
- Total 31 buyers participated in the 1st matching event organized by AMPF and VCCI. The questionnaire survey conducted right after the matching event showed that 21 buyers could find good partners as a food supplier for their business. Hence, a follow-up survey conducted one month later revealed that 9 buyers have already started to contact those partners for the negotiation of the transaction. In addition, most of the participants expressed hope for the organization of this event repeatedly.

(3) Development of Promotion Tools for Agricultural Products

AMPF and JICA Project Team has developed “Handbook of Agricultural Products in Nghe An Province” as a promotion tool. This handbook is developed mainly for the buyers of agricultural products, and AMPF is supposed to utilize this tool when to conduct a hearing survey with buyers for identifying their needs. The said handbook is shown in the appendix of this report.

5.3.3 Collection and Delivery of Market Information

AMPF performed the collection and delivery of market information through the implementation of pilot projects as described in chapter 6. The table hereinbelow shows the possible actions of AMPF to collect market information under the existing AMPF capacity.

Table 5.5 AMPF Activities to Collect and Deliver Market Information

Classification	Market	Activity
Collection of Market Information	Domestic Market (Nghe An province)	- To conduct a hearing survey on the demanders such as food processing company, supermarket, restaurant and hotels. - To organize an exchange meeting between producers and demanders.
	Domestic Market (Hanoi and HCM)	- To conduct a hearing survey on the demanders such as food processing company, supermarket, restaurant and hotels in Hanoi or HCM by project base. - To organize an exchange meeting between producers and demanders.
	International Market	- To cooperate with Trade Promotion Center in DOIT. - To cooperate with big companies such as Nafoods and TH milk.
Delivery of Market Information	-	- To inform the candidate producers who can produce the products that satisfy the specific market needs.
	-	- To inform the information by website and leaflet.

Source: JICA Project Team

5.4 Capacity Development of AMPF and Extension Staffs

5.4.1 Training for AMPF and Extension Staffs

The JICA Project Team organized various training to develop the capacity of AMPF and extension staffs to maintain functions of AMPF and keep contributing to the development of FVC even after the termination of this project. The training consists of 1) OJT, 2) Lecture and 3) Site visit. The table below shows the details of the training conducted during the project period.

Table 5.6 Details of Training Conducted for AMPF and Extension Staffs

Type of Training	Date	Participants	Contents
OJT	Throughout Project	AMPF staffs	Database management, Preparation of leaflet and webpage, Hearing survey regarding market needs, Organizing opinion exchange meeting and matching event, Planning and management of pilot project
Lecture Training	July 22, 2016	AMPF staffs, extension staffs	Management of marketing platform
Lecture Training	Sept. 22, 2016	AMPF staffs, extension staffs	Agricultural production and marketing, Project progress report
Lecture Training	April 28, 2017	AMPF staffs, extension staffs	Planning of pilot project, Management of contract agriculture, Contract condition in contract agriculture
Site Visit	May 31, 2017	AMPF staffs, PMU	Site visit of pilot project sites managed by JICA project team
Lecture Training	July 27, 2017	AMPF staffs, PMU	Introduction of marketing activities in Ibaraki prefecture in Japan, Market needs identification
Site Visit	April 19-20, 2017	AMPF staffs	Site visit of an agricultural cooperative in Ho Chi Minh city and DARD
Site Visit	May 31, 2018	AMPF staffs, PMU	Site visit of pilot project sites managed by JICA project team
Lecture Training	June 29, 2018	AMPF, extension staffs	Planning of pilot project

Source: JICA Project Team

5.4.2 Implementation of Pilot Project

AMPF member implemented pilot projects (PP) as shown in the table below to understand their duty for promoting contract agriculture, which starts from the collection of market information to trial farming. The detailed progress of PP is described in the Annexes.

Table 5.7 Progress of Pilot Project Conducted by AMPF Members

PP	Representative of AMPF
Pilot Project for the Promotion of Pomelo by the Improvement of Cultivation Technique	Mr. Chau (DARD)
Pilot Project for the Promotion of Safe Vegetable Production in Cua lo Town	Mr. Hoi (DARD)
Pilot Project for the Promotion of Chicken Egg in Vinh City	Mr. Linh (DARD)
Pilot Project for the Promotion of Nhut for Local Restaurant in Nghe An Province	Mr. Duc (DOIT)
Pilot Project for the Promotion of Raw Silk	Mr. Loi (DPI)
Pilot Project for the production of herbal plant	Mr. Khanh (DOST)

Source: JICA Project Team

5.5 Evaluation of AMPF Activities and Issues to be Solved

5.5.1 Evaluation

The figure below shows the evaluation results of AMPF activities that had been conducted since its establishment. AMPF has already collected enough information to develop database within the project period. It is not necessary to collect more information, while AMPF should focus on the management and updating of the database. As described above, the updating will not be conducted periodically but requires updating each time when it is necessary to modify. The validity of promotion activities in

trade exhibition needs to be considered carefully since 1) the effect/impact on promotion is limited and 2) this activity is overlapped with the tasks conducted by other administrative organizations such as a cooperative union. On the other hand, there is no public and private organization, which organize matching event and opinion exchange meeting in Nghe An province and thus, it indicates that this activity can be the main task of AMPF. However, even if the matching is succeeded, it does not mean they can start trading uneventfully since it is not always easy to prepare products, which satisfy the request from buyers. In such case, the agricultural extension center can support the facilitation of the product development by compensating some portion of the development cost in the form of the pilot project. Agricultural extension center will be in charge of planning and implementation of the pilot project, while AMPF would take responsibility of 1) selection of qualified PP submitted by agricultural extension staff and 2) conducting monitoring and evaluation of the PP.

Evaluation of AMPF Activities

Evaluation	
Database development	Database was developed sufficiently. Updating database will not be conducted periodically, but updating each time when it is necessary.
Promotion in trade exhibition	Limited effect on promotion. Overlapped with tasks of other administrative organization. Necessary to re-consider its validity.
Matching event, Opinion exchange meeting	Positive effect for producers and buyers to find partner. There is no public and private organization who conducts this activity. It could be the main duty of AMPF.
Planning of pilot project	Planning should be conducted by local extension staffs to strengthen their commitment to the project. AMPF will be in charge of the selection of qualified project.
Implementation of pilot project	Implementation of pilot project will be conducted by extension staffs while the monitoring and evaluation will be conducted by AMPF.

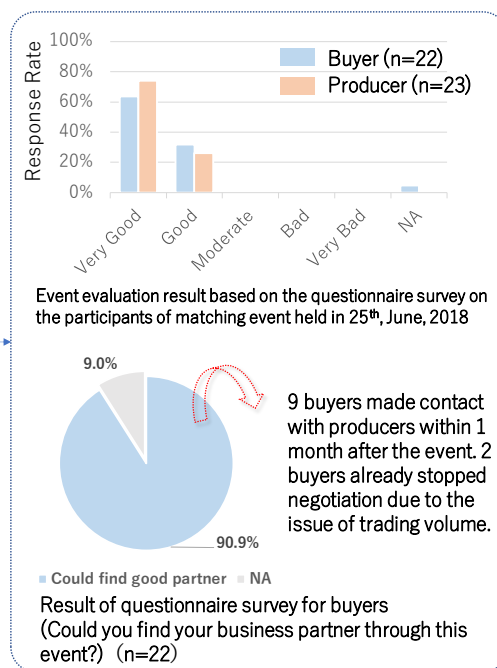


Figure 5.2 Evaluation of AMPF Activities

5.5.2 Issues

AMPF staffs attempted to implement their duties throughout the project period. The challenges and lessons obtained through this trial are described as follows.

1) Function to Collect of Market Needs

AMPF is the organization for strengthening the connection between market and producers. The function to collect market needs is the most important duty of AMPF. Considering the financial situation and capability of officers in Nghe An province embodied in AMPF and its members, collecting market needs by the methods described in Section 3.3.3 would be the realistic measure. However, only taking this measure alone is not sufficient to collect market information especially in foreign countries. It is necessary to propose measures in the M/P to secure suitable human resources to collect market information from inside and outside of the country.

2) Support of Agricultural and Livestock Production Based on the Market Needs

Market demand bears diversity depending on customers. Thus, producers should select a proper farming technique to meet such diverse demand. However, neither local farmers nor agricultural extension staffs find without difficulty in selecting what kinds of techniques should be applied for meeting specific requirement from customers. Such situation usually happens when they understand market needs superficially. It is recommended to let extension staffs should have more

opportunity to communicate with buyers and to understand the buyer's requirement deeply by taking the opportunity of matching event and opinion exchange meeting.

3) Collaboration with Private Companies and Chambers of Commerce

AMPF is required to improve communication between producers and demanders and to promote FVC development. Meanwhile, it is difficult to secure sufficiently the budget and human resources necessary for the activities of AMPF due to the series of administrative reforms (public debt, reduction of the number of public servants, etc.) by the government of Vietnam in recent years. In light of such circumstances, consideration should be given to facilitate exchanges between producers and demanders in cooperation with private enterprises engaged in matching services. Furthermore, efforts such as holding a matching event together with the Chamber of Commerce and Industry should be taken.

Chapter 6 Pilot Projects

6.1 Purpose of Pilot Project

Along with the development of the socio economy, the structural adjustment of the agricultural sector of Nghe An province is required. In other words, the practice of "product out" where farmers continue to produce conventional products without paying any attention to market conditions is outdated. Agricultural producers need to participate in modern food value chain and obtain appropriate income in the prevailing economic system. In this project, JICA Project team promoted the introduction of "market in" system in Nghe An province, attempted its market-oriented agricultural system in pilot project and verify its feasibility.

6.2 Concept of Pilot Project

The basic concept of the pilot project is summarized below. In addition, details of the concept and activities of the pilot project are described in the Annexes.

- Pilot project developed based on the market needs

Pilot projects must be associated with specific market demands. Moreover, it is important not only to produce products that can be sold, but also to create market needs.

- Proper allocation and maximization of profit among stakeholders

To ensure business continuity, JICA Project team propose projects that all business parties can obtain appropriate profit.

- New business

JICA Project team propose measures to fill the gap between producers condition and buyers requirement regarding the transaction of the products.

6.3 Results and Lessons through the Implementation of Pilot Projects

6.3.1 Promotion Zone for Safe Vegetable Production

(1) Policy to Develop Pilot Project

JICA Project Team verified the practice and effectiveness of contract farming through improving production system and cultivation technology with the aim of supplying safe and high-quality fresh vegetables and eggs to local retail shops, hotels and restaurant industry.

(2) Pilot Projects Conducted in this Strategic Region

Pilot projects planned and implemented in this strategic region are as shown in the table below.

Table 6.1 Outline of Pilot Projects Conducted in Promotion Zone for Safe Vegetable Production

ID	Title of PP	Objective	Location	Period	Buyer	Representative
SV1	Safe Vegetable Production and Distribution in Vinh City	To strengthen safety vegetable production and distribution in Vinh city through support for acquisition of safety certificate and production support of safety vegetables consistent with local wholesale retailer's needs.	Vinh	2016.10 ~ 2018.10	Local Retailing Shop	JICA Consultant
SV2	Contract Farming for Safe Vegetable	To strengthen safety vegetable production and distribution in Vinh city through the support of contract farming between the agricultural	Quynh Luu	2016.11~ 2017.2	Local Retailing Shop	JICA Consultant

ID	Title of PP	Objective	Location	Period	Buyer	Representative
		cooperative which already acquired Viet Gap certificate and local retailers.				
SV3	Production and Sales of Eggs in Urban Areas	To strengthen the distribution system of high quality and safe eggs through strengthening the sanitation management system and acquiring safety certificate.	Vinh	2017.2 ~ 2018.10	Local Retailing Shop	AMPF
SV4	Vegetable Production in Cua Lo Tourism Town	To develop fresh vegetable production model by introducing techniques for summer cultivation and strengthen the shipping system of fresh vegetables in the tourist season (May - September).	Cua Lo	2017.2 ~ 2018.10	Hotel. Restaurant	AMPF
SV5	Trial Cultivation of Spinach for Demand of Domestic Fresh Market	PP derived from PE1 (described later). To verify to develop producing area of spinach not only for processing but also for flesh vegetable consumed in domestic market.	Quynh Luu	2017.4 ~ 2018.11	Local Retailer, trader	JICA Consultant

Source: JICA Project Team

(3) Outcome of Pilot Projects

- Because of acquiring safety certificate, the farmers' sales destination expanded as the buyer side regards acquisition of safety certificate as a condition for selecting supplier of agricultural products. In the SV1, the contract farming got on track and due to attaining higher reputation, the transactions were also requested from retailers other than already contracted partners. In addition, egg-producing farmers who acquired safety certificate have negotiated transactions with multiple wholesalers / retailers, food processors, restaurants, and finally concluded a trade agreement with the two companies although they traded their products only with intermediary before the initiation of the pilot project (SV3).
- Introduction of contract farming improved farmers' income. Specifically, the revenues of farmers who engaged in contract farming with local retailer increased by 20 to 50% than the conventional farming (SV1).
- The introduction of contract farming also contributed to the improvement of the stability of profits of farmers. In the middleman-dependent sales structure, the product prices are strongly influenced by market conditions, but stable revenues can be obtained through contract farming. In addition, as farmers' income prediction became easier, many farmers made capital investments with their own funds (SV1, SV3).
- Conventionally, local retailers who had been procuring products from distant places such as Hanoi and Da Lat were able to procure products near to the store, and it became possible to reduce the cost of transportation costs (SV1, SV3, SV5).

(4) Lessons Learned

- In the pilot project of SV1, the farmer's revenues increased by 1.2 - 1.5 times when producing and shipping agricultural products after setting up a production plan according to monthly procurement order from contracted retailer. Generally, farmers are conservative and tend to choose things that are easy to cultivate, but it is desirable to produce and sell agricultural products by closely exchanging information with retail stores and tailoring crop varieties and cultivation methods according to changing market needs.
- Even if it requires the support of legal experts, it is necessary to create a contract over time to understand and convince the parties. In Vietnam, it is vital to have a formal contract, not a verbal agreement, because paper & written contract increase the effect on parties or people of the contract.
- In the summer of June to September, it is difficult to produce vegetables throughout the province because of effect of dry hot air and typhoon. However, there are cases where vegetable cultivation

in summer has succeeded by developing shade and drainage facilities. It is suggested that construction of facilities suitable for the local environment and introduction of crop varieties with high heat resistance to enable vegetable cultivation in the summer, which would in turn increase farmer income more.

- In Nghe An province, many international companies supply feed, medicine, livestock, etc. to local farmers, and at the same time, guidance for animal husbandry technology is also carried out, therefore, the technological level of poultry farmers is generally high. Nevertheless, due to the lack of knowledge of sales, the farmers cannot get out of the habit of depending on middleman. The administrative side (AMPF) should strongly recognize the importance of providing farmers with opportunities to grasp market needs and promoting improvement of production system.
- In the pilot project of SV3, the farmers acquired DARD safety certificate and Viet GAHP certificate, which made it possible to supply safety eggs in urban areas by producing egg according to the certification standards, but it has not been linked to improving income of the producers. This was due to fact that the product differentiation of eggs was not practiced sufficiently at the retail stage and it was inevitable to make the contract condition to add only extra 100 VND/egg compared to the general market price. It is suggested to promote farmer's own branding of eggs for product differentiation, and at the same time, the government agencies need to promote PR and safety awareness among consumers.
- In the pilot project of SV4, which tackled the production and shipment of fresh vegetables during the off-crop season, the majority of the products were damaged because of typhoon. Nghe An province is a region susceptible to typhoons, and it is necessary to take safeguard for the crop cultivation at the arrival time of typhoon. In cultivating fresh vegetables in off-crop season, in addition to selecting crops with high demand and low height (such as Vietnamese spinach etc.), measures to improve drainage facilities are required to prevent flooding of agricultural land.
- Hotels and restaurants need multi-items of vegetables and meat. In general, one hotel handles 36 items alone with fresh vegetables and is procured through local wholesalers. Since the procurement by individual item increases the procurement cost of the buyer side, relative transaction with farmers and agricultural cooperatives is not feasible. Cooperation with local wholesalers is indispensable for supply to the restaurant industry.
- In order for a producer and a buyer to establish a trustworthy relationship and to continue contract farming, both parties must comply with the contents stipulated in the contract. In the pilot project of SV1, in the process of identifying contracting conditions, both the producer and the buyer deepened the knowledge and recognition concerning the contract contents, and fostered sense of responsibility for the assigned roles that each party should play. It is essential for contract farming to undergo such a process, and it is necessary to develop system to support the stakeholders of contract farming by the administration side as an intermediary.
- The strategic area covered Vinh city and Cua Lo town where demand for safety vegetables is high, but the districts located in the coastal plain area can be developed as safe vegetable supply base as in the case of SV5. Therefore, the safe agricultural and livestock promotion area indicated by M/P, sets Vinh city and Cua Lo town as the top priority target area, but it is also necessary to include the districts of other coastal plain area in the scope of coverage.
- Since freshness is regarded as important factor for vegetables and fruits, appropriate post-harvest processing, preservation and processing techniques are necessary. However, in the current distribution system, there is occurrence of many losses after harvesting of the product, which causes a decline in farm-gate price. Besides, it is possible to add high value to livestock products by having slaughter processing within the province. For such reason, it is necessary to consider establishing a logistics base of the agricultural and livestock production including the cold chain.

6.3.2 Promotion Zone for Raw Material and Exporting Products Production

(1) Policy to Develop Pilot Project

JICA Project Team verified the production and distribution model that contributes to the increase of farmer's income and management stability by contract farming targeting raw material supply and export to domestic and overseas processing companies.

(2) Pilot Projects Conducted in this Strategic Region

Pilot projects planned and implemented in this strategic region are as shown in the table below.

Table 6.2 Outline of Pilot Projects Conducted in Promotion Zone for Raw Material and Exporting Products Production

ID	Title of PP	Objective	Location	Period	Buyer	Representative
PE1	Large Size Spinach Production for IQF Processing	To verify the development of production area of spinach for processing through the cultivation trial.	Quynh Luu, Nam Dan	2016.10 ~ 2017.4	Local Food Processing Enterprise	JICA Consultant
PE2	Large Size Chinese Cabbage Production for IQF Processing	To verify the development of production area of Chinese cabbage for processing through the cultivation trial.	Nam Dan	2016.10 ~ 2017.2	Local Food Processing Enterprise	JICA Consultant
PE3	Improving Bamboo Shoot Production for Export Demand	To verify the development of production area of bamboo for processing through the cultivation trial.	Quynh Luu	2016.10 ~ 2018.3	Local Food Processing Enterprise	JICA Consultant
PE4	Production of Black Sesame for Oil Extraction for Japanese Market	To verify the development of production area of sesame for extracting oil and exporting Japan	Dien Chau	2016.10 ~ 2018.8	Japanese Trading Enterprise	JICA Consultant
PE5	Production of Potato for Producing Processed Foods	To verify the development of production area of potato for processing through the cultivation and sales trial.	Hoang Mai	2016.10 ~ 2018.10	Japanese Food Processing Enterprise	JICA Consultant
PE6	Introduction of Lotus Root Production	To verify the development of production area of lotus root for processing through the cultivation and sales trial	Nam Dan	2016.10~ 2017.11	Local Food Processing Enterprise	JICA Consultant
PE7	Production of Scallion for Processing	To verify the development of production area of scallion for processing through the cultivation and sales trial	Quynh Luu	2016.10~ 2017.4	Local Food Processing Enterprise	JICA Consultant
PE8	Promotion and Marketing of Honey	To verify the possibility of market diversification of honey through the sales trial to Japanese market	Yen Thanh	2016.10~ 2017.3	Japanese Trading Enterprise	JICA Consultant
PE9	Rice Production for Processing of Rice Snack	To verify the possibility to expand cultivation area of rice for rice snack through the trial cultivation and sales.	Dien Chau	2017.2~ 2018.8	Local Food Processing Enterprise	JICA Consultant
PE10	Promotion of Jew's Ear Mushroom for Export to Japan	To verify the development of production area of Jew's ear for processing and exporting Japan	Yen Thanh	2017.2~ 2017.10	Local Food Processing Enterprise	JICA Consultant
PE11	Production and Marketing of Groundnuts	To verify the potential and feasibility of peanuts for exporting through the trial cultivation designed based on the market needs of peanut exporting company.	Dien Chau	2017.10~ 2018.8	Local Trading Enterprise	JICA Consultant
PE12	Promotion of rice for Shochu	To verify the potential and feasibility to expand the	Yen Thanh	2016.5~ 2018.11	Japanese Brewing	JICA Expert

ID	Title of PP	Objective	Location	Period	Buyer	Representative
		cultivation area of rice for Shochu through the trial cultivation and sales.			Enterprise	
PE13	Development of Silk Products	To verify the potential and feasibility of expanding market of silk products through the development of products made from silk yarn produced in Dien Chau district	Quy Chau	2017.7~2018.11	Hotel, Souvenir shop	JICA Expert
PE14	Develop Brand of Rice Noodle	To verify the potential to increase the farmer's income through the branding of rice noodle	Nam Dan	2017.3~2018.11	Local Retailing Shop	JICA Expert
PE15	Production of Silk yarn	To verify the potential to increase farmer's income through the introduction of an effective production system of silk yarn.	Dien Chau	2017.2~2018.10	Local Trader	AMPF

Source: JICA Project Team

(3) Outcome of the Pilot Projects

- Most of the PPs implemented in this area did not reach to the contractual stage within the project period and ended at the stage of trial cultivation, processing and sales (PE1, PE2, PE3, PE6, PE7, PE8, PE10, PE11). The reasons include (1) difficulties in producing/manufacturing products that meet consumer's needs within the project period, (2) poor quality due to unseasonable weather (PE4), and (3) agreement of the transaction was not obtained with business partners (PE9). The case regarding (1) as above includes a) the introduction of an appropriate processing facility was indispensable, b) the cultivated variety and the cultivation technology necessary for producing the products meeting the market needs were insufficient, c) the supply amount was judged to be insufficient and d) the quality was judged to be inadequate.
- In the case where contract farming of potatoes for processing was successfully conducted (PE 5), the farmer's income increased by 11% than conventional farming by the increase of potato yield through the introduction of appropriate cultivation technology. Besides, many farmers who participated in Pilot Project evaluated against the stability of transaction through contract farming rather than in terms of the increase in revenue. On the other hand, several farmers have shipped some potatoes, which does not meet the required standard. Thus, it is pointed out the necessity to establish the system to control the quality of the products to be shipped to the buyers.
- In case of improving silk production (PE15), the efforts were made to bring change through division of production system, i.e. between young silk breeders and silkworms/matured silk breeding farmers within the cooperative. As a result, the growth of silkworms became homogeneous, and the reduction rate of silkworm during breeding stage was decreased. Besides, the quality of silk yarn was improved by the introduction of improved yarn-making machine. Since there is strong demand from buyers, the farmers' income improved by 52% compared to the past due to increased sales volume and increased unit price.

(4) Lessons Learned

- In case of the raw materials for processing and exporting, the actual specifications, desired transaction price, shipping method etc. are clearly requested from the buyer side. For such reason, it is easy to identify the technology and facilities to be introduced to develop products that meet the buyer's needs. On the other hand, depending on the needs of buyer, there are cases where large amount of capital investment and high technical skill are required for product development, and such problems cannot be solved in a brief period of time. It is necessary to develop the competitive production area from the view of a long-term perspective as well as to grant subsidies for capital investment expenses and to improve the cooperative's financial access.
- The Nghe An province frequently subjects to typhoon damage, and crop failure due to unseasonable weather cannot be avoided in the future. However, if drainage facilities are well

developed, the crop damage can be reduced. In order to continuously undertaking contract farming with buyers, it is necessary to promote the development of such production base.

- Regarding sesame and peanuts, which are the main agricultural products of the Nghe An province, the competitiveness of these crops is being lost due to the inflow of cheap raw materials into the domestic market from outside the country. It is required to develop products appealing to the needs of specific market. However, under present circumstances, Nghe An province focuses on developing varieties and cultivation technology with emphasis on the productivity, and have not been able to satisfy diverse needs both domestic and international market. Regarding the major agricultural and livestock products in Nghe An province, it is necessary for the administration side to devote efforts for the development of varieties and cultivation technologies based on the market needs.
- In general, the trading unit price of processing materials is low, and it is important to consider from the viewpoint of that how much production cost can be reduced as to whether or not to become profitable business although such is not a problem of only Nghe An province, as it is difficult to drastically reduce production cost under conditions where the farmer's farmland area is small and the mobility of the farmland is low. As a possible solution at this stage, it is conceivable to promote integration and consolidation of cooperatives and to develop an efficient production and shipping system of raw materials for processing in cooperative units.
- The added value of the raw materials for processing and agricultural and livestock products for export is the uniformity in the quality of the shipped products. For that purpose, the cultivation standardization is indispensable, and a management system for producer side is needed to ensure the required quality.

6.3.3 Promotion Zone for High-Value Products Production

(1) Policy to Develop Pilot Project

Agricultural and livestock products with well-known brand names are already produced in this area. Therefore, JICA Project team targeted the high-income earners outside of the province, including Hanoi and Ho Chi Minh, to develop and verify the production and distribution model based on the high value added to the existing products and the contract farming with traders and sellers in this pilot project.

(2) Pilot Projects Conducted in this Strategic Region

Pilot projects planned and implemented in this strategic region are as shown in the table below.

Table 6.3 Outline of Pilot Projects Conducted in Promotion Zone for High-Value Products Production

ID	Title of PP	Objective	Location	Period	Buyer	Representative
HV1	Brand Promotion and Production Improvement of Thanh Chuong Chicken	To improve the production system of local chicken and verify the possibility of improving farmer's income through development of local chicken brand.	Thanh Chuong	2016.9~2018.12	Local Supermarket, Retailing Shop	JICA Consultant
HV2	Improvement of Value Chain of Oranges in Quy Hop	To verify the possibility of market expansion through the product diversification of orange.	Quy Hop	2016.9~2018.12	Retailing Shop, Hotel in Vinh, Ha Noi	JICA Consultant
HV3	Improvement of processed mango and lime products	To verify the possibility to export processed mango and lime to Japan through the improvement of product specification	Nghia Dan	2016.10~2017.4	Japanese Trading Enterprise	JICA Consultant
HV4	Production and Marketing	To develop pork brand based on the feed improvement and	Thanh Chuong	2016.10~2018.2	Local Supermarket	JICA Consultant

ID	Title of PP	Objective	Location	Period	Buyer	Representative
	Improvement of Eco-Pork	verify its economic impact				
HV5	Improve Cultivation Technique for Higher Yield and Quality of Mandarin	To verify the possibility to improve or standardize the quality of orange through the introduction of advanced technology.	Quy Hop, Nghia Dan	2016.9~2018.12	Local Supermarket	JICA Consultant
HV6	Production and Sales of Cassava Silage for Dairy Farms	To verify the possibility to promote the farming contract of cassava silage with local daily enterprises	Thanh Chuong	2016.12~2017.2	Dairy Companies	JICA Consultant
HV7	Sales Promotion of Black Garlic Products	To verify the possibility to develop FVC regarding black garlic products through the sales promotion and farming contract between farmers and black garlic processor	Thanh Chuong	2017.2~2017.10	Retailing Shop in Vinh, Ha Noi, HCM	JICA Consultant
HV8	Improvement of Garlic Production and Marketing	To verify the possibility to develop FVC of garlic through the trial cultivation and sales of safe garlic	Thanh Chuong	2017.10~2018.12	Retailing Shop in Vinh	JICA Consultant
HV9	Improvement of production and sales of Matcha	To verify the possibility to improve farmer's income through the introduction of cultivation technique of Matcha	Anh Son	2016.6~2018.11	Markets in HCM	JICA Expert
HV10	Improvement of production and sales of pomelo	To verify the possibility to improve farmer's income through the branding of Quang Tien pomelo and improvement of cultivation technique	Thai Hoa	2017.2~2018.10	Supermarket, Retailing in Vinh, Ha Noi	AMPF
HV11	Improvement of quality of Nhut	To verify the possibility to develop FVC of Nhut through the improvement of food safety management regarding Nhut production	Thanh Chuong	2017.2~2018.3	Retailing Shop in Vinh	AMPF

Source: JICA Project Team

(3) Outcome of Pilot Projects

- In pilot project of HV1, which tackled the issue of branding of local chicken, JICA Project team revised the condition of breeding and raising mixed chicken varieties, and thoroughly raised only the traditional local chicken variety (pure Ri breed) as well as instructed to improve the feed (cassava silage and earthworm rearing). JICA Project team also promoted contract farming with middleman, supermarkets and retail chains in Vinh city, and worked to raise awareness for Thanh Chuong chicken. In response to such activities, Thanh Chuong district subsidizes the cost relating to incubator installation and support for the establishment of Thanh Chuong chicken association, registration of collective trademark, creation of logo of Thanh Chuong chicken and introduction of traceability system. Currently, the number of farmers producing Thanh Chuong chicken in the target area is 88, and a system to produce more than 100,000 Thanh Chuong chicken per year was established. However, despite the rising farm-gate price (about 5%), the demand of Thanh Chuong chicken is higher than the supplement capacity of the chickens. The results of these activities have already been developed in the form of improving farmer's income; the average annual income of farmers has increased by 56% on an average as compared with the commencement of this pilot project.
- In the pilot project of HV 4, JICA Project team carried out activities to promote sales of pork produced with feeds consisted of self-supplied material and without using industrially produced formulated feed as much as possible under the brand name Eco-Pork. In this regard, JICA Project team supported the acquisition of safety certifications requested as one of the transaction conditions by buyer, improvement of the fattening condition of pig, and the construction of

slaughter and processing facilities of target farmers in collaboration with the LIFSAP project implemented by WB. As a result, it was estimated that farmer's income from fattening / selling activities of Eco-pork would increase by about 25% compared to the conventional farming due to the reduction of feed cost and slight increase in unit price. On the other hand, it is pointed out that there exist issues such as 1) necessity to collaborate with business partners having sufficient purchasing capacity, 2) stable supply of organic feed, 3) increase in labor force, 4) decline in turnover rate due to prolonged fattening period.

- In the pilot project of HV10, which tackled the issue of branding of the locally unique pomelo variety (Quang Tien variety), JICA Project team implemented the optimization of fertilizer management and introduction of thinning technique and fruit bag after identifying market needs (fruit weight, appearance, brix, etc.) of pomelo. In addition, Thai Hoa Town carried out the establishment of pomelo producer's cooperative, support for acquisition of safety certificate and provision of subsidies relating to procurement of drip irrigation equipment in the budget of the town, as well as the creation of brand logo on its own and marketing activities in Ha Noi. In result of these activities, the farm-gate price of pomelo increased by 67%, and farmer's income also increased by 61%.
- In HV2 pilot project, which worked on the diversification of orange product, JICA Project team supported the manufacture and sale of processed orange products (peels, jams, etc.), develop the orange grading system and identify the sales channel of each orange grade in collaboration with the local agricultural enterprise. JICA Project team also implemented activities for sale of stored orange in the Lunar New Year and during off-crop season, where the orange demand drastically increases. In result of these activities, the collaborated enterprise concluded contractual transactions of stored fresh oranges and processed orange products with hotels in Vinh city and Cua Lo town where tourists visit a lot. Through this transaction, the enterprise can earn 20,000 VND/kg by selling fresh orange and 50,000 VND/kg by selling processed orange products. In result of this prospect of expanding Orange sales channel, the number of contracted farmers of the company increased from 4 to 20, and the orange purchase price by the company is also expected to be increased by 30%.
- In the pilot project of HV5, the optimization of fertilizer management and application trial of mulching sheet for improving fruit color and brix were carried out for the improvement of quality and quality stabilization of orange. The brix of orange increased at some extent through the treatment process conducted in the pilot project, although it is indispensable to develop the supplementary system of disease-free seedling and drainage facilities to realize the orange production with stable quality.
- JICA Project team conducted support regarding the processing and sales of black garlic (HV7) and Nhut (HV11) for producing higher value-added products. In such pilot projects, the target processing enterprise and local farmer acquired the safety certificate and conducted sales trial of those products in the retail store and restaurants in Vinh city through the support of JICA Project team. In the pilot project of HV8, the contract farming with a retail store in Vinh city was carried out through the production and sales support of safe fresh garlic. The contract farming is continuing in each case, but the sales channel of these products are still limited. More marketing activities are needed to expand sales channels.
- In the pilot projects of HV9, as part of fertilizer management for matcha production, JICA Project team conducted the dissemination of guidance on fertilization, pruning and tea covering techniques for target farmers.
- For Tencha production, which is a raw material for matcha, JICA Project team instructed the installation and maintenance operation of steaming machines, dryers, sorting machines, etc., and improved the production lines. After conduction of 11 trials manufacture from the prototype production of the tencha / matcha that started in September 2016 and continued until August 2018, it reached the quality level sufficient for processing as matcha. However, due to competition with cheap matcha produced in China, Taiwan, etc., the matcha products have not reached commercialization stage since it needs more negotiation with the match sweets making

enterprises in terms of the transaction price of matcha.

- In the pilot project of HV6, JICA Project team promoted efforts to silage cassava and sell it as feed to a dairy company showing high feed demand although it was not possible to make a business due to the issue of transaction price of the product. However, as a result, cassava silage spread widely in the area, and livestock farmers used it as self-made feed, leading to lower cost for livestock sector (30% reduction of poultry feed cost).

(4) Lessons Learned

- In promotion of branding of agricultural product, it is important to build a system in which related districts and communes work on their own initiative. In order to promote the brand, not only technical improvement but also the establishment of cooperative, acquisition of safety certificate, certificate of origin and the enhancement of relevant facilities are necessary. As in the case of HV 1 and HV 10, even if the project is a proposed by the AMPF, extension agencies, or private enterprises, it is desirable that administrative agencies of districts and communes to possess high sense of ownership to support the project continuously.
- Thanh Chuong chicken, which was promoted for branding in pilot project of HV1 received nationwide popularity, but the varieties of chickens, feeding method / period, selling method and so on were not unified and the variation in quality was extremely large. In addition, due to hybridization with Western varieties, original characteristics as of a native species are being lost, and it was not possible to differentiate it from local chickens produced in other regions in the country. In branding agricultural and livestock products, it is essential to develop a common awareness that stakeholders work together to raise and rigorously disseminate production technologies and to develop their regional brand by strengthening the organization capacity.
- In branding agricultural and livestock products, it is necessary to consider safety standard of food as well. For meat sector particularly, the hygienic slaughter / processing is required at registered slaughter facilities, but only a small number of slaughtered facilities are supervised in Nghe An province. At the same time while strengthening supervision by the government, it is also necessary to support the production cooperative to promote installation of facilities according to public standards.
- Currently, Vinh Orange, which has a high name-value in Vietnam, trades at high prices in domestic market. On the other hand, in recent years, the production area of Orange has increased sharply in Vietnam as well as in Nghe An province, and the decline of Vinh Orange's competitiveness is a critical issue. Considering such circumstances, it is necessary to improve the production and distribution system to appeal the demand of processed orange products and storage of orange for the sales during off-crop season that was demonstrated in the pilot project of HV2. Particularly, in Quy Hop district, which produces more than 50% of oranges in Nghe An province, the illegal agricultural chemicals are heavily being used, and the productivity and deterioration of orange quality are becoming considerable issues due to the spread of diseases in the area. Some regions proceeded to remove the diseased orange tree and improved cultivation technology. However, it is difficult for producer to obtain disease-free seedlings, and adaptive cultivation technology corresponding to environmental change. In this regards, specific points to be pointed out include the establishing a distribution system of disease-free seedlings, establishing a proper cultivation technique and guidance thoroughly, creating standards common to the production areas and expanding sales channels according to standards, supporting procurement of food processing equipment and cold storage and the improvement of logistics (farm road improvement), etc.
- In HV 6, although contract farming as originally planned was not conducted, the production technology of cassava silage became popular, and silage trading among farmers became active. Until then, cassava production for tapioca processing, which was extremely inferior in profitability, led to an increase in farm income by diversifying the application. In fact, the feed cost of livestock farmers has declined, and the quality of livestock products is improved by improving the nutrition of livestock. Regarding cassava, although it has been imported as a raw

material for blended feed for pigs, there is also a shift in movement of major feed companies to switch from suppliers from Laos to Nghe An province, and demand as feed is expected to expand in the future. For the government as well, it is necessary to promote expansion of cassava applications and sales channels corresponding to above said situation.

6.3.4 Promotion Zone for Minor and Specific Products Production

(1) Policy to Develop Pilot Project

In this area, high-demand special agricultural and livestock products are produced. In the pilot project, JICA Project team strengthened the production system for special agricultural and livestock products that meet the market needs from domestic and overseas markets, and developed a production and distribution model based on contract farming in association with related actors of distribution, processing and sales.

(2) Pilot Projects Conducted in this Strategic Region

Pilot projects planned and implemented in this strategic region are as shown in the table below.

Table 6.4 Outline of Pilot Projects Conducted in Promotion Zone for Minor and Specific Products Production

ID	Title of PP	Objective	Location	Period	Buyer	Representative
SU1	Production of Competitive Fresh Passion Fruit for Domestic Market	To verify the sales potential of fresh passion fruit to supermarket through the improvement of harvesting technique.	Que Phong	2016.9 ~ 2017.9	Local Processing Enterprise	JICA Consultant
SU2	Improvement of processing of pure of passion fruit	To verify the possibility to expand the sales channel through the support of sales promotion	Que Phong	2016.9 ~ 2017.2	Japanese Trading Enterprise	JICA Consultant
SU3	Value Chain Development of Passion Fruit Seed as Health Functional Supplement	To verify the sales potential of passion fruit seed to the Japanese health company through the support of sales promotion	Que Phong	2016.9 ~ 2018.11	Japanese Trading Enterprise	JICA Consultant
SU4	Production and sales of pectin extracted from passion fruit internal skin	To verify the possibility of commercialization of the pectin extracted from passion fruit internal skin	Que Phong	2016.9 ~ 2017.2	Local Processing Enterprise	JICA Consultant
SU5	Improvement of Ginger Production to Meet International Market Demand	To verify the possibility to develop producing area of ginger through the support of contract farming between local farmers and local processing company.	Ky Son	2016.9 ~ 2018.12	Local Processing Enterprise	JICA Consultant
SU6	Improvement of Fresh Passion Fruit Conservation	To verify the possibility to export fresh passion fruit through the improvement of preservation technique.	Que Phong	2016.11 ~ 2017.7	Trading Enterprise	JICA Consultant
SU7	Production and Sales of H'mong Chicken and Local Black Pig	To verify the possibility to develop FVC of minor livestock grazing in mountainous area through the support of contract farming between local farmers and retail shop in Vinh city	Ky Son	2017.6 ~ 2018.11	Local Retailing Shop	JICA Consultant
SU8	Production of garlic seed for Japanese market	To verify the possibility to produce garlic seed for Japanese market	Ky Son	2016.7 ~ 2018.11	Japanese Agriculture Cooperative	JICA Expert
SU9	Production and sales of tomato	To verify the possibility to increase farmer's income	Tuong Duong	2017.7 ~ 2018.11	Local Retailing	JICA Expert

ID	Title of PP	Objective	Location	Period	Buyer	Representative
	with specific variety	through the support of production and branding of specific tomato grown in mountainous area.			Shop	
SU10	Improvement of Herbal Trees Production and Marketing	To verify the possibility to increase the farmer's income through the support of contract farming regarding herbal trees.	Con Cuong	2017.7 ~ 2018.10	Pharmacy, Hospital	AMPF

Source: JICA Project Team

(3) Outcome of Pilot Projects

- In pilot project of SU5, which conducted contract farming of yellow ginger with high demand in Japan (local farmer - ginger processing enterprise), the project demonstrated that it is possible to produce yellow ginger that meets the specifications presented by the processing company through the trial cultivation. In addition, compared to the farm-gate price of traditional ginger, it is clear that unit price increases in the contract farming, which leads to improvement of farmer profit and stabilization of income. On the other hand, in ginger cultivation through slash-and-burn agriculture in mountainous areas, it was found that the production areas were widely dispersed, which leads to the difficulty in the procurement and application of agricultural materials, cultivation management and shipping of harvested products and the vulnerability to the disasters (landslides etc.). In order to secure stable supply to contract buyers, such issues are not small to solve.
- SU3, which supported the sale of passion fruit seed to Japanese pharmaceutical companies, had shifted to commercial trading after about two years of quality and sanitation testing and test sales of passion fruit seed, which has been used solely as a livestock feed, and the remaining portion has to be incinerated. By improving the commercial value of seeds, it would lead to an increase in the profit of actors involved in the production and processing of passion fruits. On the other hand, in SU 4, which worked on the use of passion fruit peel as well, PP activity was canceled because the utilization method could not be commercialized and candidate suppliers could not be identified within the project period.
- In the pilot project of SU1, the project conducted a cultivation test to improve quality and harvesting method and the project was able to get high evaluation for quality of flesh passion fruit from a supermarket operated by Japanese company in Vietnam. However, there was a case where local residents who were dissatisfied with Contract companies cut down the fruits of the company's own farm, including the trial field, and the test was forced to be canceled.
- In SU10, which worked on contract farming between medicinal herb tea processing enterprise and raw-herb material production farmer, the project gave technical guidance to production farmers and sales promotion support for the medicinal herb tea product. Contract farming of the raw materials of herb tea practiced through these efforts resulted in a slight increase (about 5%) over the sales price of other agricultural crops, and stabilization of farmer's income was expected as well.
- In SU 7, which engaged in contract farming of rare livestock (black chicken, native black pig, H'mong-cow) in the mountainous area, in order to improve the situation where farmer's management scale has not progressed. The measures taken in this pilot project were to 1) measures for livestock disease, 2) measures against cold weather in winter, 3) utilization of unutilized feed resources and 4) introduction of superior species, etc. Through these activities, it was possible to improve the survival rate of the rare livestock (black chickens: about 50% → 95%), which led to the reduction of risks for the expansion of the management scale of the production farmers.
- In SU 8, which worked on the production of garlic seeds for Japan, utilizing the climate of the plateau, it proved that garlic production for seeds is possible through test cultivation, although the quality of harvested garlic varies much. On the other hand, securing the production area of garlic

in mountainous areas and establishing sustainable production technologies / systems are main issues. As a measure against this problem, garlic production utilizing rice terraces in mountainous areas is effective, and efforts are underway to establish production techniques and systems for that purpose.

(4) Lessons Learned

- Many agricultural and livestock products with high market demand are produced in mountainous regions, and its sales potential is high. On the other hand, the problem is that it is difficult to expand the scale of production and secure sufficient supply to the market. Procurement and application of agricultural materials such as seeds, fertilizers and agricultural chemicals and veterinary medicines are difficult, and many of the production farmers come from ethnic minorities with different languages, and training opportunities for improving technology are also limited.
- Further, some mountain areas have problems in terms of product distribution, such as pavement, roads and storages are not well developed, and access road to agricultural land is extremely deteriorated due to rainfall etc. In order to develop FVC in this region, the improvement of such production and distribution system is indispensable.
- One factor impeding scale expansion by livestock farmers is the risk of livestock disease. Targeted farmers in SV7 pilot project frequently experienced annihilation of livestock due to the occurrence of infectious diseases, but all farmers became motivated to increase the number of livestock because the loss of livestock became zero by use of appropriate vaccination. In mountainous areas, there is concern about the occurrence of diseases caused by illegal inflow of livestock from neighboring countries, and the provision of veterinary services by the veterinary and livestock office is also limited. Thus, the improvement of such situation is necessary.
- In mountainous areas, it is difficult to secure flat land, so there are many areas where livestock products are major products to make a living. Although these areas are rich in terms of unused land and feed resources, those are not well utilized for the development of livestock breeding. While crude feed that cannot be used in summer is abandoned, whereas on the occurrence of flood damage or in the winter snowfall period, feed to be fed disappears, and thus livestock starved to death. For such reason, it is required to disseminate feed storage technologies such as slinging and hay preparation.
- For rare livestock, the production is quite small leads to high unit price sale. However, it is currently scarcely available in the local market and the market size of this rare livestock is extremely small. These agricultural and livestock products should be linked to the promotion as local special products, and it is necessary to make appropriate production and sales strategies.
- Demand for export of fresh ginger was also confirmed. When exporting fresh agricultural livestock products, it is necessary to quarantine it by using specific important pests. Specifically, as it includes collection of soil samples of target production area and pest analysis, etc., it is necessary to develop the quarantine procedure support system by administrative authority for the production area of export products.
- Regarding SU 3, which worked on selling passion fruit seeds, there is potential for improvement in the use of food processing byproducts, including other agricultural and livestock products. Besides, the demand for tropical fruits is high in international markets, and further export expansion is expected. However, due to required uniform quality and food safety etc., further improvement is required in production, processing and distribution of such products.

Chapter 7 FVC Development Strategy in Nghe An Province

7.1 Statutory Position of Master Plan

The M/P is assumed to be incorporated with the agriculture and rural development sector of the Social Economic and Development Plan (SEDP) in Nghe An province (2021-2025).

In general, the SEDP consists of the objective of socio-economic development, key indicators, and major development policies to achieve the goal of the plan. As an example, SEDP (2016-2020) states the development policy on the aspect of economic development and social development. The policy on economic development contains six sub-policies including 1) development of industry sector, 2) development of service sector, 3) development of agriculture and rural development sector, 4) infrastructure development sector, 5) economic development sector and 6) business development sector. Although the objective and development policy of SEDP (2021-2025) will be formulated in due course of proper timing, the contents of the M/P will mainly be incorporated in the section 3) i.e. in the development of agriculture and rural development sector.

7.2 Structure and Target Year of Master Plan

The M/P is formulated for the development of FVC, which enhances the value of the production, distribution, processing and sales based on the introduction of the concept of contract agriculture. The M/P contains the following pillars of basic strategy to achieve the goal of M/P. The M/P also states the A/P to be carried out by Nghe An province to achieve the goal. The A/P describes the activities to be carried out for the creation of FVC of the major and feasible products in Nghe An province.

As mentioned above, the M/P is assumed to be incorporated into the SEDP (2021-2025), the target year of present M/P is also set as the same period with as of SEDP. However, since A/P contains the component of basic infrastructure development, which requires a long-term perspective, the target year of those plans might be longer than it is supposed to be.

7.3 Basic Development Vision

The agricultural sector in Nghe An province has shown firm growth by expansion of domestic demand due to population increase and an increase of exporting opportunities. The average rate of annual agricultural production value from 2011 to 2015 in Nghe An province is reported as 4.58 %. Hence, for the year of 2016 to 2020 it is estimated at 4.5 to 5.0 %. The total population in Nghe An province in 2034 will increase by 25% in comparison with the year of 2014. In other words, the total population in Nghe An province will increase to the 750,000 persons by the year 2034, which indicates further expansion of domestic demand for food-related products. Besides, Free Trade Agreement (FTA) was concluded between ASEAN member countries and Japan, EU, India and China indicating the further increase of exporting opportunities of agricultural products for Nghe An province.

However, such drastic change of circumstance does not always bring positive impact on the agricultural sector in Nghe An province. Due to the expansion of domestic demand and foreign capitalization, economic in Vietnam shows rapid growth, which leads to increase in the households of the wealthy class and middle-income class. The rapid changes in income level and development of supermarket system is diversifying the needs of food in the consumer market. Accordingly, the demand for high value-added food products also increases gradually despite falling under the high price range. On the other hand, the reduction and abolition of tariff barrier by the conclusion of FTA are accelerating the inflow of cheap food products from abroad, which stimulates concern for the drop of market competitiveness of agricultural products falls in low price range.

The agricultural superiority in Nghe An province is not high as compared to the provinces such as Lam Dong province, which possesses favorable natural condition for the production of highland vegetables, ornamental plants and coffee. If it can't easily express the agricultural superiority based on the natural condition, Nghe An products are obliged to be supplied to general consumer market which

has many international and domestic competitors who can supply high-quality and reasonable products compared to the ones produced in Nghe An province. The current agricultural structure in Nghe An province is mainly sustained by the supplement of agricultural products to the general consumer market under the adverse condition in terms of the lack of production superiority. Therefore, the economic value of agricultural products in Nghe An hit its ceiling.

To grasp diversifying consumers' needs accurately and to strengthen the market competitiveness of Nghe An agricultural products, the agricultural sector in Nghe An province should change the sales target from general consumer market to specific one where the needs of consumers are not satisfied or over-satisfied (the case that where consumers pay the surplus cost to satisfy their needs). Moreover, it should acquire strong external creditworthiness of Nghe An agricultural products in the specific market by creating FVC to supply the required products stably.

Based on the present data analysis mentioned above, JICA Project Team proposes the agricultural development vision titled as **“Realization of Strong Development of Nghe An Agriculture by Proving Worthy of Market Trust and Needs”** and agricultural development strategy to realize its vision.

7.4 Structure of Nghe An Agricultural Development Strategy

JICA Project Team proposes Nghe An agricultural development strategy that consists of 3 FVC development policies and 4 FVC development strategical regions. FVC development policies are formulated based on the acquired experiences through AMPF activities and pilot project, and it shows the direction to promote FVC development of Nghe An agricultural products. FVC development policies comprise three (3) policies as shown below.

FVC development policy 1: Establishment of Market Needs Gathering and Sharing System

FVC development policy 2: Improvement of Agricultural Administration Service and Infrastructure for the Development of FVC

FVC development policy 3: Capacity Development of Organization and Human Resources Related to FVC Development

Nghe An province has the biggest land area in the country and diversity of geographical conditions which are the typical characteristics to be considered for FVC development. Thus, it is necessary to make zones of the area having different production environments of agricultural product and show directions on how to develop FVC in each zone. Based on the collected statistical data, JICA Project Team conducted statistical analysis and specified following FVC development strategical regions.

FVC development strategical region 1: Strategical Region for Promotion of Safe Agricultural Production (Target: Vinh, Cua Lo)

FVC development strategical region 2: Strategical Region for Promotion of Raw Material Production for Food Processing and Exporting (Target: Hung Nguyen, Nam Dan, Nghi Loc, Do Luong, Yen Thanh, Dien Chau, Quynh Luu, Hoang Mai)

FVC development strategical region 3: Strategical Region for Promotion of High Value-Added Agricultural Production (Target: Thanh Chuong, Anh Son, Tan Ky, Quy Hop, Nghia Dan, Thai Hoa)

FVC development strategical region 4: Strategic Region for Promotion of Agricultural Products for Special Use (Target: Con Cuong, Tuong Duong, Ky Son, Que Phong, Quy Chau)

Henceforth, the direction of FVC development is determined based on the characteristics of each strategical region and to promote FVC development in accordance with the FVC development policies mentioned above.

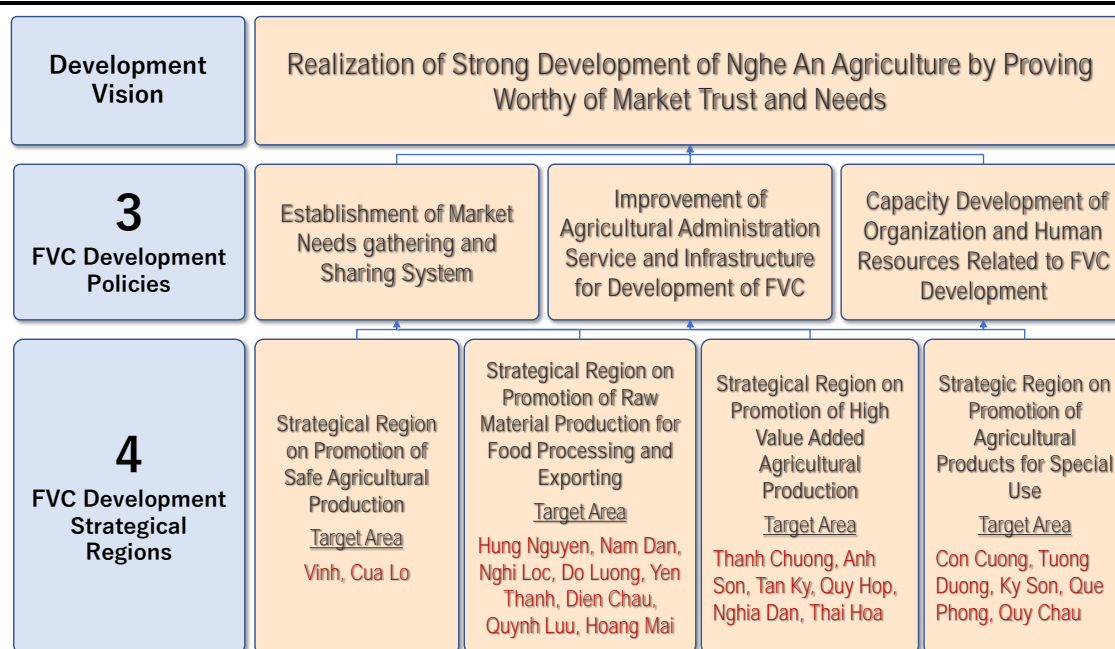


Figure 7.1 Overall Concept of the M/P

7.4.1 FVC Development Policies

(1) Establishment of Market Needs Gathering and Sharing System

The agricultural development strategy shows a mechanism to identify demander’s needs and develop products satisfying the requirement of demanders. Within the process of such mechanism, the most important issue is to develop the function of collecting market needs. To solve this issue, Nghe An province should secure or develop human resource who can take responsibility for collecting market information. This policy shows directions for the activities to be conducted for these matters.

Table 7.1 Directions on the Activities Regarding the Establishment of Market Needs Gathering and Sharing System

Item		Contents
1	Institutionalization of AMPF activities and capacity development of AMPF	Institutionalization of AMPF and allocation of necessary human resource and budget
		Expanding activities on market survey conducted by AMPF
		Holding periodical opinion exchange meeting/matching event and mediates transaction of agricultural products
		Capacity development of AMPF staffs
2	Development of human resource regarding marketing	Develop and train marketing staffs in agricultural cooperatives and enterprises
3	Facilitation of collaboration with private enterprises	Collaboration with private companies providing matching service.
		Promotion of collaboration among agriculture, industry and commerce

Source: JICA Project Team

(2) Improvement of Agricultural Administration Service and Infrastructure for the Development of FVC

This policy shows the direction of the base development input necessary for producing and distributing agricultural products satisfying specific market needs stably. As shown table below, this policy includes the introduction of the institution, promotion of infrastructure development for production and distribution of agricultural products and promotion of diversification for the domestic

and international market to be targeted, which are indispensable aspects to acquire strong external creditworthiness and market competitiveness in the specific market.

Table 7.2 Directions on the Activities Regarding the Improvement of Agricultural Administration Service and Infrastructure for the Development of FVC

Item		Contents
1	Introduction of institutions to develop agricultural producing area having strong market competitiveness.	Promotion of farmland conservation, intensive agriculture and agricultural mechanization
		Promotion of obtaining safety certificate and branding of agricultural products
		Promotion of the development of small-scale irrigation facilities
2	Development of infrastructures on food distribution	Development of Farm to Market Road (FMR) in a mountainous area
		Development of food storages and storage techniques
		Development of slaughterhouse
		Development of post-harvest facilities
3	Diversification of the domestic market and international market to be targeted	Promotion of food and gift development for a tourist area
		Facilitation of investment from agri-business enterprises
		Promotion of modern trade
		Development of supporting system regarding plant quarantine

Source: JICA Project Team

(3) Capacity Development of Organization and Human Resources Related to FVC Development

This policy shows the direction for the capacity development of human resources and organization necessary for producing and distributing agricultural products for satisfying specific market needs stably. This policy includes the capacity development of agricultural cooperative and enterprise, agricultural research and agricultural extension, which are also indispensable aspects of acquiring strong external creditworthiness and market competitiveness in the specific market.

Table 7.3 Directions for the Activities Regarding the Capacity Development of Organization and Human Resources Related to FVC Development

Item		Contents
1	Capacity development of agricultural cooperative and enterprise	Expansion of categorical assistance for a capital investment of agricultural cooperative and enterprise to develop necessary facilities
		Capacity development of the business management of agricultural cooperative
		Expansion of the institution for financial banking
2	Strengthen agricultural research	Selection and concentration of research theme
		Promotion of collaboration among research organization and agency
3	Strengthen agricultural extension	Capacity development of agricultural extension staffs regarding skills on project planning
		Reforming model development program
		Development of supporting system on contract agriculture
		Strengthen veterinary service

Source: JICA Project Team

7.4.2 FVC Development Strategic Region

(1) Strategic Region for Promotion of Safe Agricultural Production

Target: Vinh, Cua Lo

Prioritized Promotion Product: Safe vegetables, chicken egg

Direction for FVC development in this region is to target wealthy and middle-income class consumers living in an urban area and tourists, which is estimated to 3 million persons per year approximately.

Due to the comparative advantage in terms of lower transportation cost of the products, prioritized products should be safe and fresh vegetables and a chicken egg. The destination of those products is assumed as the supermarket, hotel and restaurant accessed by target consumers. Following is the direction to develop FVC in this region.

- Due to growing interest for food safety under consumer's market, the buyers would require more intense management of the agricultural production such as the management of cultivation record and delivery plan as well as obtaining safety certificate as approved by the governmental organization. Therefore, it is proposed to improve several existing agricultural cooperatives in this region and develop reliable and stable producing area of safe agricultural products as a model for its extension.
- The demand for fresh vegetable increases rapidly by the increase of tourists in tourist season starting from June to September every year. On the other hand, the temperature during this season is very high and thus the production of leafy vegetable is not suitable. Therefore, it is proposed to conduct supporting activities such as introducing heat tolerance variety and other agricultural materials such as cheesecloth which enables to deliver fresh vegetables in tourist season.

(2) Strategic Region for Promotion of Raw Material Production for Food Processing and Exporting

Target: Hung Nguyen, Nam Dan, Nghi Lo, Do Luong, Dien Chau, Yen Thanh, Quynh Luu, Hoang Mai

Prioritized Promotion Product: Raw material for processing (vegetable), Ground-nut, Sesame, Rice

Direction for FVC development in this region is to supply raw material for food processing and to export agricultural products to the international market. Although target product will be determined depending on the buyer's needs, it is proposed to strengthen production and distribution system of the products having the experiences on the supply of raw material to the processing company or exporting to the international market.

In general, the raw materials traded by processing company and exporting company are produced after the conclusion of an agreement on its specification and sales unit price. It is proposed to develop a farming model, which produces agricultural products matching the specification effectively and increases farmer's income by the reducing production cost or increasing the production volume more than the cost to be spent. Keys are developing production area with strong market competitiveness in the target market, selecting several cooperatives and providing various supports to encourage those cooperatives to become model of this region.

(3) Strategic Region on Promotion of High Value-Added Agricultural Production

Target: Thanh Chuong, Anh Son, Tan Ky, Quy Hop, Nghia Dan, Thai Hoa

Prioritized Promotion Product: Citrus fruit including orange, Tea, Cassava, Sugarcane, Fodder

This region has already several agricultural products with high name-value. Thus, the direction of FVC development in this region is to strengthen the market competitiveness of those products. It is proposed to target wealthy income class consumers living inside and outside of Nghe An province and expand sales channel to supermarkets, hotels and restaurants especially in big cities such as Ha Noi and Ho Chi Minh.

- Develop sales channel of processed products made off with the high name-valued products such as orange and tea.
- To promote the formulation of producing area of those products and develop the trustable brand by standardization of product's quality and obtaining a certificate of origin.
- To promote production efficiency improvement of fodder crops.
- Promotion of branding on a local variety of livestock.
- Promotion of safe meat production by utilizing organic feed made from the unused resource.

(4) Strategic Region on Promotion of Agricultural Products for Special Use

Target: Con Cuong, Tuong Duong, Ky Son, Quy Chau, Que Phong

Prioritized Promotion Product: Ginger, Garlic, Fruits, Tea, Mong cow, Black pig, Black chicken

Although it is characterized by high poor rate and less development of basic infrastructure, this region has local farmers to produce high-demand agricultural products such as ginger, garlic, black pig and black chicken. Thus, it is expected to generate higher income and reduce poverty if local farmers could produce those products with a medium level of quality. Therefore, the direction of FVC development in this region is to strengthen production capacity of those specific agricultural products which satisfies domestic and international market needs.

- To increase farmer’s income to promote the production of those highly demanded products.
- Formulate agricultural cooperative and strengthen those capacities to manage ginger, garlic and other high-demanded products.
- To realize stable production of Mong cow, black pig and black chicken by sanitary management and veterinary service.
- Reducing production cost and encouraging branding by utilizing unused products.

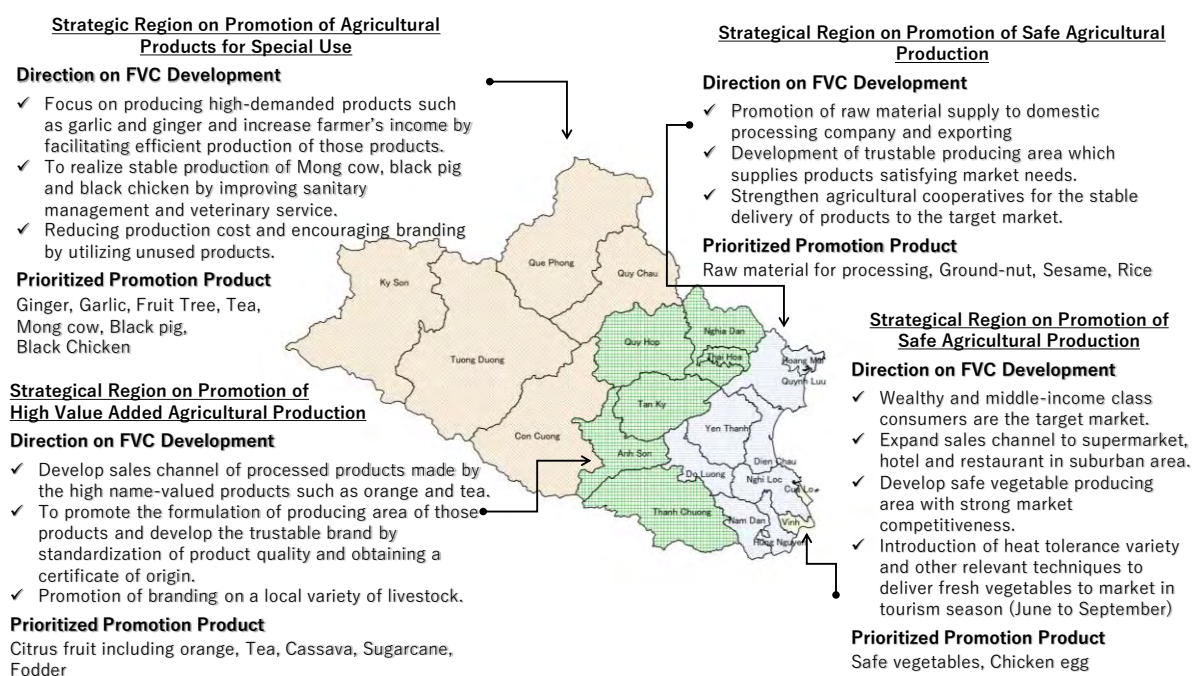


Figure 7.2 Overall Concept of FVC Development Strategic Region

Chapter 8 Action Plan

8.1 Structure and Remarks of Action Plan

8.1.1 Incorporation of the A/P into Socio-Economic Development Plan (2021-2025) in Nghe An Province

As mentioned in the previous chapter, M/P and A/P prepared in this project are expected to be incorporated into the Socio-Economic Development Plan (2021 - 2025). In the development plan, development policies and targets of a wide range of sectors in the relevant period are described, but two types of project lists are attached as annex as follows.

- Project list of public works to be implemented by the budget of Nghe An province (public works such as irrigation facilities and new construction / renovation of roads etc.)
- Project list of industrial development on the premise of private investment (industrial development project including food business)

Projects included in these lists generally have a large impact on socioeconomic development, so they are the projects which require large scale of budget. On the other hand, the development projects on soft-component such as human resource development are not described in the socio-economic development plan, but are put down as an activity plan of the specific organization such as agriculture and rural development plan (2021-2025) developed by DARD.

From the above viewpoints, the A/P developed in this project consists of an "Investment Plan" that assumes incorporation of the socio-economic development plan (2021-2025) and "Capacity Development Plan" which assumes the integration into the agriculture and rural development plan (2021-2025) mainly developed by DARD. With regard to the former, JICA Consultant team clarifies the roles and cost burden of "public" and "private" in project implementation. Regarding the latter, mainly emphasis is placed on soft-component development in the agricultural field, and basically it is assumed to be administrative burden except for some exceptions.

8.1.2 Application of Incentive Policy Regarding Private Investment and Agricultural Development

The A/P developed in this project is formulated based on the FVC development policies and the FVC development strategical zone as described above. However, even if it is an A/P conforming to the policies, it is difficult to create A/P with high feasibility without consideration of the budget of each public and private sector. Therefore, in this project, based on the incentive policies aimed at private investment promotion and agricultural support determined by the national and provincial government, the individual A/Ps are prepared in such a way that these policies can be applied. The table below shows major incentive policies regarding private investment promotion and agricultural support which were considered in A/P development.

Table 8.1 Incentive Policies for Private Investment Promotion and Agricultural Support

Document No.	Title	Summary of Contents
Decree No. 98/2018/NĐ-CP	Providing Incentive Policy for Development of Linkages in Production and Consumption of Agricultural Products in Nghe An Province	Subsidy scheme to facilitate the creation of linkage between agricultural producers and actual users such as processing or retaining company. <ul style="list-style-type: none"> • Subsidy on hiring consultants • Subsidies on infrastructure development • Subsidies on agricultural extension and training
Decree No.57/2018/NĐ-CP	Incentive Policies For Enterprises Investing in Agriculture and Rural Development Sector in Nghe An Province	Scheme to facilitate private investment in the agricultural sector based on financial support. <ul style="list-style-type: none"> • Subsidy on credits

Document No.	Title	Summary of Contents
Decree No.14/2017/NQ-HĐND	Subsidy Policies for Agriculture and Rural Development in Nghe An Province	Subsidies program to develop agriculture. <ul style="list-style-type: none"> • Subsidy on procuring agricultural material • Subsidy on livestock breed improvement • Subsidy on vaccination • Subsidy on constructing slaughterhouse • Subsidy on agricultural machine • Subsidy on agricultural cooperative development

Source: Documents collected from DARD

8.1.3 Structure of A/P

The total number of A/Ps proposed by the JICA consultant team is 20. Of these, "Investment Plan" corresponds to 12 cases, "Capacity Development Plan" to 8 cases.

Table 8.2 List of A/P

ID	Classification	Title of A/P
AP1	Investment Plan	Development of Safe Vegetable Production and Supply System Project
AP2	Investment Plan	Development of Producing Area of Rice for Processing Project
AP3	Investment Plan	Development of Producing Area of Vegetable for Processing Project
AP4	Investment Plan	Development of Producing Area of Peanut for Exporting Project
AP5	Investment Plan	Development of Producing Area of Sesame for Exporting Project
AP6	Investment Plan	Orange Production Improvement Project
AP7	Investment Plan	Orange Distribution and Marketing Improvement Project
AP8	Investment Plan	Tea Production and Marketing Improvement Project
AP9	Investment Plan	Development of Cost Competitive Producing Area of Forage Crops Project
AP10	Investment Plan	Development of Cost Competitive Producing Area of Industrial Crops Project
AP11	Investment Plan	Improvement of Production and Supply System on Specialty Products Project
AP12	Investment Plan	Development of Infrastructure for Agricultural Products Distribution Project
AP13	Capacity Development Plan	Enhancement on the Food Safety Management Capacity of Local Producers and Traders Project
AP14	Capacity Development Plan	Branding Promotion by Application of Protection of Intellectual Property Project
AP15	Capacity Development Plan	Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production Project
AP16	Capacity Development Plan	Improvement of Veterinary Service Project
AP17	Capacity Development Plan	Capacity Development on Administration and Marketing of Agricultural Cooperatives Project
AP18	Capacity Development Plan	Improvement of Agricultural Financing Project
AP19	Capacity Development Plan	Capacity Development of AMPF Project
AP20	Capacity Development Plan	Establishment of Effective Research System for the Development of Advanced Technique Project

Source: JICA Project Team

8.2 Outline of A/P

Details of each action plan shown in the above table are described below.

API: Development of Safe Vegetable Production and Supply System

Background of the Project
<p>Since vegetable are often taken in fresh as a source of vitamin and mineral, it is important to produce the vegetable by following production standards designated in the Viet GAP or the “Compliance with Safety Regulation” issued by DARD and certified as “safe food” in Vietnam.</p> <p>The DARD in Nghe An province elaborated a 5 years plan in accordance with a Decision No. 1702 / QD-UBND dated 6/5/2015 of the provincial People’s Committee approving the outline of the Scheme on safe vegetable production in Nghe An province for the period 2015-2020, aims to expand safe vegetable production area from 490 ha in 2014 to 1,600 ha by 2020 with double or triple cropping to develop its value chain, and to increase agriculture income of producers and then maintain the health of people in the province.</p> <p>The number of farmers’ cooperatives which obtain such certificate has been increased gradually in recent years. However, safe vegetable production has not been expanded as expected as of 2018 because of three main possible reasons namely; i) Limitation of trading period; Safe vegetable can be grown from November to May in the main production areas because of the ‘Lao wind’ and flood led by typhoon in summer from June to October, ii) Unstable quality and quantity; Traders who buy safe vegetables regularly do not want to come to farmers in the province because they cannot produce and sell the products in certain quality and quantity and iii) Less incentive for farmers; Farmers do not want to produce safe vegetable following ‘tedious’ standards of safe food certificates because the income from safe vegetables is not very increased than conventional ones.</p> <p>In order to develop the safe vegetable production and value chain, it is necessary to introduce facilities and materials which mitigate severe weather condition and plant damages to produce vegetables throughout the year to sell their products to large buyers regularly. Additionally, farmers need to change the way of produce and sale of their vegetables from ‘product out’ to ‘market-in (market-oriented) production’ and from individual sales to collective sales with cooperative members following several successful cases for each measure in Quynh Luu and Vinh city. By cooperation with private sector, this action plan aims to expand production and trade of safe vegetable and to establish stable value chain.</p>
Goal
<p>The stable production and supply system of safe vegetable is developed.</p> <p>Numeric target: develop 3,000 ha of safe vegetable producing area.</p>
Target zone
<p>Promotion area of safe agriculture products</p> <p>Seven (7) districts (Quynh Luu, Yen Thanh, Dien Chau, Nghi Loc, Nam Dan, Hung Nguyen, Do Luong), two (2) towns (Hoang Mai, and Cua Lo) and one (1) city (Vinh)</p>
Target Market
<p>Retail shops, hotel, restaurant, school and hospital in Nghe An province especially in Vinh city and Cua Lo town</p>
Output
<ol style="list-style-type: none"> (1) More than 100% of the vegetable farmers’ cooperatives obtain a safe food certificate of DARD or Viet GAP by 2030. (2) The natural disasters and appropriated facilities for safe vegetable production in summer are identified (3) Appropriate facilities are developed in cooperation with private sector for year-round production of safe vegetable production. (4) Safe vegetable is produced thought the year in the province (5) Safe vegetable value chain is established though stable production and trade under contracts between farmers cooperatives and buyers.
Activities
<ol style="list-style-type: none"> (1) Built capacity of agriculture officers working for DPC, CPC and cooperatives are raised on safe vegetable production standard. (2) Conduct field survey to understand natural agriculture condition ,and identifying farm which enables year-round production of safe vegetables and appropriated farm facilities and materials to prevent natural disasters in the vegetable production area (coastal and low land areas: 7 districts, 2 towns and 1city. (3) Design the appropriate farm facilities and material, and set faculties and/ or procure necessary materials. Conduct capacity building training on facilities operation and maintenance (O&M) for related cooperatives members and CPC (4) Establish production techniques for year-round safe vegetable production especially in summer, and

<p>Conduct capacity building training on year-round production, contract farming (market-oriented production) and collective sales for related producers' cooperatives</p> <p>(5) Provide trainings on marketing for related cooperative members and find buyers who trade regularly and conclude contracts with cooperatives</p>												
<p>Input</p>												
<p><u>Input by government:</u></p> <ul style="list-style-type: none"> • Governmental HR: DARD, AEC, AES, Cooperative Alliance, AMPF, DPC and CPC • External HR: Facility Construction Engineers (in charge of M&O training), technical consultants on safe vegetable production and marketing consultant • Construction of facilities (irrigation, drainage system, houses etc.) and Materials for wind screen, light shielding (partial charge) • Procurement of agricultural input (partial charge) • Local activity expenses (expenses for training for year-round production, market-oriented production, production and collective sales, etc.) 						<p><u>Input by private sector:</u></p> <ul style="list-style-type: none"> • Construction of facilities (irrigation, drainage system, houses etc.) and Materials for wind screen, light shielding (partial charge) • Procurement of agricultural input (partial charge) • Advertisement expenses • Contract farming with local cooperative and farmers 						
<p>Implementing Agencies</p>												
<p>Government: PPC, DPC, CPC, DARD, DPI, AMPF, Cooperative Union (CU) Private Sector: Private companies engaging in production and sales of safe vegetable</p>												
<p>Implementing Schedule</p>												
Activity	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	In Charge	
(1) Built capacity of agriculture officers and cooperatives											DARD, AEC, CU	
(2) Conduct field survey and identify farm facility and materials and production techniques											DARD, DPC, Private Companies	
(3) Design and set the appropriate facilities and materials and capacity building training on M&O											PPC, DPC, DARD, Private Companies	
(4) Establish production techniques for safe vegetable and provide training											AEC, Private companies	
(5) Provide training on marketing and find buyer to be contracted with											AMPF, DPC, Private companies	
<p>Budget</p>												
<p>The total project cost: 8.2 million USD (190 billion VND) Expense by government: 2.3 million USD (53 billion VND) 28% of the total cost Expense by private sector: 5.9 million USD (137 billion VND) 72% of the total cost</p>												
<p>Benefit/Impact</p>												
<ul style="list-style-type: none"> • Economic effect in the province: 900 billion VND (38million USD)/year by2030. • Farmers' income from safe vegetables becomes 300 million VND/ ha. 												
<p>Environmental and Social Considerations</p>												

<ul style="list-style-type: none">• Regarding the production area expansion and facility development, it should be ensured that the land ownership problem does not occur.• Farmers who cannot obtain any safe food certificate due to the environmental condition of his/her farm land, any measures should be taken to mitigate social inequality if necessary.
Remarks
<ul style="list-style-type: none">• To pay attention to the changes of the law, regulation and governmental bodies in charge of rural infrastructure development in Nghe An Province.• To pay attention to the changes of the decrees, decision and resolutions etc., issued by the governmental authorities for incentive policies of agriculture and rural development including FVC establishment.• Any similar project conducted by World Bank, ADB or other donors should be considered collaboration to emerge synergy and not to be overlapped.• To consider to apply Decree No. 98/2018/ NĐ-CP, Decree No.57/2018/ NĐ-CP and No.14/2017/ NQ-HĐND in implementation stage.

AP2: Development of Producing Area of Rice for Processing Project

Background of the Project	
<p>Likewise other many provinces in Vietnam, most farmers primarily produce paddy rice for home consumption and surplus produce is sold. The provincial production amount in 2016 was 1 million tons and upland rice which is mainly cultivated in mountainous regions represented only 1.4 %. Major lowland rice producing areas are distributed on the coastal plain zone (Yen Thanh, Dien Chau, Quynh Luu, Do Luong, Quynh Luu, Nghi Loc, Nam Dan and Hung Nguyen) and some districts on the hilly zone (Thanh Chuong and Tan Ky). These nine districts occupy three quarters of the total rice cropping area in Nghe An. The rice produced in Nghe An is of moderate quality and the volume is enough to supply for provincial consumption including urban population, but rice exportation is not so actively practiced.</p> <p>On the other hand, the lowland rice is used not only for staple food but also made into rice liquor, rice paper, noodles such as pho, snacks and crackers, etc. Hence the varieties of rice are very diversified by these processed commodities. Some wet noodles, which are impossible to store for a long time, are being produced in or near each village every day and marketed within a limited area. Processing factories normally have their particular varieties for the material rice.</p> <p>This project aims to promote contract farming of rice for processing with the Vietnamese food processing companies, which use rice as materials for their products, by supplying material rice met the quality standards of these companies. (Merits of contract farming: the processing companies can get stable sources of material supply and the producers can start cultivation after securing marketing of rice.)</p>	
Project Goal	
Develop the producing area as production for highly competitive rice for processed food Numeric target: 18,000 ha of rice production area for processing	
Target Zone	
Promotion of Raw Material Production for Food Processing and Exporting	
Target Market	
Confectionery and alcohol maker in Vietnam	
Outputs	
<ol style="list-style-type: none"> (1) Establish the cooperation system between the companies and agricultural cooperatives. (2) Develop necessary infrastructure and equipment for efficient production/ shipment of rice for processing and export. (3) Specify the appropriate cultivation technique that meets market needs, and extend it to target farmers / cooperatives. (4) Improve and stabilize farmers profit by improvement of productivity and contract farming. 	
Activities	
<ol style="list-style-type: none"> (1) Establish the cooperation system between the companies and agricultural cooperatives Hold meetings to exchange opinions between companies that need rice and agricultural cooperatives producing these crops. Besides, establish the cooperation system between the companies and the agricultural cooperatives. (2) Develop necessary infrastructure and equipment for efficient production/ shipment of agricultural products for processing and export. Develop various necessary infrastructure and procure farm machines, trucks, processing machines to meet the amount of actual consumer's demand. (3) Formulate cultivation and shipping plan, standardize cultivation, and implement contract farming. Under the guidance of actual consumers, specify the appropriate varieties and cultivation technique, and standardize the cultivation in the production areas. Formulate cultivation and shipping plan according to actual consumer's demand. Therefore, promote contract farming between the actual consumers and producers/ agricultural cooperatives. 	
Inputs	
<u>Portion for government</u> <ul style="list-style-type: none"> • PPC, DPC, DARD (personal assignment) • Procurement cost of agricultural and processing machinery (Partial burden) • Farm land purchase and farmland consolidation • Project experts (Agricultural machinery, cultivation technique) • Project management cost (pilot projects, training fee, transportation, allowance/ accommodation, etc.) 	<u>Portion for private sector</u> <ul style="list-style-type: none"> • Procurement cost of agricultural and processing machinery (Partial burden) • Farm land purchase and farmland consolidation • Procurement of agricultural materials and implementation of contract farming

Implementing Agencies												
Government: PPC, DPC, DARD (AEC, AMPF), DPI, DOIT, Cooperative Union (CU)												
Private Sector: Consumer/ company producing raw material of rice/ vegetable for processed food, and groundnut/ sesame for export.												
Implementing Schedule												
	Activities	20 21	20 22	20 23	20 24	20 25	20 26	20 27	20 28	20 29	20 30	In charge
1. Establish cooperation system between companies and cooperatives	1.1 Select candidates of actual consumers/ companies and producers											PPC, DPC, DARD
	1.2 Hold meeting to exchange opinions between the companies and producers											Private companies, DARD, AMPF
	1.3 Specify roles of public and private sector. Specify producing area and its scale.											PPC, DPC DARD, Private companies
2. Develop necessary infrastructure and equipment for production, processing, shipment	2.1 Hold explanation meeting with farmers/ cooperatives and make agreements.											PPC, DPC, DARD, Private Companies
	2.2 Develop the infrastructure facilities and procure machines.											PPC, DPC DARD, DPI, DOIT, Private Companies
3. Formulate cultivation and shipping plan. Standardize cultivation and implement contract farming.	3.1 Formulate cultivation and shipping plan. Procure agricultural materials											DARD, Private Companies
	3.2 Implement guidance and training to actual consumers and producers											DARD, AEC
	3.3 Produce and ship target crops based on contract farming											DAR, DPC, Private Companies
Project Cost												
The total project cost: 3,125,965 USD (72 billion VND)												
Expense by government: 740,294 USD (17 billion VND) : 23.7% of total cost												
Expense by private sector: 2,385,672 USD (55 billion VND) : 76.3% of total cost												
Benefit/Impacts												
Increase of production output by agricultural mechanization and improvement of cultivation technology: 117 billion VND (total benefit gained from 2021 to 2030)												
Environment and Social Considerations												
<ul style="list-style-type: none"> A/P's activities will be conducted with fully consideration on the land lease right of small-scale farmers even if the value of farmland rise because of the improvement of productivity. 												
Remarks												
<ul style="list-style-type: none"> It is necessary to explain the plan and activities for targeting farmers/cooperatives when agricultural land is consolidated. Based on "Decree No. 98/2018/ NĐ-CP", "Decree No.57/2018/ NĐ-CP" and "Decree No.14/2017/ NQ-HĐND", the project shall be incorporated with support to private sectors, such as the provision of subsidy and technical assistance. 												

AP3: Development of Producing Area of the Vegetables for Processing Project

Background of the Project
<p>According to the Business Monitor International report, it is predicted that food industry in Vietnam grows 10.9% every year between 2015 and 2020. As the importance of food processing industry increases, the number of food processing companies seek stable source of processed food materials.</p> <p>On the other hand, the growth rate of the food processing industry in central region in Vietnam is lower than southern Vietnam. The reasons are listed below.</p> <ul style="list-style-type: none"> • It is difficult to supply the materials stably because of subdivided farm layout. • The quality of fruits and horticultural crops is low • The scale of consumer market is not large compared with northern and southern Vietnam. <p>As the result of implemented PP on the food processing industry, it is verified that there is necessity to improve cultivation technique to meet the market needs, farmland consolidation, farm mechanization to improve the productivity, etc. In addition, there are 343 food processing companies in Nghe An, however the business scale of most companies are family-owned and a few companies are big enough to procure the raw materials.</p> <p>It is anticipated that Vietnam promotes export of agricultural products to foreign countries including Japan, triggered by the elimination of tariffs through conclusion of TPP. However, in order to acquire market competitiveness in the international market, it is essential to reduce production costs by consolidating farmland and stabilize the quality by cultivation standardization in the production areas.</p> <p>In the future, it is necessary to solve the above problems in order to acquire sufficient market competitiveness in the food processing market and export market. However, only government support is not enough to solve it because the government budget is limited. For that reason, the purpose of this A/P is to promote collaboration between food processing companies/ local trading companies and vegetable producers, hence A/P develop the vegetable products in Nghe An with high competitiveness for processing and export by public-private partnership.</p>
Project Goal
<p>Develop the producing area as production for highly competitive vegetables for processed food.</p> <p>Numeric target: 6,000 ha of vegetable production for processing</p>
Target Zone
Promotion of Raw Material Production for Food Processing and Exporting
Target Market
Food processing and exporting company in Nghe An and other neighboring province
Outputs
<ol style="list-style-type: none"> (1) Establish the cooperation system between the companies and agricultural cooperatives. (2) Develop necessary infrastructure and equipment for efficient production/ shipment of vegetables for processing. (3) Specify the appropriate cultivation technique that meets market needs, and extend it to target farmers / cooperatives. (4) Improve and stabilize farmers profit by improvement of productivity and contract farming.
Activities
<ol style="list-style-type: none"> (1) Establish the cooperation system between the companies and agricultural cooperatives Hold meetings to exchange opinions between companies that need vegetables and agricultural cooperatives producing it. Besides, establish the cooperation system between the companies and the agricultural cooperatives. (2) Develop necessary infrastructure and equipment for efficient production/ shipment of vegetables for processing. Develop various necessary infrastructure and procure farm machines, trucks, processing machines to meet the amount of actual consumer’s demand. (3) Formulate cultivation and shipping plan, standardize cultivation, and implement contract farming. Under the guidance of actual consumers, specify the appropriate varieties and cultivation technique, and standardize the cultivation in the production areas. Formulate cultivation and shipping plan according to actual consumer’s demand. Besides, promote contract farming between the actual consumers and producers/ agricultural cooperatives.
Inputs

Portion for government <ul style="list-style-type: none"> • PPC, DPC, DARD (personal assignment) • Construction and procurement costs (pick-up point, production facility, agricultural machinery/ processing machine) (Partially burden) • Farmland purchase and farmland consolidation • Project experts (Farm machine, cultivation technique) • Project management cost (pilot projects, training fee, transportation, allowance/ accommodation, etc.) 		Portion for private sector <ul style="list-style-type: none"> • Construction and procurement costs (pick-up point, production facility, agricultural machinery/ processing machine) (Partially burden) • Farmland purchase and farmland consolidation • Procurement of agricultural materials and implementation of contract farming 										
Implementing Agencies												
Government: PPC, DPC, DARD (AMPF, AEC), DPI, DOIT, Cooperative Union (CU) Private Sector: Consumer/ company producing raw material of vegetable for processed food.												
Implementing Schedule												
	Activities	20 21	20 22	20 23	20 24	20 25	20 26	20 27	20 28	20 29	20 30	In charge
1. Establish cooperation system between companies and cooperatives	1.1 Select candidates of actual consumers/ companies and producers											PPC, DPC, DARD
	1.2 Hold meeting to exchange opinions between the companies and producers											Private companies, DARD, AMPF
	1.3 Specify roles of public and private sector. Specify producing area and its scale.											PPC, DPC DARD, Private companies
2. Develop necessary infrastructure and equipment for production, processing, shipment	2.1 Hold explanation meeting with farmers/ cooperatives and make agreements.											PPC, DPC, DARD, Private Companies
	2.2 Develop infrastructure facilities and procure machines.											PPC, DPC DARD, DPI, DOIT, Private Companies
3. Formulate cultivation and shipping plan. Standardize cultivation and implement contract farming.	3.1 Formulate cultivation and shipping plan. Procure agricultural materials											DARD, Private Companies
	3.2 Implement guidance and training to actual consumers and producers											DARD, AEC
	3.3 Produce and ship target crops based on contract farming											DAR, DPC, Private Companies
Project Cost												
The total project cost: 3,428,766 USD (79 billion VND) Expense by government: 1,092,127 USD (25 billion VND) : 31.9% of total cost Expense by private sector: 2,336,639 USD (54 billion VND) : 68.1% of total cost												
Benefit/Impacts												
Increase of production output by agricultural mechanization and improvement of cultivation technology: 106 billion VND (total benefit gained from 2021 to 2030)												
Environment and Social Considerations												
<ul style="list-style-type: none"> • A/P's activities will be conducted with fully consideration on the land lease right of small-scale farmers even if the value of farmland rise because of the improvement of productivity. 												
Remarks												
<ul style="list-style-type: none"> • It is necessary to explain the plan and activities for targeting farmers/ cooperatives when agricultural land is consolidated. • Based on "Decree No. 98/2018/ NĐ-CP", "Decree No.57/2018/ NĐ-CP" and "Decree No.14/2017/ NQ-HĐND", the project shall be incorporated with support to private sectors, such as the provision of subsidy and technical assistance. 												

AP4: Development of Producing Area of Peanut for Exporting Project

Background of the Project	
<p>In the past, groundnuts produced in Vietnam were exported to the neighboring ASEAN countries such as Thailand, Malaysia and Indonesia and its export value was over USD 31 million in 2007. Since then, cheap Indian groundnuts have been imported to Vietnam and the import value of groundnuts hit USD 20 million in 2014, which exceeded the export value of groundnuts. In 2016, Nghe An had 15,700 ha of groundnuts cropping area, which is the largest in Vietnam occupying 8.5% of the national groundnuts cropping area, so groundnuts are regarded as one of the specialty products in Nghe An. Major producing areas lie on the coastal plain zone (Nghì Loc, Dien Chau, Nam Dan and Do Luong districts) and Thanh Chuong. Due to the recent increase of groundnuts import, the groundnut fields in Nghe An gradually decreased from 21,900 ha in 2010.</p> <p>According to the recent data of the Nghe An Statistics Department, groundnuts exported from Nghe An was recorded as 3,151 tons in 2010 and as 19 tons in 2014. From 2015, there have been no groundnuts export records. However, based on the interview survey results in the major producing areas, many buyers from Lang Son province located on the border with China came to buy many groundnuts produced in Nghe An on behalf of Chinese traders. Hence it is expected that quite a large amount of groundnuts were marketed to China through these Vietnamese buyers from Lang Son province.</p> <p>Japan imports quite a lot of groundnuts and 90 % of them are dominantly imported from three countries, namely China, USA and the Republic of South Africa. Because of a so-called China risk issue, some Japanese companies try to diversify the import sources of groundnuts. Considering foreign companies including the Japanese ones as customers of groundnuts in future, the project aims to promote export of groundnuts by producing groundnuts which meet these customers' quality standards through diversified marketing channels.</p>	
Project Goal	
<p>To develop highly competitive producing area of peanut for exporting. Numeric target: 4,500 ha of peanut production area for exporting</p>	
Target Zone	
Promotion of Raw Material Production for Food Processing and Exporting	
Target Market	
China, Japan and ASEAN countries such as Malaysia and Indonesia	
Outputs	
<ol style="list-style-type: none"> (1) Establish the cooperation system between the companies requiring peanut for exporting and agricultural cooperatives. (2) Develop necessary infrastructure and equipment for efficient production/ shipment of peanut for export. (3) Specify the appropriate cultivation technique that meets market needs, and extend it to target farmers / cooperatives. (4) Improve and stabilize farmers profit by improvement of productivity and contract farming. 	
Activities	
<ol style="list-style-type: none"> (1) Establish the cooperation system between the companies and agricultural cooperatives To hold meetings to exchange opinions between companies that need peanut and agricultural cooperatives producing it. (2) Develop necessary infrastructure and facility for efficient production/ shipment of agricultural products for export. To develop various necessary infrastructure and procure farm machines, trucks, processing machines to meet amount of actual consumer's demand. (3) Formulate cultivation and shipping plan, standardize cultivation, and implement contract farming. Under the guidance of demanders, specify the appropriate varieties and cultivation technique, and standardize the cultivation in the production areas. Formulate cultivation and shipping plan according to actual consumer's demand. Besides, promote contract farming between the demanders and producers/ agricultural cooperatives. 	
Inputs	
<u>Portion for government</u> <ul style="list-style-type: none"> • PPC, DPC, DARD (personal assignment) • Procurement of agricultural machines (partial burden) • Construction of collecting and pre-processing facility (partial burden) 	<u>Portion for private sector</u> <ul style="list-style-type: none"> • Procurement of agricultural machines (partial burden) • Construction of collecting and pre-processing facility (partial burden) • Farm land purchase and farmland

<ul style="list-style-type: none"> Project experts (agricultural machinery, cultivation technique) Farm land purchase and farmland consolidation if necessary Project management cost (pilot projects, training fee, transportation, allowance/ accommodation, etc.) 	<ul style="list-style-type: none"> consolidation if necessary Procurement of agricultural materials and implementation of contract farming 											
Implementing Agencies												
Government: PPC, DPC, DARD (AMPF, AEC), DPI, DOIT, Cooperative Union (CU)												
Private Sector: Private company producing and exporting peanut												
Implementing Schedule												
	Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	In charge
1. Establish cooperation system between companies and cooperatives	1.1 Select candidates of actual consumers/ companies and producers											PPC, DPC, DARD
	1.2 Hold meeting to exchange opinions between the companies and producers											Private Companies, DARD, AMPF
	1.3 Specify roles of public and private sector. Specify producing area and its scale.											PPC, DPC, DARD, Private Companies
2. Develop necessary infrastructure and equipment for production, processing, shipment	2.1 Hold explanation meeting with farmers/ cooperatives and make agreements.											PPC, DPC, DARD, Private Companies
	2.2 Develop infrastructure facilities and procure machines.											PPC, DPC, DARD, DPI, DOIT, Private Companies
3. Formulate cultivation and shipping plan. Standardize cultivation and implement contract farming.	3.1 Formulate cultivation and shipping plan. Procure agricultural materials											DARD, Private Companies
	3.2 Implement guidance and training to actual consumers and producers											DARD, AEC
	3.3 Produce and ship target crops based on contract farming											DARD, DPC, Private Companies
Project Cost												
The total project cost: 952,659 USD (23 billion VND)												
Expense by government: 327,409 USD (8 billion VND) : 34.4% of total cost												
Expense by private sector: 625,250 USD (15 billion VND) : 65.6% of total cost												
Benefit/Impact												
Increase of production output by agricultural mechanization and improvement of cultivation technology: 42 billion VND (total benefit gained from 2021 to 2030)												
Environment and Social Considerations												
<ul style="list-style-type: none"> A/P's activities will be conducted with fully consideration on the land lease right of small-scale farmers even if the value of farmland rise because of the improvement of productivity. 												
Remarks												
<ul style="list-style-type: none"> It is necessary to explain the plan and activities for targeting farmers/ cooperatives when agricultural land is consolidated. Based on "Decree No. 98/2018/ NĐ-CP", "Decree No.57/2018/ NĐ-CP" and "Decree No.14/2017/ NQ-HĐND", the project shall be incorporated with support to private sectors, such as the provision of subsidy and technical assistance. 												

AP5: Development of Producing Area of Sesame for Exporting Project

Background of the Project	
<p>Sesame is an agricultural product of high demand mainly as oil seeds, and currently, many sesames produced by Nghe An province is exported to overseas such as China. In the pilot project, JICA Project Team worked on the sesame production trial assuming exports to Japan. However, it was not possible to secure necessary sesame production volume that could be exported to Japan due to the typhoons that hit in 2016 and 2017. On the other hand, since the demand for sesame from foreign countries including Japan was confirmed through the pilot activity, there is a possibility to develop highly competitive sesame producing area in Nghe An province if the province can realize the improvement of sesame production efficiency by consolidation of farmland, agricultural mechanization and improvement of crop cultivation technology according to market needs. Therefore, this A/P aims to develop competitive sesame producing area that specializes for exporting by strengthening the linkage between the sesame demanders such as trading company and producers, and developing necessary facilities and equipment for its production and export.</p>	
Project Goal	
<p>To develop highly competitive producing area of sesame for exporting. Numeric target: 1,000 ha of sesame production area for exporting</p>	
Target Zone	
Promotion of Raw Material Production for Food Processing and Exporting	
Target Market	
China, Japan and ASEAN countries	
Outputs	
<ol style="list-style-type: none"> (1) Establish the cooperation system between the companies requiring sesame for exporting and agricultural cooperatives. (2) Develop necessary infrastructure and equipment for efficient production/ shipment of sesame for export. (3) Specify the appropriate cultivation technique that meets market needs, and extend it to target farmers / cooperatives. (4) Improve and stabilize farmers profit by improvement of productivity and contract farming. 	
Activities	
<ol style="list-style-type: none"> (1) Establish the cooperation system between the companies and agricultural cooperatives To hold meetings to exchange opinions between companies that need sesame and agricultural cooperatives producing it. (2) Develop necessary infrastructure and facility for efficient production/ shipment of sesame products for export. To develop various necessary infrastructure and procure farm machines, trucks, processing machines to meet amount of actual consumer's demand. (3) Formulate cultivation and shipping plan, standardize cultivation, and implement contract farming. Under the guidance of demanders, specify the appropriate varieties and cultivation technique, and standardize the cultivation in the production areas. Formulate cultivation and shipping plan according to actual consumer's demand. Besides, promote contract farming between the demanders and producers/ agricultural cooperatives. 	
Inputs	
<p><u>Portion for government</u></p> <ul style="list-style-type: none"> • PPC, DPC, DARD (personal assignment) • Procurement of agricultural machines (partial burden) • Construction of collecting and pre-processing facility (partial burden) • Project experts (agricultural machinery, cultivation technique) • Farm land purchase and farmland consolidation if necessary • Project management cost (pilot projects, training fee, transportation, allowance/ accommodation, etc.) 	<p><u>Portion for private sector</u></p> <ul style="list-style-type: none"> • Procurement of agricultural machines (partial burden) • Construction of collecting and pre-processing facility (partial burden) • Farm land purchase and farmland consolidation if necessary • Procurement of agricultural materials and implementation of contract farming
Implementing Agencies	
<p>Government: PPC, DPC, DARD (AMPF, AEC), DPI, DOIT, Cooperative Union (CU) Private Sector: Private company producing and exporting sesame</p>	

Implementing Schedule												
	Activities	20	20	20	20	20	20	20	20	20	20	In charge
		21	22	23	24	25	26	27	28	29	30	
1. Establish cooperation system between companies and cooperatives	1.1 Select candidates of actual consumers/ companies and producers											PPC, DPC, DARD
	1.2 Hold meeting to exchange opinions between the companies and producers											Private Companies, DARD, AMPF
	1.3 Specify roles of public and private sector. Specify producing area and its scale.											PPC, DPC DARD, Private Companies
2. Develop necessary infrastructure and equipment for production, processing, shipment	2.1 Hold explanation meeting with farmers/ cooperatives and make agreements.											PPC, DPC, DARD, Private Companies
	2.2 Develop infrastructure facilities and procure machines.											PPC, DPC DARD, DPI, DOIT, Private Companies
3. Formulate cultivation and shipping plan. Standardize cultivation and implement contract farming.	3.1 Formulate cultivation and shipping plan. Procure agricultural materials											DARD, Private Companies
	3.2 Implement guidance and training to actual consumers and producers											DARD, AEC
	3.3 Produce and ship target crops based on contract farming											DAR, DPC, Private Companies
Project Cost												
The total project cost: 601,024 USD (14 billion VND)												
Expense by government: 189,148 USD (4 billion VND) : 31.5% of total cost												
Expense by private sector: 411,876 USD (10 billion VND) : 68.5% of total cost												
Benefit/Impact												
Increase of production output by agricultural mechanization and improvement of cultivation technology: 5 billion VND (total benefit gained from 2021 to 2030)												
Environment and Social Considerations												
<ul style="list-style-type: none"> A/P's activities will be conducted with fully consideration on the land lease right of small-scale farmers even if the value of farmland rise because of the improvement of productivity. 												
Remarks												
<ul style="list-style-type: none"> It is necessary to explain the plan and activities for targeting farmers/ cooperatives when agricultural land is consolidated. Based on "Decree No. 98/2018/ NĐ-CP", "Decree No.57/2018/ NĐ-CP" and "Decree No.14/2017/ NQ-HĐND", the project shall be incorporated with support to private sectors, such as the provision of subsidy and technical assistance. 												

AP6: Orange Production Improvement Project

Background of the Project	
<p>Orange produced in Nghe An province is called "Vinh Orange" and has a high degree of name recognition nationwide, and it is the main agricultural product which is traded at high prices in the market. In recent years, a large number of farmers and companies are engaged in cultivating oranges in Nghe An province. According to statistical data, its cultivated area has increased by about 1.82 times over the 4 years of 2013-2016. Orange production area is on an increasing trend in other provinces too, and it is expected that the competition among the production areas in domestic orange market will intensify in the near future. In order to maintain the market competitiveness of "Vinh Orange" in preparation for such a future, in addition to improving the quality of the products, it is necessary to explore the orange sales market where the other orange production areas can't reach.</p> <p>The bottleneck in improving the quality of citrus fruits including oranges is that it is difficult to procure good seedlings. At present, the seedlings produced by local orange farmers are circulating in the surrounding area, but pest measures are not sufficiently applied, and it is one of the reasons that diseases spread throughout orange production area. On the other hand, the government plans to establish an orange nursery center in Nghia Dan district, aiming for the production and sale of disease-free seedlings, in cooperation with the local agricultural production company. It will be necessary to facilitate such public-private partnership in producing and circulating disease-free seedlings of orange.</p> <p>Based on the above, this A/P will strengthen the market competitiveness of "Vinh Orange" through strengthening the distributing capacity of disease-free seedling and improvement of production technique of orange producers.</p>	
Project Goal	
Strengthening the production base of citrus fruits including orange	
Target Zone	
Promotion of High Value-Added Agricultural Production Zone (Quy Hop, Nghia Dan, Con Cuong)	
Target Market	
High-income class consumers in Vinh city and other big cities such as Ha Noi and Ho Chi Minh city	
Outputs	
<ol style="list-style-type: none"> (1) The candidate site of orange nursery center is specified. (2) The private companies that construct the orange nursery center are specified. (3) Distribution base of disease-free orange seedling is developed by constructing orange nursery center. (4) Appropriate cultivation technique is specified and spread to the production area. 	
Activities	
<ol style="list-style-type: none"> (1) Specify the candidate site of orange nursery center Specify the candidate site of orange nursery center based on the field survey. (2) Specify the private companies that construct orange nursery center Conduct facilitating activity for attracting investment regarding business on the sales of orange seedling in the occasion of the matching event organized by AMPF. Besides, facilitate the attraction of private investment by utilizing incentive policy that supports private investment financially. (3) Develop distribution base of disease-free orange seedling by constructing orange nursery center Implement necessary support activity for private company to invest for constructing orange nursery center such as the provision of subsidies, infrastructure development and land acquisition. (4) Implement necessary technical training for orange producers Conduct technical training on pest control and fertilizer management considering safety for agricultural cooperatives and individual farmers in orange production area 	
Inputs	
<u>Portion for government</u> <ul style="list-style-type: none"> • Grant subsidies for private investment (facility improvement, infrastructure development, hiring consultant) • Land acquisition support • Implement technical training regarding orange production 	<u>Portion for private sector</u> <ul style="list-style-type: none"> • Various facility development (nursery center, office equipment, agricultural equipment etc.) • Production and sales of disease-free orange seedling
Implementing Agencies	
Government: PPC, DPC, DARD (AEC, AMPF) , DPI, CU	

Private Sectors: Agricultural Companies/ Cooperatives producing and selling orange products.												
Implementing Schedule												
Activity	20 21	20 22	20 23	20 24	20 25	20 26	20 27	20 28	20 29	20 30	In charge	
1.1 Selection of candidate sites for orange nursery center											PPC, DPC, DARD	
1.2 Selection of investor regarding the construction of orange nursery center											PPC, DARD, AMPF	
1.3 Construction of orange nursery center											PPC, DPC, DPI, DARD, Private Company	
1.4 Procurement of other necessary equipment for the management of orange nursery center											Private company	
1.5 Production and sales of disease-free orange seedling											Private Company	
1.6 Implementation of technical training of orange cultivation											AEC	
Project Cost												
Total cost : 624,965 USD (15 billion VND)												
Cost borne by government : 205,910 USD (5 billion VND) : 32.9% in total												
Cost borne by Private companies : 419,054 USD (10 billion VND) : 67.1% in total												
Benefit/Impacts												
<ul style="list-style-type: none"> • Construction of orange nursery center would make it possible to supply orange stably to the market. • The competitiveness of orange producing area in Nghe An province would be stronger by the improvement of producer's orange cultivation skill. 												
Environment and Social Consideration												
<ul style="list-style-type: none"> • When installing orange nursery center, consider carefully so that the deterioration of the natural environment and social environment does not occur or is kept to a minimum 												
Remarks												
<ul style="list-style-type: none"> • At the time of project implementation, government side should support private companies based on Decree No. 98/2018/ NĐ-CP and Decree No.57/2018/ NĐ-CP. 												

AP7: Orange Sales and Marketing Improvement Project

Background of the Project	
<p>Orange produced in Nghe An province is called "Vinh Orange" and has a high degree of name recognition nationwide, and it is the main agricultural product which is traded at high prices in the market. In recent years, a large number of farmers and companies are engaged in cultivating oranges in Nghe An province. According to statistical data, its cultivated area has increased by about 1.82 times over the 4 years of 2013-2016. Orange production area is on an increasing trend in other provinces too, and it is expected that the competition among the production areas in domestic orange market will intensify in the near future. In order to maintain the market competitiveness of "Vinh Orange" in preparation for such a future, in addition to improving the quality of the products, it is necessary to explore the orange sales market where the other orange production areas can't reach.</p> <p>In this project, the pilot project regarding the storing orange at cold temperatures was implemented to sell orange at the Tet period and at off-crop period of orange (May to August) when the demand for oranges increased. As a result, it was confirmed that it is possible to store orange for about 3 months with appropriate freshness preservation technology, and the existence of vigorous orange demand at the Tet and off-crop period. On the other hand, only two companies have cold storage in Nghe An province as of 2018. There are two private enterprises that provide rental services for cold storage, but both are cabinets aimed at cryopreservation of marine products, which are unsuitable for orange storage from the viewpoint of rent cost and its location. By preparing cold storage in orange production area that enables adjustment of shipment of oranges, it is possible to not only strengthen competitiveness in existing markets but also lead to favorable sales at the Tet and off-crop period when the demand of oranges increases.</p> <p>Based on the above, this A/P will strengthen the market competitiveness of "Vinh Orange" through strengthening the shipping adjustment capacity utilizing cold storage facilities and expand sales channel of orange.</p>	
Project Goal	
Increase the shipment volume of stored orange by 4,800 tons per annum	
Target Zone	
Promotion of High Value-Added Agricultural Production Zone (Quy Hop, Nghia Dan, Con Cuong districts)	
Target Market	
High-income class consumers in Vinh city and other big cities such as Ha Noi and Ho Chi Minh city	
Outputs	
<ol style="list-style-type: none"> (1) The candidate sites of developing cold storage are specified (2) Cold storage for orange is constructed (3) Appropriate storage technology of orange is specified and spread to the production area. 	
Activities	
<ol style="list-style-type: none"> (1) Specify the candidate site of cold storage for orange Specify the candidate site of cold storage for orange based on the field survey. (2) Construction of cold storage for oranges Promote the development of cold storage through various kinds of assistance to agricultural companies willing to orange production / sales business. (3) Identification and dissemination of orange's proper cultivation and storage techniques To conduct orange storage test at storage facility managed by agricultural company repeatedly to identify and disseminate efficient and effective storage technology. 	
Inputs	
<u>Portion for government</u> <ul style="list-style-type: none"> • Grant subsidies for private investment (facility improvement, infrastructure development, hiring consultant) • Land acquisition support • Support regarding orange storage technology development and material procurement • Promotion support for storage orange • Intermediary in contract cultivation, etc. 	<u>Portion for private sector</u> <ul style="list-style-type: none"> • Various facility development (construction of cold storage, office equipment, agricultural equipment etc.) • Contract cultivation with farmers and storage of oranges
Implementing Agencies	

Government: PPC, DPC, DARD (AEC, AMPF), DPI												
Private Sector: Agricultural companies/ Cooperatives producing orange products												
Implementing Schedule												
	Activity	20 21	20 22	20 23	20 24	20 25	20 26	20 27	20 28	20 29	20 30	In charge
1. Construction of cold storage for oranges	1.1 Select candidate location for orange storage facility											PPC, DPC, DARD
	1.2 Construction of orange storage facility											PPC, DPC, DPI, DARD, Private Company
	1.3 Procurement of other equipment related to storage facilities											Private Company
	1.4 Sales of storage oranges											Private Company
2. Identification and dissemination of orange's proper cultivation and storage techniques	2.1 Implementation of Orange Storage Technology Training											DARD, AEC
	2.2 Implementation of storage orange sales promotion activities											AMPF, Private Company
	2.3 Contract farming support											AEC, Private Company
Project Cost												
Total cost : 4,338,346 USD (101 billion VND)												
Cost borne by government : 1,457,425 USD (34 billion VND) : 33.6% in total												
Cost borne by Private companies : 2,880,920 USD (67 billion VND) : 66.4% in total												
Benefit/Impacts												
<ul style="list-style-type: none"> Orange storage of 4,800 tons becomes possible with the installation of 24 cold storage with the capacity of 200t. Orange sales prices in off-crop period will increase to 45,000 VND / kg, which is about 1.5 times higher than the current farmgate price (about 30,000 VND / kg). Since the cost of storage and transport is estimated to be about 7,600 VND / kg from the result of the pilot project, the profit of 7,400 VND per kg of orange can be expected. Assuming that all of the stored oranges will be sold, the total sales will increase by 35.5 billion VND annually. 												
Environment and Social Consideration												
<ul style="list-style-type: none"> When installing cold storage, consider carefully so that the deterioration of the natural environment and social environment does not occur or is kept to a minimum 												
Remarks												
<ul style="list-style-type: none"> The sales timing of storage orange is the Tet (January - February) and off-crop period (May-August). It is necessary to provide marketing support for acquiring sales channels to target companies and cooperatives so that the orange sales will be possible at this time. At the time of project implementation, government side should support private companies based on Decree No. 98/2018/ NĐ-CP and Decree No.57/2018/ NĐ-CP. 												

AP8: Tea Production and Marketing Improvement Project

Background of the Project	
<p>Tea is one of main agricultural products in Nghe An province. Main production area is hilly area such as Thanh Chuong and Anh Son districts. Annual production amount of tea leaf is about 7,000 ton harvested in about 7,000 ha. About 5,000 ton of tea is exported to European countries as low-price materials of black tea mainly through Nghe An Tea state-owned company. There are other small and medium scale tea processors in tea production area, producing green tea for domestic market. On the other hand, demand of Matcha is rapidly increasing mainly for processed foods, although authorized statistic data of Matcha production and demand is not available yet. Diversification of tea products could be a plausible strategy of tea sector activation.</p> <p>The Matcha production amount in Japan is about 2,666 ton, sharing 3.3 % of total tea production, and export amount of Matcha to USA is estimated at about 750 ton. Considering expanding international demand of Matcha and population of Vietnam, the demand of Matcha production in Vietnam could be increased up to that in Japan.</p> <p>The JICA Project carried out the pilot project of Matcha production for material of sweets and it revealed a possibility of Matcha production in Nghe An. The original Matcha is fine powder of dried open tea leaves produced under shade for certain period. It is quite different from powder tea using normal green tea in terms of taste and ingredient. Therefore, Matcha is distributed at more than double price of normal green tea in Japan. In this sense, there exists a chance of producing original Matcha and selling it in differentiated marketing channels.</p> <p>The project aims at promoting original Matcha production in cooperation with private sector as a new value chain of tea, which is different from black tea for export and green tea for domestic market.</p>	
Project Goal	
<p>Tea sector in Nghe An province is restructured with diversification of tea products through Matcha production and promotion</p> <p>Numeric target: 50 ha of Matcha production area</p>	
Target Zone	
<p>High value-added agricultural production zone (Thanh Chuong, Anh Son, etc.)</p>	
Target Market	
<p>Confectionery maker in Vietnam</p>	
Outputs	
<ol style="list-style-type: none"> (1) Market needs and production potential of tea products are evaluated. (2) Matcha production in Nghe An increases. (50 ton in 5 years) (3) Marketing channel of Matcha increases. 	
Activities	
<ol style="list-style-type: none"> (1) AMPF studies and analyzes trend of domestic market of tea products: AMPF analyzes trend of domestic market of tea products including Matcha, and studies needs of major tea processors. Based on the studies, AMPF prepares possible strategy and detailed support plan of tea products promotion. (2) Nghe An government assists to establish Matcha producers groups and production of valuable Matcha: The provincial and district government assists to formulation of Matcha producers groups in tea production areas, and provides technical guidance of Matcha production. Also, the government supports private sector to install facilities and equipment for Matcha production and processing. (3) Nghe An government assists contracts between various Matcha dealing companies and Matcha producers groups: Nghe An government promotes matching of potential buyers and producers groups of Matcha and provides guidance and monitoring to producers groups regarding contract agriculture. 	
Inputs	
<p><u>Portion for government</u></p> <ul style="list-style-type: none"> • Project experts (Matcha production, Matcha processing, Matcha marketing) • Cost for officials Nghe An province (transportation, allowances, etc.) • Support private company to procure necessary facilities • Marketing promotion cost (materials, transportation, etc.) 	<p><u>Portion for private sector</u></p> <ul style="list-style-type: none"> • Material for shade production of tea • Matcha processing facility • Matcha processing machine

Implementing Agencies						
Government: PPC, DPC, DARD (AMPF, AEC), DPI, DOIT, CU						
Private Sector: Tea farmers and tea companies						
Implementing Schedule						
Activities	2021	2022	2023	2024	2025	In charge
Study on market needs and production potential of tea products						DARD, AMPF
Establishment and development of farmers' groups						DPC, DARD, AEC, CU
Technical training of Matcha production and procurement of equipment						PPC, DPC, DARD, DPI, DOIT, Private Company
Support on production and marketing of Matcha						DARD, AEC, AMPF, Private Company
Project Cost						
Total Cost: USD 2,549,679 (VND 59 billion)						
Government portion: USD 906,679 (VND 21 billion): 36 % of total cost						
Private sector portion: USD 1,643,000 (VND 38 billion): 64 % of total cost						
Benefit/Impacts						
<ul style="list-style-type: none"> Estimate of Matcha production value in the last year = VND 35 billion (=VND 700,000 /kg * 1,000 kg/ha * 50 ha) (Estimate of normal tea production value in the same area = VND 17.5 billion (=VND 350,000 /kg * 1,000 kg/ha * 50 ha) Tea products other than Matcha are expected to be considered to promote. Acceleration of economic activities in the districts is expected through development of valuable tea products promotion. 						
Environment and Social Consideration						
<ul style="list-style-type: none"> Tea products shall be developed in consideration of measures to prevent or minimize degradation of natural and social environment. 						
Remarks						
<ul style="list-style-type: none"> Based on "Decree 57/2018/ND-CP" and "Decree No. 98/2018/NĐ-CP", the project shall be incorporated with support to private sectors, such as the provision of subsidy and technical assistance. In the last year of the project, review of the outcome and market needs of the tea products shall be done to evaluate the possibility of the expansion of Matcha and other tea products production. Based on the review, further tea promotion plan shall be formulated. 						

AP9: Development of Cost Competitive Producing Area of Forage Crop Project

Back ground of the Project	
<p>Forage crop (maize) is major crops produced, processed, and consumed in Nghe An province. In fact, corporations in Nghe An such as TH Milk have production chain from cultivation to processing/ sales or company consumption. In addition, corporations produce raw materials their own, but most of the raw materials depend on small farmers in the province. Therefore, procurement of raw materials is not sufficient to meet their demand, currently.</p> <p>Corporations have achieved cost reduction by introducing efficient production and expanding business scale. Corporations have an intention to roll out the mechanism of large-scale production by centralization to improve the productivity of raw materials with small farmers. However, most corporations cannot make agreement with small farmers because of structure of land rights. Small farmers can reduce hard labor and improve profitability by improving productivity if companies utilize large machinery and cultivation technique with small farmers. This A/P improve the efficiency of production system and enhance cost competitiveness by encouraging linkage between corporations with demand for forage crop and organized farmers, consolidation of farmland, and promoting agricultural mechanization.</p>	
Project Goal	
<p>Enhance cost competitiveness of the crops by promoting farmland consolidation and introducing agricultural mechanization.</p> <p>Numeric Target: 4,500 ha of consolidated maize production area</p>	
Target Zone	
<p>Raw Material Production for Food Processing and Exporting High Value-Added Agricultural Production</p>	
Target Market	
<p>Animal feed makers in Nghe An province</p>	
Outputs	
<ol style="list-style-type: none"> (1) Establish cooperation system between corporations with demand for forage crop and agricultural cooperatives. (2) Cultivation using large farm machine becomes possible by the farmland consolidation. (3) Achieve cost reduction and improving profitability through improvement of production efficiency. 	
Activities	
<ol style="list-style-type: none"> (1) Establish cooperation system between corporations and producers Hold meetings to exchange opinions between corporations that need forage crops such as maize, etc. and agricultural cooperatives producing these crops. The cooperation system includes government support. (2) Consolidate farmland and develop necessary agricultural materials. Conduct necessary consolidation of farmland for improving production efficiency of target crops. Also, develop necessary equipment for agricultural mechanization. (3) Formulate cultivation and shipping plan, standardize cultivation Under the guidance of actual consumers, specify the appropriate varieties and cultivation technique, and standardize the cultivation in the producing area. Formulate cultivation and shipping plan according to actual consumer's demand. 	
Inputs	
<p><u>Portion for government</u></p> <ul style="list-style-type: none"> • PPC, DPC, DARD (personal distribution) • Procurement of agricultural machinery (partial charge) • Project experts (Fodder production, agricultural mechanization) • Farmland consolidation (partial charge) • Procurement of agricultural input (partial charge) • Project management cost (office supplies, training fee, transportation, allowance/ accommodation, etc.) 	<p><u>Portion for private sector</u></p> <ul style="list-style-type: none"> • Procurement of agricultural machinery (partial charge) • Farmland consolidation (partial charge) • Procurement of agricultural input (partial charge)
Implementing Agencies	
<p>Government: PPC, DPC, DARD (AMPF, AEC) , DPI, CU</p>	

Private Sector: Actual consumers/ companies that have demand for forage crop												
Implementing Schedule												
	Activities	20 21	20 22	20 23	20 24	20 25	20 26	20 27	20 28	20 29	20 30	In charge
1. Establish cooperation system between companies and cooperatives	1.1 Select candidates of actual consumers/ companies and producers											PPC, DPC, DARD, AMPF
	1.2 Hold meeting to exchange opinions between the companies and producers											DARD, AMPF
	1.3 Specify roles of public and private sector. Specify producing area and its scale											PPC, DPC DARD, Private Companies
2. Consolidation of farmland and development of necessary agricultural materials	2.1 Hold explanation meeting with farmers/ cooperatives and make agreements.											DPC, DARD, Private Companies
	2.2 Implement farmland development for farmland consolidation and procurement of agricultural machinery											PPC, DPC, DARD, DPI Private Companies
3. Formulate cultivation and shipping plan. Standardize cultivation	3.1 Formulate cultivation and shipping plan. Procure agricultural materials											Private Companies, DARD
	3.2 Implement guidance and training to actual consumers and producers											DARD, AEC
	3.3 Produce and ship forage/ industrial crops											Private Companies
Project Cost												
Total Cost: 2,923,820 USD (68 billion VND)												
Government portion: 926,853 USD (22 billion VND) : 31.7% of total cost												
Private sector portion: 1,996,967 USD (46 billion VND) : 68.3% of total cost												
Benefit/Impacts												
Increase of production output by agricultural mechanization and improvement of cultivation technology: 24 billion VND (total benefit gained from 2021 to 2030)												
Environment and Social Consideration												
<ul style="list-style-type: none"> A/P's activities will be conducted with fully consideration on the land rights of small-scale farmers even if the value of farmland rise because of the improvement of productivity. 												
Remarks												
<ul style="list-style-type: none"> It is necessary to explain the plan and activities to target farmers/ cooperatives when agricultural land is consolidated. Based on "Decree 57/2018/ND-CP" and "Decree No. 98/2018/ NĐ-CP", the project shall be incorporated with support to private sectors, such as provision of subsidy and technical assistance. 												

AP10 : Development of Cost Competitive Producing Area of Industrial Crops Project

Back ground of the Project	
<p>Industrial crops (sugarcane) is major crops produced, processed, and consumed in Nghe An province. In fact, corporations in Nghe An such as NASU have production chain from cultivation to processing/ sales or company consumption. In addition, corporations produce raw materials their own, but most of the raw materials depend on small farmers in the province. Therefore, procurement of raw materials is not sufficient to meet their demand, currently.</p> <p>Corporations have achieved cost reduction by introducing efficient production and expanding business scale. Corporations have an intention to roll out the mechanism of large-scale production by centralization to improve the productivity of raw materials with small farmers. However, most corporations cannot make agreement with small farmers because of structure of land rights. Small farmers can reduce hard labor and improve profitability by improving productivity if companies utilize large machinery and cultivation technique with small farmers. This A/P improve efficiency of production system and enhance cost competitiveness by encouraging linkage between corporations with demand for industrial crop and organized farmers, consolidation of farmland, and promoting agricultural mechanization.</p>	
Project Goal	
<p>Enhance cost competitiveness of the crops by promoting farmland consolidation and introducing large agricultural machinery.</p> <p>Numeric Target: 4,500 ha of consolidated sugarcane production area</p>	
Target Zone	
<p>Raw Material Production for Food Processing and Exporting High Value-Added Agricultural Production</p>	
Target Market	
<p>Sugar makers in Nghe An province</p>	
Outputs	
<ol style="list-style-type: none"> (1) Establish cooperation system between corporations with demand for industrial crop and agricultural cooperatives. (2) Cultivation using large farm machine becomes possible by the farmland consolidation. (3) Achieve cost reduction and improving profitability through improvement of production efficiency. 	
Activities	
<ol style="list-style-type: none"> (1) Establish cooperation system between corporations and producers Hold meetings to exchange opinions between corporations that need industrial crops such as sugarcane, etc. and agricultural cooperatives producing these crops. The cooperation system includes government support. (2) Consolidate farmland and develop necessary agricultural materials. Conduct necessary consolidation of farmland for improving production efficiency of target crops. Also, develop necessary equipment for agricultural mechanization. (3) Formulate cultivation and shipping plan, standardize cultivation Under the guidance of actual consumers, specify the appropriate varieties and cultivation technique, and standardize the cultivation in the producing area. Formulate cultivation and shipping plan according to actual consumer's demand. 	
Inputs	
<p><u>Portion for government</u></p> <ul style="list-style-type: none"> • PPC, DPC, DARD (personal distribution) • Procurement of agricultural machinery (partial charge) • Project experts (Fodder production / industrial crop producing, agricultural mechanization) • Farmland consolidation (partial charge) • Procurement of agricultural input (partial charge) • Project management cost (office supplies, training fee, transportation, allowance/ accommodation, etc.) 	<p><u>Portion for private sector</u></p> <ul style="list-style-type: none"> • Procurement of agricultural machinery (partial charge) • Farmland consolidation (partial charge) • Procurement of agricultural input (partial charge)
Implementing Agencies	
<p>Government: PPC, DPC, DARD (AMPF, AEC) , DPI, CU</p>	

Private Sector: Actual consumers/ companies that have demand for industrial crop.												
Implementing Schedule												
	Activities	20 21	20 22	20 23	20 24	20 25	20 26	20 27	20 28	20 29	20 30	In charge
1. Establish cooperation system between companies and cooperatives	1.1 Select candidates of actual consumers/ companies and producers											PPC, DPC, DARD, AMPF
	1.2 Hold meeting to exchange opinions between the companies and producers											DARD, AMPF
	1.3 Specify roles of public and private sector. Specify producing area and its scale											PPC, DPC DARD, Private Companies
2. Consolidation of farmland and development of necessary agricultural materials	2.1 Hold explanation meeting with farmers/ cooperatives and make agreements.											DPC, DARD, Private Companies
	2.2 Implement farmland development for farmland consolidation and procurement of agricultural machinery											PPC, DPC, DARD, DPI Private Companies
3. Formulate cultivation and shipping plan. Standardize cultivation	3.1 Formulate cultivation and shipping plan. Procure agricultural materials											Private Companies, DARD
	3.2 Implement guidance and training to actual consumers and producers											DARD, AEC
	3.3 Produce and ship forage/ industrial crops											Private Companies
Project Cost												
Total Cost: 2,923,820 USD (68 billion VND)												
Government portion: 926,853 USD (22 billion VND) : 31.7% of total cost												
Private sector portion: 1,996,967 USD (46 billion VND) : 68.3% of total cost												
Benefit/Impacts												
Increase of production output by agricultural mechanization and improvement of cultivation technology: 54 billion VND (total benefit gained from 2021 to 2030)												
Environment and Social Consideration												
<ul style="list-style-type: none"> A/P's activities will be conducted with fully consideration on the land rights of small-scale farmers even if the value of farmland rise because of the improvement of productivity. 												
Remarks												
<ul style="list-style-type: none"> It is necessary to explain the plan and activities to target farmers/ cooperatives when agricultural land is consolidated. Based on "Decree 57/2018/ND-CP" and "Decree No. 98/2018/ NĐ-CP", the project shall be incorporated with support to private sectors, such as provision of subsidy and technical assistance. 												

AP11: Improvement of Specialty Products Production Project

Background of the Project
<p>Japan import 100,000 ton ginger (raw/ processed) in a year and 20,000 ton raw garlic in a year, however over 90 % of imported products produced in China. Unilateralization of the supplier is high risk because import price is really affected by China wholesale market price. Therefore, most companies consider the diversification of raw materials, and Vietnam is one of the countries expected as a new supply source. Actually, Kagawa prefecture, major garlic producing prefecture in Japan, consider securing of stable supplier of garlic seeds, and mountainous area in Nghe An such as Ky Son district was selected as candidate of the supplying district because the climate in mountainous area is comfortable for garlic production. Regarding ginger, it is confirmed that Japanese trading companies also consider the diversification of importing country, and Vietnam is one of the candidates. Indeed, through the PP, the Project tried cultivation of ginger for Japanese trading company requirement. Regarding the livestock products, it was confirmed that rare livestock products such as H'mong cattle, black pig, H'mong chicken and deer horn have potential to promote as unique specialty products through the PP and survey. Therefore, it is necessary to utilize the specialty product as effective business opportunities. DARD (VAH) also has plan to promote the development of specialty products such as domestic duck, black pig, H'mong chicken, etc.</p> <p>On the other hand, in mountainous area (Ky Son, Tuong Duong, Con Cuong, Que Phong, Quy Chau districts), people grow the different crops and livestock such as ginger, garlic, fruit trees, tea, herbal trees, rare species of livestock, etc. from plain area. However, these products are not satisfied with the quality and standards required for international markets. In addition, the infrastructure in mountainous area is not well developed hence it is a bottleneck of development of specialty products in the areas. In order to distribute specialty products outside the area, the government has to develop the infrastructure. Besides, only a few farmers/ companies can sell specialty products outside the region at present. Consequently, income of the people living in mountainous area is lower than the other areas: plain area, coastal area, hilly area.</p> <p>In this A/P, the Project support establishment of production system of specialty products based on the private sector's investment and infrastructure development in mountainous areas. Therefore, farmers/ cooperatives can distribute the specialty products outside the areas so as to improve their income of the people living in mountainous area.</p>
Project Goal
<p>Specialty products are developed through promotion of production of specialty products (ginger, garlic, and rare livestock) and reinforcement of road infrastructure.</p> <p>Target (garlic production: 160 ha, ginger production: 100 ha)</p>
Target Zone
Promotion of Agricultural Products for Special Use zone (Ky Son, Tuong Duong, Con Cuong, Que Phong, Quy Chau districts)
Target Market
Japanese trading companies (ginger and garlic) and retail shops in Vinh city (rare livestock)
Outputs
<ol style="list-style-type: none"> (1) Specifying and prevailing the specialty products satisfied with the quality of international and domestic requirement and standards. (2) Developing the infrastructure in mountainous areas in order to distribute specialty products. (3) Farmers/ Cooperatives distribute specialty products outside the areas. (4) Increase the income and profit of the farmers/ cooperatives living in mountainous area and these areas are developed as producing center of specialty products.
Activities
<ol style="list-style-type: none"> (1) Support of specifying and prevailing the specialty products that satisfied with the quality of international and domestic requirement and standards by private companies such as Japanese trading companies, Japanese agricultural cooperative, Nafoods, etc. (2) Province and districts investigate and specify the required infrastructure in mountainous area. Province and districts make plans and construct the road infrastructure. (Subsidy for infrastructure, construction and maintain the road, site acquisition, etc.) (3) Improve yield and quality of specialty products and develop the mountainous area as producing center. The project provides the cooperatives/ farmers training on fertilization and pest management, technique related to post-harvest processing, making the products uniform by standardization of cultivation and harvest. The project also promotes the contract farming and matching event between the producers and companies. In addition, regarding the products to international markets, the government supports pesticide residue inspection and plant quarantine for export the specialty

products.												
Inputs												
Portion for government						Portion for private sector						
<ul style="list-style-type: none"> Project experts (Ginger and garlic production, Livestock production, Specialty products marketing) Cost for officials Nghe An province (transportation, allowances, etc.) Support private company to procure necessary facilities Development of production technique and its extension Marketing promotion cost (materials, transportation, etc.) 						<ul style="list-style-type: none"> Materials for specialty products production. Machines for specialty products processing (Dryer machine). Cost for processing facilities Transaction cost including the transportation to domestic and international markets. Contract farming with local farmers and transportation fee. 						
Implementing Agencies												
Government: PPC, DPC, DARD (AEC, AMPF) , DPI, DOIT, CU												
Private Sector: Companies/ Cooperatives (Trading company/ Food company)												
Implementing Schedule												
	Activities	20 21	20 22	20 23	20 24	20 25	20 26	20 27	20 28	20 29	20 30	In charge
1. Establishment production system and prevailing technique on specialty products	1.1 Specification of technique on specialty products production (variety, quality, standards)											DARD, AMPF, Private Company
	1.2 Conducting training on specialty products production											DPC, DARD, AEC, CU
	1.3 Implementation and evaluation of PP											DPC, DARD, AEC, Private Company
	1.4 Support private sector to procure necessary facilities and sales and marketing based on contract farming											PPC, DPC, DARD, DPI, DOIT, Private Company
	1.5 Production and sales of specialty products											Private Company
Project Cost												
Total Cost: 3,556,749 USD (82 billion VND)												
Government portion: 448,752 USD (10 billion VND): 12.6% of total cost												
Private Sector portion: 3,107,998 USD (72 billion VND): 87.4% of total cost												
Benefit/Impacts												
<ul style="list-style-type: none"> Value-Adding effect on ginger, garlic and rare livestock : 81.45 billion VND (total production output from 2021 to 2030) The mountainous areas are developed as producing center of specialty products through the improvement of production technique and construction of road infrastructure. Besides, acceleration of economic activities in the mountainous areas. 												
Environment and Social Considerations												
<ul style="list-style-type: none"> Regarding the expanding the scale of specialty products and construction of the infrastructure, A/P's activities will be conducted with fully consideration on the natural and social environment. Especially ginger production by slash-and-burn agriculture will be conducted with fully consideration of soil erosion and soil degradation. 												
Remarks												
<ul style="list-style-type: none"> It is necessary for the local agricultural union / farmer group to understand the standards that are demanded in the international market for export. it is important to develop the infrastructure in order to distribute and sell the specialty products, therefore this A/P utilize the A/P12 "Development of Infrastructure for Agricultural Products Distribution". 												

- Based on "Decree 57/2018/ND-CP", "Decree No. 98/2018/ NĐ-CP" and "Decree No. 14/2017/ NQ-HDND", the project shall be incorporated with support to private sectors, such as the provision of subsidy and technical assistance.

AP12: Development of Infrastructure for Agricultural Products Distribution

Background
<p>Including animal products, many types of agricultural product are raised in Nghe An province by taking advantage of its different environmental conditions. However, farmers are not necessarily received a fair reward by agriculture production and sale as they deserve due to lack of infrastructure to distribute the agricultural product and to develop food value chain (FVC) for the benefit of the farmers in the province. For instance, farmers in mountainous area grow several unique products such as ginger, garlic, passion fruit and rare species of animal which could be sold at high price in the city, but hardly gain enough income from these products. Because Rural road and storages facilities are not well constructed or rehabilitated in rural area, they cannot access to the market or adjust timing of shipment to add value and have to sell their product at cheap price asked by buyers. Moreover, post-harvest loss of common food such as rice, groundnut and vegetable produced is accounted from 10 to 30% in Vietnam according to FAO, which restricts stability and expansion of domestic sales and export, and decreases the profits from agriculture. The percentage of food loss may be higher in Nghe An province since logistic facilities and means of transportation with temperature control so-called ‘cool/cold chain’ are not well developed. As for animal products, most of slaughterhouses and facilities are not updated; established directly on the ground without efficient waste treatment system, even in Moi Dau market, the biggest meat market in the province.</p> <p>Aiming to optimize distribution system of the agricultural production and to establish FVC which benefits farmers especially, Nghe An province have launched a program on “New-Style Rural Area Development 2016-2020” in response to Decision no. 1600/QD-TTg dated 16th August 2016 issued by prime minister in Vietnam. In addition, an incentive policy each for local government and private sector was promulgated in 2018 to promote agriculture and rural development, which stipulated the application of subsidies for infrastructure development related to FVC. By using the subsidies regulated in the incentive policies efficiently, this action plan is to support technically on the infrastructure development in terms of FVC establishment.</p>
Goal
<p>Appropriate infrastructures are established and operated as planned for the advantageous sales of agriculture and livestock products in-and outside province, and is the FVC for the benefit of the farmers developed in Nghe An province.</p>
Target Zone
<p>Whole province</p>
Output
<ol style="list-style-type: none"> (1) All DPC formulate a new infrastructure development plan 2021-2030 for the establishment of FVC based on the result of the program of “New Style Rural Area Development 2016-2020” and implementation modality (structure, responsible parties, schedule etc.). (2) 100% of top prioritized infrastructure and related facility are constructed, rehabilitated or updated by 2030 in each district. (3) 100% of meat shipped to the market is processed at the registered slaughterhouse and properly inspected by VAH by 2030 (4) More than 80% of top prioritized infrastructure and related facility are operated properly by 2030 due to capacity building of responsible parties as defined in (1) (5) Farmers’ sales are raised by 30~40% in 2030 comparing to that of 2018 by value addition activities using the developed infrastructure
Activities
<ol style="list-style-type: none"> (1) Formulate a new infrastructure development plan 2021-2030 for establishment of FVC after; <ol style="list-style-type: none"> i) Study on infrastructural bottleneck for FVC development, type of infrastructure (rural road, pick up points, storage, transportation means, (pre-) processing facility, etc., ii) Location, function and scale and implementation plan of top prioritized infrastructures for and related facility (electricity and water supply system) from the results of the “New Style Rural Area Development 2016-2020”, ii) identifying top prioritized infrastructure, iii) Designating responsible parties for implementation among the government authorizes and FVC actors (private sectors) and iv) Implementation schedule. (2) Implement according to the plan by district under the support from related departments of PPC Nghe An: develop, rehabilitate or update the top prioritized infrastructures in collaboration with the private sectors (depends on the infrastructures to be developed) (3) Under the support from Sub-department of Veterinary and Animal Husbandry of PPC Nghe An,

update the infrastructure of slaughter facilities in promotion area of safe agriculture products to fulfill the official standard

(4) Provide training on the M&O of the infrastructures being developed to all parties concerned. Support private sectors (farmers' cooperatives, collectors, traders, and companies) which use infrastructures for facility use, production and processing techniques, cool storage, transportation, etc.

(5) Promote marketing of agricultural products produced by using the developed infrastructures and expand sales channels and provide technologies and techniques to add value on the agriculture products; e.g. collective sale or export in certain quantity using rural road, shipping adjustment using cool/cold storage, safe meat production using updated (modernized) processing facilities, etc.

Input

Input by government:

- Government Human Resources: DARD, (sub-dept. of Economic and Infrastructure Development, Veterinary and Animal Husbandry, etc.), DOST, DOIT, DPC, AEC, AES, AMPF
- External human resource: 4 local consultants (infrastructure development planer and M&O trainer, cool/cold chain development, expert on post-harvest and storage, expert of slaughter and meat processing)
- Construction/rehabilitation costs (rural road, public market, pre-processing facilities, slaughter facilities, electricity, water supply facilities, cool/cold storage, cool/cold transport vehicles, etc.)
- Local activity expenses (training costs for M&O and value addition and marketing, study trip, monitoring costs, etc.)
- Project management fee

Input by private sector:

- Construction/rehabilitation cost (pick up center, pre-processing area, slaughter facilities, cool/cold storage, cool/cold transport vehicles etc.)
- Advertisement expenses

Implementing Agencies:

Government: PPC, DPC, DARD, AMPF, DPI, DOIT, Department of Transport (DOT)

Private Sector: Private companies regarding transportation business and slaughter

Implementing Schedule

Activities	20 21	20 22	20 23	20 24	20 25	20 26	20 27	20 28	20 29	20 30	In charge
(1) Formulate infrastructure development. plan & study											PPC, DPC, DARD, DPI, DOT, DOIT
(2) Implement the plan											PPC, DPC, DARD, DPI, DOT, DOIT
(3) Support to update slaughter facilities											PPC, DPC, DARD, DOIT, DPI, Private Company
(4) Provide related trainings											DARD
(5) Promote value addition and marketing											DARD, DOIT, AMPF, Private Company

Project Cost

Total budget: USD 10.5 million (VND 236 billion)

Expense by government: USD 7.4million (VND 169 billion) 70.3 % of the total cost

Expense by private sector: USD 3.1 million (VND 67 billion) 29.7% of the total cost

Benefit/Impacts

- Reducing food loss during transportation
- Increasing sales channel and opportunity by the development of distribution infrastructures including cold storage and slaughterhouse
- Improvement of market access in the mountainous area

Environmental and Social Considerations
<ul style="list-style-type: none">• It is necessary to conduct social and environmental consideration assessment in accordance with the guideline or manuals regulated in Vietnam before implementation of the new infrastructure development plan not to cause or minimize the deterioration of the natural and social environment.
Remarks
<ul style="list-style-type: none">• To pay attention to the changes of the law, regulation and governmental bodies in charge of rural infrastructure development in Nghe An Province.• To pay attention to the changes of the decrees, decision and resolutions, etc., issued by the governmental authorities for incentive policies of agriculture and rural development including FVC establishment.• Any similar project conducted by World Bank, ADB or other donors should be collaborated in implementing this A/P to emerge synergy and not to be overlapped.• Based on "Decree 57/2018/ND-CP" and "Decree No. 98/2018/NĐ-CP", the project shall be incorporated with support to private sector, such as provision of subsidy and technical assistance.

AP 13: Enhancement on the Food Safety Management Capacity of Local Producers and Traders

Background
<p>In order to response to a critical issue on ‘food safety’ in Vietnam, the governmental authorities have been establishing regulations to secure all food safe. In response the PPC of Nghe An province is promoting acquisition of certificates such as Viet GAP, Viet GAHP or “Compliance of Food Safety” issued by DARD for safety production and GMP (Good Manufacturing Practice), GHP (Good Hygienic Practice) and HACCP (Hazard Analysis and Critical Control Point) for processing and manufacturing management. Although the number of farmers’ organizations or companies which obtained those certificates has been increasing gradually in Nghe An province, the awareness and knowledge on the safe food is still low among players (actors) of food value chain especially local producers and traders.</p> <p>Consequently, unauthorized and poor-quality agricultural inputs for crop production such as seed/seedling, fertilizers and chemicals and for animal production such as veterinary medicines and feed which impede safe food production inputs are wildly sold and used in the rural area. In addition, local producers and traders treat and process their products after harvesting or slaughtering regardless the hygiene and environmental pollution. Particularly, most of food poisoning bacteria are detected in retail stores in Vietnam are derived from slaughterhouses or processing factories. In fact, 2,350 or more unregistered slaughterhouses in the province do not meet hygiene standards because of traditional slaughtering practice is still dominant in the rural area.</p> <p>In order to secure food safety in Nghe An province it is necessary to build capacity of the local producers and traders by creating awareness and updating knowledge of all concerned aspects to keep products safe, and then to encourage them to produce, process and manufacture properly following standards of the safe food certifications.</p>
Project Goal
<p>Through management capacity building of the producers and traders for the safe food production and manufacture, more than 20% of the agricultural organizations (and groups) of producers or traders obtain certificates related to the food safety in Nghe An province.</p>
Target Zone
<p>Promotion area of safe agriculture products Seven (7) districts (Quynh Luu, Yen Thanh, Dien Chau, Nghi Loc, Nam Dan, Hung Nguyen, Do Luong), two (2) towns (Hoang Mai, Cua Lo) and one (1) city (Vinh)</p>
Output
<ol style="list-style-type: none"> (1) More than 50% of farmers’ organizations and traders obtain “Certificate on Food Safety Knowledge” after attending training on relevant safe food production or manufacture standard by 2025. (2) The number of unauthorized or expired input shops) are reduced by 50% for crop production, veterinary medicine and feed by 2025 compared to the one(in 2018 in Nghe An province. (3) More than 60% of farmers’ organizations for crop production obtain safe food certificate in Nghe An province by 2025. (4) 120 slaughterhouses and other processing factories are registered officially improving hygienic environment and processing capacity by acquiring DARD certificate, etc., and 30% of them obtain GMP, GHP and/or HACCP.
Activities
<ol style="list-style-type: none"> (1) <ol style="list-style-type: none"> i) Conduct a study on the current situation which impedes safe food production, processing and manufacturing including slaughter and processing facilities by district in Nghe An province. ii) Design and provide regular training for the awareness creation and knowledge updating of safe food to organizations (and groups) of producers and traders by related sub-departments of DARD, AEC and DPCs (2) Build and operate a joint information collection and management system of the agricultural inputs among agricultural cooperatives with CPCs and DPCs under supervision of the related sub-departments of DARD (3) Support organizations (and groups) of producers and traders to improve production environment and to obtain certificates on safe food production (Viet GAP, Viet GAHP and “Compliance of Food Safety”) and by providing training and subsidies (4) Support organizations (and groups) of traders and related slaughterhouses and processing factories to introduce necessary system to meet hygiene standards by acquiring DARD certificate, etc., and to obtain certificates on safe food manufacturing (GMP, GHP and HACCP) by providing training and subsidies

Input								
<u>Input by government:</u> <ul style="list-style-type: none"> Government Human Resources: DARD (sub-dept. of Crop Production & Plant Protection, Veterinary and Animal Husbandry and Quality Assurance), AEC, DOST, DPC, DOIT External human resource: 3 local consultants (construction of agricultural input management system, environment and waste disposal management, processing and distribution system) Local activity expenses (supervision costs, input and facility inspection costs, monitoring costs, regular training, advice costs, travel expenses, etc.) Project management fee 					<u>Input by private sector:</u> <ul style="list-style-type: none"> Cost for safety certificate (DARD certificate, HACCP, etc.) 			
Implementing Agencies:								
Government: DPC, DARD (AEC) , DOST, DOIT Private Sector: Agricultural Cooperative, local trader								
Implementing Schedule:								
Activity	2019	2020	2021	2022	2023	2024	2025	In charge
(1) Conduct a study and provide training								DARD, DOST, DPC
(2) Establish information collection and management system								DARD, AEC
(3) Support to acquire safe food production certificates								DARD, AEC, DPC
(4) Support to acquire safe food processing and manufacturing certificates								DARD, DPC, DOIT
Project Cost:								
Total budget: USD 399,000 (VND 10 billion) Expense by government: USD 369,000 (VND 9 billion) : 92.6% of the total Expense by private sector: USD 30,000 (VND 1 billion) : 7.4% of the total								
Benefit/Impact:								
<ul style="list-style-type: none"> Distribution of safe food satisfying hygiene standards improves the entire FVC (production, distribution, processing, sales and consumption). Farmers income with safe food certificate is raised by more than 10 % compared to no certificate products Traders income using safety certified facilities is raised by 10% comparing to conventional ways 								
Environmental and Social Considerations:								
<ul style="list-style-type: none"> For establishing and expanding the slaughter and processing facility, it needs careful consideration of the development plan so as not to cause or minimize the deterioration of the natural and social environment. 								
Remarks:								
<ul style="list-style-type: none"> When implementing the activities, the plan supports not only from the perspective of private business but also from the administrative management and supervision by the government. As a government as well, from the current situation and circumstances in the country, they have not applied regulations strictly, and the project needs to promote the use of registered slaughter facilities step by step to actors. To pay attention to the changes of the law, regulation and governmental bodies in charge of agriculture input management and control in Nghe An Province (As of 2018, monitoring of seeds (including seedlings), organic fertilizers and pesticides is handled by DARD's Crop Production & Plant Protection sub-dept. and chemical fertilizer is done by DOST) Any similar project conducted by World Bank, ADB or other donors should be considered collaboration to emerge synergy and not to be overlapped. 								

API4: Branding Promotion by Application of Protection of Intellectual Property Project

Background of the Project						
<p>Some companies/ cooperatives in Nghe An produce the products with high value-added. However, the competitiveness of the products in Nghe An is still not high, because few producers acquire geographical indications and certificates for trademark.</p> <p>DARD and DOST promote the certificate system. DOST implemented the projects and research based on the Decision 4485/QD-UBND. However, most companies/ agricultural cooperatives still do not have the certificate hence the competitiveness of the agricultural products is low. Besides, the products are not branded well.</p> <p>In this A/P, we support product development and establishment of brands through promoting the acquisition of various certification and intellectual property for high value-added agricultural products produced in Nghe An. Establishment of the system that AMPF can investigate and analyze the market needs, and implement the projects for acquisition of various certificate.</p>						
Project Goal						
Promoting and branding the certified agricultural products produced in Nghe An province.						
Target Zone						
Promotion of High Value-Added Agricultural Production Area						
Outputs						
<ol style="list-style-type: none"> (1) Specifying the agricultural products in Nghe An which have high value-added. (2) High value-added products will be acquired the various intellectual property and various certification. (3) Starting the transaction of certified products with retailers and supermarket. (4) AMPF can conduct the survey, analysis and project regarding the acquisition of intellectual property and various certificate. 						
Activities						
<ol style="list-style-type: none"> (1) Investigating and specifying the agricultural products in Nghe An which have high value-added. (2) Conducting the training for target companies/ cooperatives to acquire the intellectual property and various certification. (3) Target companies/ cooperatives will acquire the intellectual property and various certificate. (4) Promoting the marketing of certified agricultural products produced in Nghe An. (5) Supporting the agricultural contract and matching the specified companies/ cooperatives with retailers/ wholesalers. (6) AMPF mainly conducts the A/P's activities 						
Inputs						
<u>Portion for government</u> <ul style="list-style-type: none"> • AMPF, AEC, DARD, DOST, CU • Materials (materials for training, Brand logo, advertisement/ poster/ printing, etc.) • Activity cost (training, transportation, allowance, accommodation, etc.) 				<u>Portion for private sector</u> <ul style="list-style-type: none"> • Cost for acquiring certificate 		
Implementing Agencies						
DARD (AEC, AMPF) , DOST, CU						
Implementing Schedule						
Activities	2019	2020	2021	2022	2023	In charge
Investigation and specification of the agricultural products with high value-added						DARD, AEC
Training for companies/ cooperatives to acquire intellectual property and certificates						DARD, DOST, CU
Acquirement of intellectual property and certificates by the companies/ cooperatives						DARD, DOST

Support for marketing and public relations						AEC, AMPF
Project Cost						
Total Project Cost: 1,424,850 USD (33.1 billion VND)						
Expense by government: USD 698,523 (VND 16 billion) : 49% of the total						
Expense by private sector: USD 726,327 (VND 17 billion) : 51% of the total						
Benefit/Impacts						
Approximately 20 products having potential to become local food brand with high name-value are selected to support obtaining necessary certificate such as geographical indications. The unit sales price is increased by obtaining such certificate.						
Environment and Social Consideration						
<ul style="list-style-type: none"> Regarding increase of facilities for the acquisition of intellectual property/ certificates, A/P's activities will be conducted with fully consideration on the natural and social environment. 						
Remarks						
<ul style="list-style-type: none"> The consistency of the A/P's activities and provincial strategy/ plan shall be taken into consideration. 						

AP 15: Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production

Background of the Project
<p>In Vietnam, "food safety" is a critical social issue, especially hazardous factors such as harmful microorganisms on fresh agricultural and livestock products and environmental pollutants, residual chemicals or veterinary drugs have been reported as health hazards. Main causes include the placement of unplanned industrial sites and waste disposal sites in the rural and agriculture areas and the abuse of unauthorized and illegal agricultural inputs. No exception in Nghe An province, there are concerns about the impact on the environment and agricultural products, such as agricultural lands nearby waste disposal site or cemetery and the distraction of illegal and poor quality agricultural inputs is increased year by year.</p> <p>In response to this situation, the government is trying to promote and agricultural production emphasizing safety and to improve the control system of agricultural inputs, etc. The DPCs and CPCs in Nghe An province also are planning an agricultural land reform and residents activities related to improvement of agricultural environment etc. However, since DARD or other departments cannot analyze and observe quality of water and soil or components of agricultural inputs, harmful substances of agricultural products, etc., is hardly able to plan effective risk assessment and risk management measures based on quantitative analysis at the provincial level. Even a good measure is developed and taken place, it is also difficult to evaluate the results and improve the measure to go next step because the quantities results cannot be observed timely.</p> <p>In order to improve and manage agricultural environment for safe agriculture production, it is necessary to introduce simple analysis equipment that can show the agricultural environment, contents of inputs or contamination level numerically in the DARD and DPC, and then to strengthen capacity on risk diagnosis and management of relevant officers.</p>
Project Goal
The identified risk of safe agricultural productions is reduced by formulating and implementing agricultural environment improvement and management plan elaborated after clarification of the agricultural environmental risk by quantitative analysis
Target Zone
Whole province
Output
<ol style="list-style-type: none"> (1) Agricultural environmental risk in production will be clarified by introducing analytical equipment in DARD and DPC. (2) An agricultural environment improvement and management plan are formulated based on the clarified analysis results by (1). (3) Agricultural environmental improvement and management plan formulated in (2) is implemented by the participation of related commune residents in each district. (4) The risks clarified in (1) are reduced.
Activity
<ol style="list-style-type: none"> (1) Quantitative Analysis: <ul style="list-style-type: none"> • Analytical equipment such as environment, materials, product components, contents, etc. are introduced to provincial DARD. • Technical training and training such as usage, analysis and maintenance of simplified analytical instruments will be carried out to Nghe An province and relevant staff in target district (2) Based on the risk assessment, an agricultural environmental improvement and management plan for risk management is formulated. (3) The plan of (2) will be shared with target communes' resident and implemented after related capacity building training (4) Evaluate the results of improvement and management of agricultural environment. If the risk is not mitigated, risk assessment is carried out again, the plan is changed and implemented.
Input (government input only)

<ul style="list-style-type: none"> • Governmental HR: DARD (sub-dept. of crop production and plant protection), DOST, DOH • External HR: 2 Local consultants (Risk analysis and evaluation of training, Agriculture Environment and management planning support) • Analysis Equipment: water and soil test, heavy metals testing, pesticide residue testing, harmful microorganisms inspection (Vietnam commercial product is desired) • Local activity expenses (training and training costs, monitor activity, training expenses, travel expenses, daily allowance, etc.) • Project management fee 																																															
Implementing Agencies																																															
Government: DARD, DOST, DOH																																															
Implementing Schedule																																															
<table border="1"> <thead> <tr> <th>Activity</th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> <th>In charge</th> </tr> </thead> <tbody> <tr> <td>(1) Introducing analytical equipment and conducting related training</td> <td style="background-color: #4F81BD;"></td> <td></td> <td></td> <td style="background-color: #4F81BD;"></td> <td></td> <td></td> <td>DARD, DOST</td> </tr> <tr> <td>(2) Formulation of agricultural environmental improvement and management plan</td> <td style="background-color: #4F81BD;"></td> <td style="background-color: #4F81BD;"></td> <td></td> <td style="background-color: #4F81BD;"></td> <td style="background-color: #4F81BD;"></td> <td></td> <td>DARD, DPC</td> </tr> <tr> <td>(3) Sharing and Implementing the plan and improving</td> <td style="background-color: #4F81BD;"></td> <td style="background-color: #4F81BD;"></td> <td style="background-color: #4F81BD;"></td> <td style="background-color: #4F81BD;"></td> <td style="background-color: #4F81BD;"></td> <td style="background-color: #4F81BD;"></td> <td>DARD, DOH, DOST</td> </tr> <tr> <td>(4) Evaluate the results, improving plan and reimplementation</td> <td></td> <td></td> <td style="background-color: #4F81BD;"></td> <td></td> <td></td> <td style="background-color: #4F81BD;"></td> <td>DARD, DPC, DOH, DOST</td> </tr> </tbody> </table>								Activity	2019	2020	2021	2022	2023	2024	In charge	(1) Introducing analytical equipment and conducting related training							DARD, DOST	(2) Formulation of agricultural environmental improvement and management plan							DARD, DPC	(3) Sharing and Implementing the plan and improving							DARD, DOH, DOST	(4) Evaluate the results, improving plan and reimplementation							DARD, DPC, DOH, DOST
Activity	2019	2020	2021	2022	2023	2024	In charge																																								
(1) Introducing analytical equipment and conducting related training							DARD, DOST																																								
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(4) Evaluate the results, improving plan and reimplementation							DARD, DPC, DOH, DOST																																								
Project Cost																																															
The total project cost: USD 271.578 (VND 6 billion)																																															
Benefit /Impacts																																															
<ul style="list-style-type: none"> • Recognized numerical result of the environmental risk has been reduced compared with the risk at the start of the project in the project area. • Report on health hazards of residents which are originally from the agricultural products is reduced from the beginning of the implementation. • It is easy for farmers and agriculture cooperative to obtain food safety certificates such as safety compliance issued by DARD and Viet GAP • Enabling to sell their products to the safe food stores, schools and factories cafeteria, and to generate stable income from agriculture production 																																															
Environmental and Social Considerations																																															
<ul style="list-style-type: none"> • Land ownership is considered when land classification, agricultural land reform and reclamation and forestation are necessary for the implementation of the risk management of agricultural environment. • If inequality occurs between residents, compensation measures should be considered. 																																															
Remarks																																															
<ul style="list-style-type: none"> • The conformity with relevant policy, development plan, laws, regulations and decision of the government of Vietnam and Nghe An province should be considered. 																																															

AP16: Improvement plan of veterinary service

Background of the Project
<p>Sub-department of Veterinary and Animal Husbandry (VAH) is a section in charge of veterinary and animal husbandry administration, and the range of their task is very diverse and there are many difficult issues in livestock production sites. They have tasks such as provision of veterinary service and technical support for livestock farmers, training and registration of artificial insemination technicians, accreditation of DARD safety certificate, prevention and surveillance of livestock disease, promotion of investment for livestock companies and inspection of slaughterhouse, livestock market, meat processors and retailers, veterinary medicine shops and feed distribution companies. However, because of the large amount of task and the wide area, various problems at the field level have not yet solved. In actual, as one of the important issue to be solved, some serious livestock diseases have occurred in Nghe An; High Pathogenic Avian Influenza (6 cases and 11,986 chickens deaths in Đô Lương, Diễn Châu and Vinh), Foot and Mouth Disease (many cases in Que Phong, Dien Chau, Quy Hop, Con Cuong, Ky Son, Thai Hoa, Anh Son, Nghi Loc, Vinh), Hog Cholera (3 cases and 80 deaths at Yen Thanh, Hoang Mai and Cua Lo) and Rabies (dog bite cases and 6 people died) have been occurred in 2017.</p> <p>VAH has planned to control the illegal imports and movement of livestock properly by 2020. In addition, there are a number of unauthorized feed and veterinary drugs and illegal slaughtered animals in the province.</p> <p>This action plan improves the veterinary and animal husbandry administration through the capacity development of the staff of VAH in order to strengthen their functions to cope with a wide range of issues. For this purpose, to grasp the current situation and solve the problems concerning urgent issues in Nghe An province such as (1) Control of serious animal diseases, (2) Supervision and support for improvement of illegal distribution of livestock and input materials, and (3) Support for appropriate operation of slaughter facilities, and strengthen organizational functions of VAH.</p>
Project Goal
Improve the capability of staff in VAH and veterinary and animal husbandry administration by grasping current situation on important issues and solving them in Nghe An province.
Target Zone
Whole province
Output
<ol style="list-style-type: none"> (1) Important issues concerning the Veterinary and Animal Husbandry (VAH) administration of Nghe An province are grasped (2) The control measures of serious animal diseases are strengthened, and annual vaccination plan is achieved 100% (3) Supervision and support for improvement on illegal distribution of livestock and input materials are strengthened, and number of violations are reduced by 50% compared to 2018 (4) Support for operation improvement of slaughter facilities is strengthened, and there are 120 or more registered slaughter facilities satisfying public standards (5) The system is established to solve priority issues
Activities
<ol style="list-style-type: none"> (1) Surveying issues on veterinary and animal husbandry administration in Nghe An Province Survey the current situation of important issues related to veterinary and animal husbandry administration including the situation on occurrence of important animal diseases, illegal livestock and input materials and illegal slaughter facilities. Based on the results of the survey, prioritize tasks related to veterinary and animal husbandry administration and make road map for solving the problems. (2) Improving vaccination rate of serious animals diseases and strengthen test and slaughter system at the time of disease outbreak Vaccination rate of serious animal diseases (highly pathogenic avian influenza, foot-and-mouth disease, hog cholera, rabies, etc.) is raised. At the same time, the disease reporting system is strengthened through necessary training given to commune veterinarians and large scale farmers. (3) Strengthening the supervision system for illegal distribution of livestock, feed and veterinary drugs, and supporting private sector to improving the situation Strengthen the supervising system by VAH on illegal distribution of livestock, feed and veterinary drugs, and improve the quality management capacity of private sector by supporting them. (4) Supporting for improvement of slaughtered facilities that do not meet public standards Strengthen the monitoring system by VAH for slaughter facilities that are not registered and do not

meet official standards, and provide support for their technical improvement by promoting acquisition of DARD certificate. (5) Planning and implementing countermeasures for other important issues based on the road map Based on the road map prepared in (1), develop a system to improve the important issues related to the veterinary and animal husbandry administration. Also, the training necessary for the staff of VAH are carried out.											
Input											
<u>Input by government:</u> <ul style="list-style-type: none"> - Grant of subsidies for private investment (distribution of livestock and quality control of input materials) - Technical support such as vaccination and disease control, distribution and quality control of livestock and input materials, and improving slaughter facilities - Technical training for officials in charge of veterinary administration and extension, community base veterinarians and farmers - Government Human Resources: DARD (sub-dept. of Veterinary and Animal Husbandry), DPC - External human resource: Four (4) local consultants (veterinary and livestock administration, veterinary epidemiological surveillance, animal disease control, slaughter facility improvement) - Local activity expenses (animal disease and environmental test fee, specimen sampling equipment and reagents) 						<u>Input by private sector:</u> <ul style="list-style-type: none"> - Vaccine procurement and vaccination - Quality control and appropriate distribution of livestock input materials - Application of suitable slaughter method and facility management 					
Implementing Agencies											
Government: DARD (VAH) , DPC, Private Sector: Private company regarding livestock distribution, livestock business											
Implementing Schedule											
Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	In charge
Survey of important issues											VAH
Strengthen animal disease control											VAH DPC Private
Strengthen supervision of illegal distribution											VAH DPC Private
Improve unregistered slaughterhouses											VAH DPC Private
Operation based on road map											VAH
Project Cost											
Total budget: USD 348,144 (VND 8 billion) Expense by government USD 288,144 (VND 7 billion) : 82.8% of total Expense by private sector USD 60,000 (VND 1 billion) : 17.2% of total											
Benefit/Impact											

<ul style="list-style-type: none"> • Reduction of HPAI and hog cholera • By improving the operation of VAH and coping with priority issues, the management risk for farmers and livestock businesses can be reduced, and they can receive public services by the government easily. • The business investment environment related to the FVC on livestock products is improved.
Environmental and Social Considerations
<ul style="list-style-type: none"> • In changing policy on veterinary and animal husbandry administration, it needs careful consideration of the development plan so as not to cause or minimize the deterioration of the natural and social environment.
Remarks
<ul style="list-style-type: none"> • For prioritizing and streamline the operations of VAH, it is necessary to plan and implement closely in cooperation with MARD of central government. • At the implementation of this plan, the private companies will be supported based on Decree No.14/2017/ NQ-HĐND for subsidies and technical support.

AP17: Capacity Development on Administration and Marketing of Agricultural Cooperatives Project

Background of the Project	
<p>As of 2016, there are 387 agricultural cooperatives in Nghe An province. In the Project, the following problems are pointed out when the Project conducted sample surveys target agricultural cooperatives in the province.</p> <ul style="list-style-type: none"> ✓ More than 90% of the cooperatives recognize the difficulty of accessing market information. ✓ The major role of the cooperatives is specialized in procurement and sales of agricultural materials, and there are few cooperatives carry out organizational activities such as joint shipment. ✓ Few cooperatives have secured storage and transportation, hence shipment of agricultural and livestock products generally depends on middlemen. <p>On the other hand, at present, there are no agricultural cooperatives producing the products that meet the market needs: 1) stable quality, 2) stable supply of many agricultural and livestock products, 3) regular shipments. *market needs means particularly supermarket expected high growth hereafter.</p> <p>It is essential for the cooperatives to implement capacity building collaborating with agricultural cooperatives and actual consumers (supermarkets, processors, etc.) in the future and conduct training of various capacity buildings for the cooperatives that produce strategic crops in Nghe An province.</p> <p>The objective of this A/P is to establish the formulation of highly competitive producing area through implementing capacity building of business management and marketing for agricultural cooperatives.</p>	
Project Goal	
Develop human resources in agricultural cooperatives in order to produce highly competitive crops and livestock through various training.	
Target Zone	
Whole province	
Outputs	
<ol style="list-style-type: none"> (1) Select agricultural cooperatives for capacity building (2) Specify items of capacity building including business management and marketing for selected agricultural cooperatives. (3) Conduct training of capacity building for the cooperatives based on the result of activities (1) and (2). (4) Monitor and evaluate the activity (3), and prepare the various manuals. 	
Activities	
<ol style="list-style-type: none"> (1) Select agricultural cooperatives as model Select 10 agricultural and livestock cooperatives producing the strategic crops in Nghe An based on the database. The cooperatives should be motivated on the activities. (2) Specify items of capacity building Conduct basic survey on selected agricultural cooperatives and specify necessary training items. At present, following training is assumed. *This activity shall be conducted with fully consideration on target cooperatives intension. <ul style="list-style-type: none"> • Business management training (formulate annual plan, accounting management, utilization of capital, utilization of financial institute) • Marketing training (Participation of matching event, market research, study tour) • Implement pilot projects regarding village farming (formulate cultivation and shipping plan, co-management for collecting, shipping, etc.) (3) Implement training Implement training as above (2) by local experts and extension officers (4) Monitoring/ evaluation and preparing manuals Monitor and evaluate the activity (3), and prepare various manuals in order to roll out the plan and activities. 	
Inputs	
<p><u>Portion for government</u></p> <ul style="list-style-type: none"> • DARD (personal distribution) • Project experts (Cooperative management, Marketing) • Project management cost (pilot projects, training fee, transportation, allowance/ accommodation, etc.) 	<p><u>Portion for private sector</u></p> <p>N/A</p>
Implementing Agencies	

Government: DARD (AMPF, AEC) , DPC, CU						
Implementing Schedule						
This A/P will start activities as soon as possible after the Project ends. Therefore, this A/P is five-year plan from 2019 to 2023.						
Activities	2019	2020	2021	2022	2023	In charge
Select agricultural and livestock cooperatives						DARD, DPC
Specify item of capacity building						DARD
Conduct training of capacity building						DARD, CU
Monitor/ evaluate the activities (2) and (3) and making manuals						DARD, DPC
Project Cost						
Total project cost: USD 198,044 (VND 5 billion)						
Benefit/ Impact						
<ul style="list-style-type: none"> ✓ The income of target farmers/ cooperatives is increased or stabilized through the development of agricultural and livestock cooperatives with highly competitive. ✓ Modeling the target cooperative as good practice, and it will be a basis in order to roll out the model. 						
Environment and Social Consideration						
<ul style="list-style-type: none"> ✓ There are no particular concerns on environment and social consideration. 						
Remarks						
<ul style="list-style-type: none"> ✓ Regarding the village farming, it is necessary to explain the plan and activities to target cooperatives. 						

AP18: Improvement of Agricultural Financing Project

Background of the Project
<p>There are four main financial institutions for agriculture in Nghe An (Bank for Agriculture and Rural Development, Vietnam Bank for Social Policies, Vietnam Association of People's Credit Fund, Cooperative Bank) and they operate various loan services. Among them, the former two institutions, namely Agribank and VBSP, provide non-mortgage loan programs. Even though the maximum loan amount is VND 50 million, individuals are eligible to receive the services. If the borrowers are family businesses in field of agricultural marketing and services, cooperatives, and agricultural production farm owners, maximum loan amount will increase up to VND 200 million to 1 billion.</p> <p>Recently, many other commercial banks also provide credit/finance services for agricultural and rural development under financial programs such as 'Lending for agricultural and rural development' and 'Lending under national target Program on new rural development'. Both programs exceed lending amount of VND 60,000 billion as of the end of 2017, and the number of loan users is over 580,000. Among them, individual users represent 99.3% of the loan uses and other users occupy less than 0.7%.</p> <p>Comparing the number of loan users in 2013 and 2017 of the major two financial programs by user type, enterprise and other (including farm owners, cooperatives, cooperative union and cooperative group) loan users increases 3 times (from 777 to 2,304) and 9 times (from 203 to 1,833), while individual loan users decreases by 28% (from 810,000 to 580,000). On the other hand, average loan amount of all type loan users increases. Considering these situations, it is expected in the rural and agricultural finance sector that (1) various types of loan programs are available, (2) individual loan users are decreasing, (more strict loan screening), (3) enterprise and other loan users are increasing (more loan applications by enterprises and other corporate borrowers), and (4) the size of one loan case expands (large-scale businesses increase).</p> <p>Based on these facts, this project aims to extend all types of loan programs across the province by having education campaign on the existing loan programs and holding series of consultation seminars (explanation of how to fill in the loan application forms for easy loan screening) for individuals, enterprises and others who need financial support.</p>
Project Goal
<p>More individuals, enterprises and other entities can receive financial loan through various loan programs in accordance with their own necessities, which in turn improve agricultural production as well as business performances.</p>
Target Zone
<p>Whole province</p>
Outputs
<ol style="list-style-type: none"> (1) Available financial loan programs are sorted out by type of loan user. (2) Demands of loan support are clarified by district and/or commune. (3) Target districts and communes are selected and education campaigns on the existing loan programs are conducted there. (4) After the campaigns, series of consultation seminars (explanation of how to fill in the loan application forms) are held. (5) The loan amount of various financial institutions increases.
Activities
<ol style="list-style-type: none"> (1) Clarification of existing available financial loan programs Currently available loan programs in agriculture sector in Nghe An are sorted out by (1) type of loan users, (2) type of investment, (3) mortgage necessity, (4) loan period and so forth. The results are summarized in tables. (2) Demand survey of agricultural finance services Demand for agricultural finance services (type of investment, investment amount, mortgage necessity, loan period, etc.) is surveyed and clarified. (3) Selection of target districts and/or communes Based on the survey results of the previous two activities, target districts and/or communes are chosen. (4) Implementation of education campaign on loan programs In the target districts and/or communes, education campaigns for promotion of the existing loan programs are implemented together with various financial institutions. (5) Seminars for consultation and loan application After the campaigns, a series of consultation seminars are held to explain how to fill in the loan application forms and loan applications are collected. (6) Execution of loan After the loan applications are properly screened by the financial institutions, loans are provided to

eligible individuals, enterprises and cooperatives.						
Inputs						
<u>Portion for government</u>			<u>Portion for private sector</u>			
<ul style="list-style-type: none"> • Staff of AMPF, DARD, DOIT and CU • Financial institutions and banks concerned • Miscellaneous expenses for activities (transportation, lodging and allowance fee, research and development expenses, material expenses, training fees, etc.) 			N/A			
Implementing Agencies						
Government: DARD (AMPF), DOIT, CU						
Private Sector: Financial institutions and banks concerned						
Implementing Schedule						
The 1 st and 2 nd activities are done in Year 1. After selection of the target areas, remaining activities are conducted in two years. This two-year cycle continuously implemented in the next target areas.						
Activity	2019	2020	2021	2022	2023	In charge
Clarification of existing available financial loan programs						DARD, DOIT
Demand survey of agricultural finance services						DARD
Selection of target districts and/or communes						DARD
Implementation of education campaign on loan programs						DARD, banks
Seminars for consultation and loan application						DARD
Execution of loan						banks
Project Cost						
Total project budget: 134,000 USD (3 billion VND)						
Benefit/Impacts						
<ul style="list-style-type: none"> • In the target areas, the total loan value increases by 35% as compared with the value before the project starts. (Mean total loan value increase rate in Nghe An between 2013 and 2017: 27.4%) • In the target areas, the number of loan users increases by 5% as compared with the one before the project starts. (Mean increase rate of number of loan users in Nghe An between 2013 and 2017: 3.5%) • Agricultural productivity in the target areas increases by 10% by means of increase in value and users of agricultural finance services, which in turn, boosts farm income and mitigates rural-urban gaps. 						
Environment and Social Consideration						
<ul style="list-style-type: none"> • When loan applications are screened (particularly, large-scale loan applied by enterprises and business entities), it needs to appraise that the investments are intended to avoid and/or minimize negative effects on nature and society. 						
Remarks						
<ul style="list-style-type: none"> • When project activities start, main actors should be financial institutions and banks and governmental agencies should work as supporters for them. • It needs to coordinate with other related plans and projects in Nghe An. 						

AP19: Improvement of AMPF Administration and Management Capacity Project

Background of the Project
<p>The AMPF was established in 2016 through the support of “Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An in the Socialist Republic of Vietnam”. AMPF aims to contribute to the development of FVC of agricultural and livestock products produced in Nghe An province through improvement of communication between FVC stakeholders and facilitation of agricultural transaction. As a result of examining the trial on AMPF activities within the project and its effectiveness, the main functions of AMPF are assumed as 1) market needs gathering / delivering activity, 2) matching business between FVC related personnel and 3) facilitation of linkage development between food business-related companies and the agricultural producers and the contract agriculture. After the project termination, the function of AMPF will be incorporated into the agricultural extension center (AEC) under the jurisdiction of DARD, and after the relocation of the function, the staff of agricultural extension center will focus on implementing related work of AMPF. In this project, the project team conducted the training on capacity building regarding the platform management, contract farming, planning of pilot project and training in Japan to the AEC staffs based on the assumption that AEC will take over the function of AMPF in the future. However, in order for AMPF to contribute to the development of FVC of agricultural and livestock products in Nghe An province even after the completion of the project, it is essential to solve the following problems.</p> <ol style="list-style-type: none"> 1. To secure sufficient budget for periodically holding business matching events and opinion exchange meetings 2. To strengthen matching function through cooperation with private matching service companies and chambers of commerce 3. Development of a support scheme for product development jointly performed by agricultural producers and actual users 4. To strengthen collaboration with trade promotion center under the jurisdiction of MARD and DOIT and with overseas companies 5. To strengthening the capacity of AMPF-related officials necessary to implement 1-4 <p>This A/P intends to make AMPF function as a specialized organization that contributes to the development of FVC of agricultural and livestock products in Nghe An province by solving those problems mentioned above.</p>
Project Goal
The function and operation and management ability of AMPF necessary to promote the development of FVC of agricultural and livestock products in Nghe An province are improved.
Target Zone
Whole province
Outputs
<ol style="list-style-type: none"> (1) AMPF is officially approved and established as the administrative organization of Nghe An province. (2) Various initiatives that contribute to improving communication among FVC stakeholders are identified and budgeted. (3) Support schemes for product development jointly performed by agricultural producers and actual users are specified and budgeted. (4) The capacity of AMPF staff necessary for properly managing various activities is improved.
Activities
<ol style="list-style-type: none"> (1) Formulate AMPF organizational objectives, job assignment, annual activity plan, activity budget, etc, and submit Nghe An PPC to obtain approval. (2) Based on the activity plan and the budget, AMPF holds business matching event for FVC stakeholders in cooperation with the chamber of commerce (assuming three times a year). (3) Identify private companies engaging in matching services and implement awareness-raising activities for local producers to promote the utilization of such services. (4) Provide support for product development jointly implemented by agricultural producers and actual users. The support scheme is assumed to utilize existing agricultural model dissemination program. (5) Deepen collaboration with Trade Promotion Center and large enterprises, and conduct business intermediation between the food business companies inside and outside of the province and local producers. (6) Conduct activities on (1) - (5) as routine work and training related to agricultural and livestock product marketing for AMPF staff and extension workers.

Inputs						
<u>Portion for government</u> Securing personnel of AMPF (about 7 in total) Activity budget of AMPF (event holding fee, equipment and materials expenses related to product development, transportation expenses, daily allowance, accommodation expenses) External consultant (platform management, agricultural and livestock marketing, horticulture, animal husbandry)			<u>Portion for private sector</u> N/A			
Implementing Agencies						
Government: PPC, DARD (AEC, AMPF) , DPI, DOIT, VCCI						
Implementing Schedule						
Activities	2019	2020	2021	2022	2023	In charge
1. Formulation of AMPF's organizational goal, job assignment, activity plan, activity budget						DARD
2. Establishment of AMPF						PPC, DARD
3. Organizing matching event						AMPF, VCCI
4. Collaboration with private matching service provider						AMPF
5. Implementation of product development support program						AEC, AMPF
6. Transaction arrangement between overseas companies and local producers						PPC, DARD, AMPF, VCCI
7. Training for AMPF officials and extension workers						DARD
Project Cost						
Total Cost : USD 809,500 (VND 19 billion)						
Benefit/Impacts						
<ul style="list-style-type: none"> By visualizing the needs of the market (actual demander) through matching events and trading consultation services, it is expected that producers will be motivated. High motivation of local producers develops universally positive effects on the promotion of agriculture in the province. In addition, the product development support program is expected to function as an incentive for producers and actual users to cooperate to develop FVC. 						
Environment and Social Consideration						
<ul style="list-style-type: none"> The target of business matching and product development support is for all producers of Nghe An province and it is necessary to pay attention so that the minorities in mountainous areas will not leak from the target. 						
Remarks						
<ul style="list-style-type: none"> In conducting A/P, there is a possibility that cooperation with each special department of Nghe An province such as DPI, DOIT, DOST and DT is necessary. The director of the AMPF is required to be familiar with the activities of AMPF and to be able to cooperate with those departments. 						

AP20: Establishment of Effective Research System for the Development of Advanced Technique Project

Background of the Project						
<p>It is important that agricultural institute develops the agricultural technique to meet the market needs. However, agricultural institutes in Nghe An does not have good enough facilities and human resources. Therefore, the province cannot make a sufficient contribution to the research and development that meets market needs.</p> <p>this A/P will enhance the facilities of agricultural institute and improve the ability of researchers. Thus, it will establish an effective research system for the development of advanced technique project to meet the market needs.</p>						
Project Goal						
Agricultural advanced technique will be developed to meet market needs. The advanced technique will be transferred.						
Target Zone						
Entire Zone						
Outputs						
<ol style="list-style-type: none"> (1) The effective research system of agricultural research institutes in the province will be strengthened. (2) The agricultural technique will be developed to meet market needs. (3) Developed Technology will be transferred to extension officers, producers, and companies. 						
Activities						
<ol style="list-style-type: none"> (1) Planning research to meet market needs DARD invite agricultural material distributors, processors, and distributors to exchange meeting, held by the province, with local farmers/ producers. They will plan the research project to fill the gap between market needs and existing production, processing, distribution technique. (2) Developing research facilities/ equipment Developing necessary research facilities and equipment based on the planned research project. (Including improvement and repair the existing facilities, expansion of seed production field, etc.) (3) Conducting training to improve researcher's ability The lecturers conduct training on utilization and maintenance of facilities and equipment, how to collect and analyze the data, etc. Lecturers should be invited from manufacturing company, research institute outside the Nghe An province. (4) Developing agricultural techniques to meet the market needs Developing agricultural technique based on the planned research project. Planned research projects will be implemented in case of using existing facilities and equipment. If existing facilities and equipment are insufficient, provincial researchers will visit research institutes outside the province to develop the agricultural technique. After the facilities and equipment are constructed, it will be developed using the facilities and equipment in Nghe An. (5) Transfer the developed agricultural technique Developed agricultural technique will be transferred to the extension officers, producers, companies through seminars, demonstration farms, Field day, etc. 						
Inputs						
<u>Portion for government</u> DARD, DOST ASINCV, Plant Seedling Center, Vinh University (Researchers) Lecturers (Researchers from institutes outside Nghe An, staffs from manufacturing companies) Facilities cost, equipment cost				<u>Portion for private sector</u> N/A		
Implementing Agencies						
Government: DARD, DOST, ASINCV, Vinh University						
Implementing Schedule						
Activities	2021	2022	2023	2024	2025	In charge
Planning research project						DARD, DOST, ASINCV. Vinh Uni.

Developing research facilities/ equipment						DARD, DOST, ASINCV. Vinh Uni.
Capacity building and training for researchers						DARD, DOST, ASINCV. Vinh Uni.
Developing agricultural technique						DARD, DOST, ASINCV. Vinh Uni.
Transfer of agricultural technique						DARD, AEC
Project Cost						
Total project budget: USD 330,400 (VND 8 billion)						
Benefit/Impacts						
<ul style="list-style-type: none"> Development of agricultural technique. Producing agricultural products satisfied with market needs and the sales channel will expand. 						
Environment and Social Consideration						
<ul style="list-style-type: none"> Regarding the development of agricultural technique, A/P's activities will be conducted with fully consideration of the natural and social environment. 						
Remarks						
<ul style="list-style-type: none"> Selecting about 5 plans with development technique directly linked to improvement of food value chain: profit to wide range of stakeholders: the possibility within the budget, etc. Target crops should be narrowed down to 2-3 in order to improve the project effect. Improve the whole FVC of the crops with multiple development techniques. Considering the implementation of research that is recognized to be necessary for other A/P. Selecting the appropriate institutes/ organizations in cooperation with ASINCV, Plant Seedling Center, Vinh University. Implement internal review meeting to share the progress of research project once a year, besides modify the planned research project if necessary. Promoting collaborative research/ contract research with companies. 						

8.3 Relationship among A/Ps

The A/Ps proposed by this project is to develop FVC of Nghe An agricultural and livestock products by promoting contract farming. Each A/P focuses on the development of separate items and human resources, but they are interrelated for that purpose. A/P1~12 are plans to promote the FVC development of the strategic crop of Nghe An province by public-private partnership. In order to smoothly advance these A/Ps, it is necessary to develop distribution infrastructures such as roads and logistics bases. It is also necessary as a prerequisite to strengthen the capacity of FVC actors including producers and administrators who support them. In addition, as a starting point for public-private partnership, AMPF should become the focal point to improve communication among FVC actors and to facilitate contract farming.

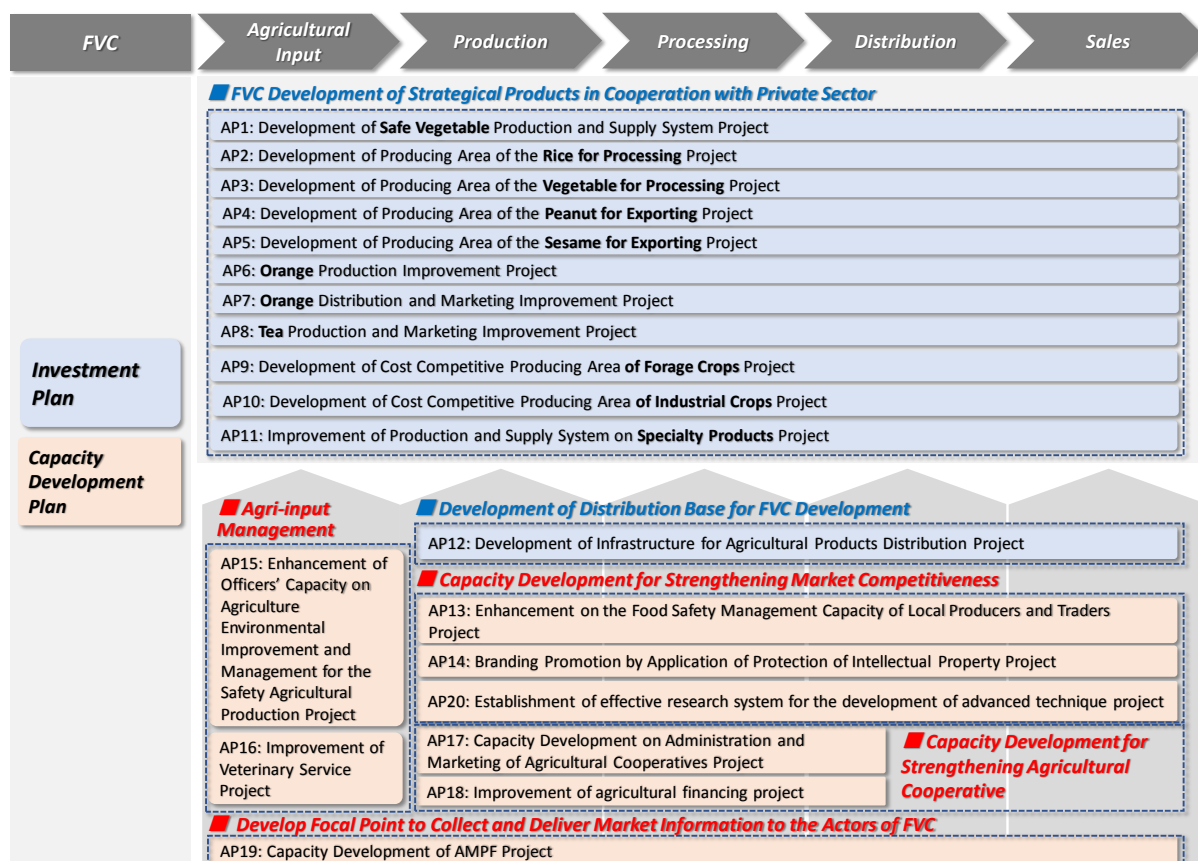


Figure 8.1 Relationship among A/Ps

8.4 Implementation Plan

The table below shows the implementation system at each A/P. The Investment Plan applicable to AP 1-12 is a public-private partnership project. Therefore, in order to promote the development of FVC by the private sector, support from the various administrative organization is required.

Table 8.3 Implementation System of Each A/P

ID	Title of A/P	PPC	DPC	DARD	DPI	DOIT	DOST	DOT	AMPF	CU*
AP1	Development of Safe Vegetable Production and Supply System Project	X	X	X	X		X		X	X
AP2	Development of Producing Area of Rice for Processing Project	X	X	X	X	X			X	X
AP3	Development of Producing Area of Vegetable for	X	X	X	X	X			X	X

ID	Title of A/P	PPC	DPC	DARD	DPI	DOIT	DOST	DOT	AMPF	CU*
	Processing Project									
AP4	Development of Producing Area of Peanut for Exporting Project	X	X	X	X	X			X	X
AP5	Development of Producing Area of Sesame for Exporting Project	X	X	X	X	X			X	X
AP6	Orange Production Improvement Project	X	X	X	X				X	X
AP7	Orange Distribution and Marketing Improvement Project	X	X	X	X	X			X	X
AP8	Tea Production and Marketing Improvement Project	X	X	X	X	X			X	X
AP9	Development of Cost Competitive Producing Area of Forage Crops Project	X	X	X	X	X			X	X
AP10	Development of Cost Competitive Producing Area of Industrial Crops Project	X	X	X	X	X			X	X
AP11	Improvement of Production and Supply System on Specialty Products Project	X	X	X	X	X			X	X
AP12	Development of Infrastructure for Agricultural Products Distribution Project	X	X	X	X	X		X	X	
AP13	Enhancement on the Food Safety Management Capacity of Local Producers and Traders Project			X		X	X			
AP14	Branding Promotion by Application of Protection of Intellectual Property Project			X		X	X			
AP15	Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production Project			X		X	X			
AP16	Improvement of Veterinary Service Project			X						
AP17	Capacity Development on Administration and Marketing of Agricultural Cooperatives Project			X						X
AP18	Improvement of Agricultural Financing Project			X		X				
AP19	Capacity Development of AMPF Project	X		X	X	X			X	
AP20	Establishment of Effective Research System for the Development of Advanced Technique Project			X			X			

Source: JICA Project Team, * Cooperative Union

8.5 Target Area of A/P

The table below shows the target area of each A/P.

Table 8.4 Target Area of Each A/P

ID	Title of A/P	Promotion of Safe Agricultural Production	Promotion of Raw Material Production for Food Processing and Exporting	Promotion of High Value-Added Agricultural Production	Promotion of Agricultural Products for Special Use
		Vinh, Cua Lo, Nam Dan, Dien Chau, Quynh Luu	Hung Nguyen, Nghi loc, Nam Dan, Do Luong, Yen Thanh, Dien Chau, Quynh Luu, Hoang Mai	Nghia Dan, Thai Hoa, Quy hop, Tan Ky, Anh Son, Thanh Chuong	Ky Son, Tuong Duong, Que Phong, Quy Chau, Con Cuong
AP1	Development of Safe Vegetable Production and Supply System Project	X			
AP2	Development of Producing Area of Rice for Processing Project		X		
AP3	Development of Producing Area of Vegetable for Processing Project		X		
AP4	Development of Producing Area of Peanut for Exporting Project		X		
AP5	Development of Producing Area of Sesame for Exporting Project		X		
AP6	Orange Production Improvement Project			X	
AP7	Orange Distribution and Marketing Improvement Project			X	
AP8	Tea Production and Marketing Improvement Project			X	
AP9	Development of Cost Competitive Producing Area of Forage Crops Project		X	X	
AP10	Development of Cost Competitive Producing Area of Industrial Crops Project		X	X	
AP11	Improvement of Production and Supply System on Specialty Products Project				X
AP12	Development of Infrastructure for Agricultural Products Distribution Project	X	X	X	X
AP13	Enhancement on the Food Safety Management Capacity of Local Producers and Traders Project	X			
AP14	Branding Promotion by Application of Protection of Intellectual Property Project			X	
AP15	Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production Project	X	X	X	X
AP16	Improvement of Veterinary Service Project	X	X	X	X
AP17	Capacity Development on Administration and Marketing of Agricultural Cooperatives Project	X	X	X	X
AP18	Improvement of Agricultural	X	X	X	X

ID	Title of A/P	Promotion of Safe Agricultural Production	Promotion of Raw Material Production for Food Processing and Exporting	Promotion of High Value-Added Agricultural Production	Promotion of Agricultural Products for Special Use
	Financing Project				
AP19	Capacity Development of AMPF Project	X	X	X	X
AP20	Establishment of Effective Research System for the Development of Advanced Technique Project	X	X	X	X

Source: JICA Project Team

8.6 Implementation Schedule and Project Cost

The table below shows the implementation schedule and project cost of each A/P. As for the Investment Plan, from the viewpoint of ensuring the project budget, it is supposed to start in 2021. On the other hand, the Capacity Development Plan is planned to start from 2019 since it does not require a large budget.

Table 8.5 Implementation Schedule and Project Cost of Each A/P (Billion VND)

No.	A/P	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Public	Private	ST
AP1	Development of Safe Vegetable Production and Supply System Project													53	137	190
AP2	Development of Producing Area of Rice for Processing Project													17	55	72
AP3	Development of Producing Area of Vegetable for Processing Project													25	54	79
AP4	Development of Producing Area of Peanut for Exporting Project													8	15	23
AP5	Development of Producing Area of Sesame for Exporting Project													4	10	14
AP6	Orange Production Improvement Project													5	10	15
AP7	Orange Distribution and Marketing Improvement Project													34	67	101
AP8	Tea Production and Marketing Improvement Project													21	38	59
AP9	Development of Cost Competitive Producing Area of Forage Crops Project													22	46	68
AP10	Development of Cost Competitive Producing Area of Industrial Crops Project													22	46	68
AP11	Improvement of Production and Supply System on Specialty Products Project													10	72	82
AP12	Development of Infrastructure for Agricultural Products Distribution Project													169	67	236
AP13	Enhancement on the Food Safety Management Capacity of Local Producers and Traders Project													9	1	10
AP14	Branding Promotion by Application of Protection of Intellectual Property Project													16	17	33
AP15	Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production Project													6	0	6
AP16	Improvement of Veterinary Service Project													7	1	8
AP17	Capacity Development on Administration and Marketing of Agricultural Cooperatives Project													5	0	5
AP18	Improvement of Agricultural Financing Project													3	0	3

Technical Cooperation Project on Development Planning of Agriculture Sector in Nghe An Final Report

No.	A/P	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Public	Private	ST
AP19	Capacity Development of AMPF Project													19	0	19
AP20	Establishment of Effective Research System for the Development of Advanced Technique Project													8	0	8
Total														463	636	1099

8.7 Priority of Action Plan

8.7.1 Process to Determine the Priority of A/P

The priority of A/P will be determined by the following procedures.

- Step 1) Preparation of Action Plans
- Step 2) Preparation of Evaluation Criteria
- Step 3) Scoring to each Action Plan
- Step 4) Priority Coefficient (pair-wise comparison)
- Step 5) Calculation of Evaluation Value
- Step 6) Analysis of Evaluation Result

8.7.2 Evaluation Criteria

Evaluation Criteria of each A/P was determined as shown in the table below by discussion with C/Ps of Nghe An site.

Table 8.6 Evaluation Criteria of each A/P

Evaluation Criteria	Judgment
1 Contribution to agricultural production output in Nghe An	Estimate of increment of agricultural production output in Nghe An Score 3 Great contribution to agricultural production output by value-adding Score 2 Large contribution to agricultural production output by value-adding Score 1 Little contribution to agricultural production output by value-adding
2 Adaptability in technical level	Comparison of newly introduced technology, facilities, etc. with current ones. Score 3 Actors have plenty of experience of similar activities Score 2 Actors have some experience of similar activities Score 1 Actors do not have experience of similar activities
3 Relevance to principle of Nghe An development strategy	Confirmation of relevance to principle of Nghe An development strategy from 2021. Score 3 Relevant to principle of Nghe An development strategy Score 2 Almost relevant to principle of Nghe An development strategy Score 1 Not relevant to principle of Nghe An development strategy
4 Impact on natural and social environment	Evaluation of negative impact on natural and social environment by project. Score 3 Little negative impact to natural and social environment Score 2 Some negative impact to natural and social environment Score 1 Serious negative impact to natural and social environment
5 Duration to achieve project purpose	Estimation of duration to achieve project purpose Score 3 Within 5 years Score 2 Within 10 years Score 1 More than 10 years
6 Scale of necessary budget	Judgment from scale of project cost and possibility of budget allocation. Score 3 Budget allocation for project in progress Score 2 Relatively low project cost Score 1 Relatively high project cost

Source: JICA Project Team

8.7.3 Weighting of Each Evaluation Criteria

JICA Consultant Team applies Analytic Hierarchy Process (AHP) to determine the weighting of each criterion. The table below shows the results of pair evaluation on each criterion, which was developed based on the interview with 5 C/Ps, 3 agricultural input traders, 4 agricultural cooperatives, 3 middlemen, 3 processors and 2 retailers.

Table 8.7 Result of Pair Evaluation

Evaluation Criteria	1 Agricultural production output by Adding value	2 Technical level	3 Relevance to strategy	4 Impact on environment	5 Duration of project	6 Scale of budge	Geometric Mean	Weighting
1 Agricultural production output by adding value	1	3.35	2.33	1.04	2.47	3.27	2.008	0.208
2 Technical level	1.80	1	2.22	2.19	2.26	2.78	1.950	0.202
3 Relevance to strategy	1.24	1.55	1	1.06	2.39	1.97	1.458	0.151
4 Impact to environment	1.91	1.01	1.59	1	2.43	2.33	1.609	0.166
5 Duration of project	1.90	2.35	1.29	0.92	1	1.66	1.437	0.148
6 Scale of budge	0.66	1.15	1.32	1.48	2.17	1	1.215	0.126

Source: JICA Project Team

8.7.4 Priority of Each A/P

Based on the evaluation criteria of each A/P, the priority of A/P was specified as shown in the table below. Regarding the evaluation of each A/P, JICA Consultant team finalized with reference to opinions from C/P. Since the A/Ps proposed in this project are related to each other, it is proposed to implement all A/P regardless of the priority level. However, the budget limitation might occur in the implementation stage since the project costs to be borne for A/Ps related to public-private partnership depends highly on the investment intention of the private companies. In such a case, it is desirable to implement A/P by referring to the priority of A/P specified in the table below.

Table 8.8 Priority of A/P

ID	Title of A/P	1 Agricultural production output by Adding value	2 Technical level	3 Relevance to strategy	4 Impact on environment	5 Duration of project	6 Scale of budge	Total Score
		0.208	0.202	0.151	0.166	0.148	0.126	
AP1	Development of Safe Vegetable Production and Supply System Project	0.416	0.606	0.452	0.500	0.298	0.126	2.398
AP2	Development of Producing Area of Rice for Processing Project	0.416	0.404	0.452	0.500	0.298	0.126	2.196
AP3	Development of Producing Area of Vegetable for Processing Project	0.416	0.202	0.452	0.500	0.298	0.126	1.994
AP4	Development of Producing Area of Peanut for Exporting Project	0.416	0.404	0.452	0.500	0.298	0.126	2.196
AP5	Development of Producing Area of Sesame for Exporting Project	0.208	0.404	0.452	0.500	0.298	0.126	1.988
AP6	Orange Production Improvement Project	0.416	0.606	0.452	0.500	0.298	0.126	2.398
AP7	Orange Distribution and Marketing Improvement Project	0.624	0.202	0.452	0.500	0.298	0.126	2.202

ID	Title of A/P	1 Agricultural production output by Adding value	2 Technical level	3 Relevance to strategy	4 Impact on environment	5 Duration of project	6 Scale of budget	Total Score
AP8	Tea Production and Marketing Improvement Project	0.416	0.202	0.452	0.500	0.298	0.126	1.994
AP9	Development of Cost Competitive Producing Area of Forage Crops Project	0.208	0.404	0.452	0.500	0.298	0.126	1.988
AP10	Development of Cost Competitive Producing Area of Industrial Crops Project	0.208	0.404	0.452	0.500	0.298	0.126	1.988
AP11	Improvement of Production and Supply System on Specialty Products Project	0.624	0.404	0.452	0.167	0.298	0.126	2.071
AP12	Development of Infrastructure for Agricultural Products Distribution Project	0.624	0.404	0.452	0.333	0.298	0.126	2.237
AP13	Enhancement on the Food Safety Management Capacity of Local Producers and Traders Project	0.208	0.404	0.302	0.500	0.149	0.252	1.814
AP14	Branding Promotion by Application of Protection of Intellectual Property Project	0.624	0.202	0.302	0.500	0.298	0.126	2.051
AP15	Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production Project	0.208	0.404	0.302	0.500	0.298	0.252	1.963
AP16	Improvement of Veterinary Service Project	0.208	0.404	0.302	0.500	0.298	0.252	1.963
AP17	Capacity Development on Administration and Marketing of Agricultural Cooperatives Project	0.416	0.202	0.302	0.500	0.298	0.378	2.095
AP18	Improvement of Agricultural Financing Project	0.416	0.202	0.302	0.500	0.298	0.378	2.095
AP19	Capacity Development of AMPF Project	0.416	0.606	0.452	0.500	0.298	0.378	2.650
AP20	Establishment of Effective Research System for the Development of Advanced Technique Project	0.416	0.202	0.302	0.500	0.298	0.252	1.969

Source: JICA Project Team

Chapter 9 Conclusion and Recommendation

9.1 Conclusion

In the framework of the Japan-Vietnam Agricultural Cooperation Dialogue, Nghe An province, which is the model area of FVC development, introduced a government support system aiming for the promotion of market-oriented agriculture and introduction of contract farming based on market needs etc. and formulated a M/P to develop FVC with the support of Japan ODA. The following points are the conclusion of the project activity that was conducted from 2016 to the beginning of 2019.

- Nghe An province has various topographical conditions from flat land to mountainous area and many agricultural and livestock products suitable for the natural condition are produced in each terrain. This means that it can approach diverse domestic and international market needs of food products. In fact, many products targeted in 42 PPs carried out in this project seemed promising in light of domestic and overseas markets demand although some PPs could not reach the “contract and undertaking stage” within the project period. Hence, Nghe An province itself, which has the fourth largest population in Vietnam and has famous sightseeing spots such as Cua Lo beach where more than 3 million tourists visit each year, is promising as a consumer market. Therefore, the feasibility of FVC development for fresh fruits and vegetables targeting Nghe An markets is very high. The population in Vietnam and the distribution rate of middle to wealthy income class among them are increasing, and reflecting this, the domestic food industry itself is also growing steadily. These facts are the strong advantages in FVC development of Nghe An agriculture and livestock products.
- Meanwhile, Nghe An province has many issues to be solved in terms of the system for producing and selling agricultural and livestock products demanded by the market. Specifically, 1) difficulties in accessing market information and lack of communication between FVC actors, 2) inappropriate use of agricultural inputs and difficulty to access proper seed and seedlings, 3) small-scale cultivation and lack of organizational farming practice, 4) vulnerable production base against natural disasters, 5) high transportation cost and food loss, 6) improper food sanitation management and 7) inefficient agricultural technology development, and so on. In order to respond to the diversifying market needs by the economic growth, it is necessary for public and private sectors to work together on the improvement of each stage of FVC.
- From the above viewpoint, this project set FVC development vision of Nghe An province as “Realization of Strong Development of Nghe An Agriculture by Proving Worthy of Market Trust and Needs” Besides, the project specified three FVC development policies and four FVC development strategical zones. These were formulated based on the project activities such as basic information gathering and issue analysis of agricultural sector in Nghe An province, pilot projects regarding contract agriculture and trial operation of AMPF, and it gives substantial directions for the development of FVC.
- In addition, based on the development policy described above, the project formulated twelve "Investment Plan" aiming for FVC development of specific products presuming cooperation between public and private sectors and eight "Capacity Development Plan" aiming to strengthen the capacity of human resources and organizations necessary for developing FVC. Although these A/Ps have different development targets individually, they are interrelated and become a comprehensive plan to promote the development of FVC. By incorporating the A/P proposed by this project into the socio-economic development plan in Nghe An province (2021-2025) and implementing those A/Ps after securing necessary budgets, it can be expected to develop FVC of agricultural and livestock products in Nghe An province smoothly and effectively.

9.2 Recommendation

The project recommends the following points to Nghe An province as a summary of the project.

1. Incorporation of M/P and A/P Developed by this Project into Socio-Economic Development Plan (2021-2025)

The project expects that this M/P and A/P would be incorporated into socio-economic development plan (2021-2025) to ensure those plans to be actually implemented. The table below shows the priorities of A/Ps formulated in this project. Although it is desirable that all A/P should be implemented, Nghe An province should select and implement A/P by referring those priorities if there is an issue on budgetary constraint. Besides, it is recommended to consider the application of development assistance funds such as WB and ADB to implement A/P.

Table 9.1 Priority of Each A/P

Priority	Investment Plan	Priority	Capacity Development Plan
1st priority	AP1: Development of Safe Vegetable Production and Supply System Project	1st priority	AP19: Capacity Development of AMPF Project
1st priority	AP6: Orange Production Improvement Project	2nd priority	AP17: Capacity Development on Administration and Marketing of Agricultural Cooperative Project
3rd priority	AP12: Development of Infrastructure for Agricultural Products Distribution Project	2nd priority	AP18: Improvement of agricultural financing project
4th priority	AP7: Orange Distribution and Marketing Improvement Project	4th priority	AP9: Branding Promotion by Application of Protection of Intellectual Property Project
5th priority	AP2: Development of Producing Area of Rice for Processing Project	5th priority	AP20: Establishment of effective research system for the development of advanced technique project
5th priority	Development of Producing Area of Peanut for Exporting Project	6th priority	AP10: Enhancement of Officers' Capacity on Agriculture Environmental Improvement and Management for the Safety Agricultural Production Project
7th priority	AP11: Improvement of Production and Supply System on Specialty Products Project	6th priority	AP11: Improvement of Veterinary Service Project
8th priority	AP3: Development of Producing Area of Vegetable for Processing Project	8th priority	AP8: Enhancement on the Food Safety Management Capacity of Local Producers and Traders Project
8th priority	AP8: Tea Production and Marketing Improvement Project		
10th priority	AP5: Development of Producing Area of Sesame for Exporting Project		
10th priority	AP9: Development of Cost Competitive Producing Area of Forage Crops Project		
10th priority	AP10: Development of Cost Competitive Producing Area of Industrial Crops Project		

Source: JICA Project Team

2. Public-Private Partnership

The A/P proposed by the project is developed on the premise of private investment in FVC development. Therefore, the project requests for further efforts to attract investment, such as explaining the outline of investment promotion policy and incentive measures as Nghe An province for investors by utilizing opportunities such as matching events planned and operated by AMPF. In addition, the project requests to make a keen effort to develop a system that can promptly provide information such as detailed meteorology data required by overseas investors.

3. Future Vision of AMPF

With M/M exchanged on September 27, 2018, PPC approved that AMPF will be formally organized within DARD from 2019, and decided to allocate necessary human resources, facilities and budget for the AMPF activities. The project strongly expects that AMPF would contribute to the promotion of interchange among FVC actors and contract farming under the supervision of DARD. Then, the project proposes the following two points.

- Currently, AMPF does not have sufficient capacity to collect market information in outside of province including international market. Consideration should be given to utilize the private sector which has strength in this point and external marketing specialist who is fluent in foreign languages.
- At present, not only DARD but also DOIT and Farmer's Union implement agricultural and livestock marketing activity, which is inefficient as the implementation system of the same function. In the future it is desirable to unify AMPF and other relevant departments and develop new platform functions directly under the PPC. By integrating the operation and management of platform function, it is beneficial for investors and FVC actors to simplify the administration procedure

4. Utilization of Guideline of Contract Farming

The guideline of contract farming (attached to Annexes) was prepared based on knowledge and lessons learned from many pilot projects concerning contract farming. It was created for administrators who will be a promoter of contract farming and essential matters for realizing sustainable contract farming and templates of contract form are prepared in the guideline. The project requests to distribute the guideline to related organization with contract farming such as AEC and AES which will take a responsibility to be the main facilitator of contract farming.

5. Expansion of Project Achievement

In this project, knowledge and lessons useful for developing FVC of agricultural and livestock products in Vietnam, such as marketing platform management and support for contract farming efforts, have been obtained. Through activities such as experiences sharing workshops and training guidance by Nghe An provincial officials, these achievements of the project should be transferred to each province in the northern part of Vietnam, which is particularly similar in geographical environment to Nghe An province.