



Food and Agriculture
Organization of the
United Nations



INVESTMENT OPPORTUNITIES OF THE PRIVATE SECTOR ON THE SUSTAINABLE FOOD SYSTEM IN INDONESIA



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ABBREVIATIONS AND ACRONYMS

AICE/AEKI	: Association of Indonesian Coffee Exporter and Industries
Balitri	: Research Center of Industrial and Refresher Plant
BAPPENAS	: National Development Planning Agency
BOD	: Biochemical Oxygen Demand
BPS	: Central Bureau of Statistics Republic of Indonesia
Bulog	: National Logistical Supply Organization
COD	: Chemical Oxygen Demand
Ditjenbun	: Directorate General of Plantation on Ministry of Agriculture
FAO	: Food and Agriculture Organization
FIEZ	: Food Insecurity Experiences Scale
Gakoptindo	: Indonesian Tempe and Tahu Producer Cooperative Association (<i>Gabungan Koperasi Produsen Tempe Tahu Indonesia</i>)
GAP	: Good Agriculture Practices
Gapoktan	: Farmer Group at Village Level
GHP	: Good Handling Practices
GMP	: Good Manufacturing Practices
HACCP	: Hazard Analysis Critical Control Point
HDPE	: High Density Polyethylene
HPDKI	: Indonesian Goat and Sheep Breeder Association
IBCSD	: Indonesia Business Council for Sustainable Development
ICS	: Internal Control System
IG	: Geographical Indications
ISO	: International Organization for Standardization
ITE	: Informasi dan Transaksi Elektronik
Kemenkumham RI	: Ministry of Justice and Human Rights Republic Indonesia
KUR	: Small Enterprise Credit (<i>Kredit Usaha Rakyat</i>)
OECD	: Organization for Economic Co-operation and Development
OJK	: Financial Services Authority
OPT	: Plant Intruder Organism
PDB	: Gross Domestic Product
PPP	: Public Private Partnership
PTPN	: PT Perkebunan Nusantara
PP	: Presidential Regulation
PPH	: Food Expectation Patterns (<i>Pola Pangan Harapan</i>)
Puslitkoka	: Indonesian Coffee and Cocoa Research Center
Rainforest	: Certification Sustainable Farming
RPH	: Slaughterhouse
SDGs	: Sustainable Development Goals
SOP	: Standard Operational Procedures
SPS	: Sanitary and Phytosanitary Measures
Susenas	: National Socio-Economic Survey
SWOT	: Analysis Model/Strategic Planning (Strengths, Weaknesses, Opportunities)
Tempe/Tahu/etc	: Indonesia Traditional Food
UAE	: United Arab Emirates
UMKM	: MSMEs (Micro, Small and Medium Enterprise)
UTZ	: Certification For Coffee, Cocoa or Tea (Sustainable Farming)

EXECUTIVE SUMMARY

Food is part of the basic human needs to survive and function well in life. To consume healthy and nutritious food is part of human rights. It is needed for the welfare of every human being and becomes the foundation for further social and economic development of every nation. Therefore, it is very important to ensure the availability, access, stability and the utilization of healthy food for all population. Inclusive and sustainable food system is needed with the core goal to achieve food security, nutrition and poverty reduction.

Food together with agriculture is also important sector for the achievement of Sustainable Development Goals (SDGs). This sector directly relates to SDG 2: Zero Hunger with the main targets to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. The indicators for achieving the goal and targets of SDG 2 at least can be categorized into five areas:

- a) Prevalence of undernourishment (PoU)
- b) Prevalence of Food Insecurity Experience Scale (FIES)
- c) Increase of agricultural productivity and smallholder incomes
- d) Sustainable agriculture practices
- e) Maintenance of genetic diversity of seeds

The responsibility to build inclusive and sustainable food system that will support the achievement of SDGs does not only rest with the government or state actors. At global level, US\$ 5-7 trillion is needed to achieve SDGs over the next 15 years. There is still a gap of 2.4 trillion in developing countries alone. The private sector contribution is dispensable because the private sector accounts for 90% job, 80% capital flow and 60% of GDP (UNSSC, 2019). This is also the case for the achievement of SDGs in Indonesia. As presented by the Minister of National Development Planning (BAPPENAS) in the 2019 SDG Annual Conference, the need for financing SDGs in Indonesia from non-state actors with high scenario amounts to IDR 7.638 trillion for 2020-2024 or around 38.2%. Even, for 2025-2030 the financing contribution from non-state actors is expected to increase at 42.3% or around IDR 20.197 trillion. It means that the government fund will not be sufficient to finance SDGs in Indonesia.

With the mentioned above concern, the Indonesia Business Council for Sustainable Development (IBCSD) with the support of FAO Indonesia, conducted a study with the main question, “What roles can private sector play in the development of sustainable food system that can support the achievement of SDG 2 in Indonesia?”

The main question above is raised in the context of problems facing the development of sustainable food system to achieve SDG 2 in Indonesia. Increasing demand for food requires bigger agricultural products in one side. In another side, however, there have been new problems that are contrary to these efforts. For example, inputs for agricultural production has been constrained by damaged infrastructure condition.

Out of the total irrigation infrastructure (7.15 million hectares), 46% is said in damaged condition (Ministry of Public Works, 2014). A decreasing number among the youth that have interest to work in agriculture sector is another problem. The age of farmers above 45 years old reaches 64.2% (BPS, 2018). Climate change also creates new risks for agriculture productivity. Hydrometeorology disasters, such as floods and droughts cause the harvest failures among the farmers.

Indonesia is also still facing triple burdens on the nutrition. According to the data from the Ministry of Health (2018), the prevalence of stunting among children under five years old is still high in 2018, namely 30,8%. Meanwhile, other children suffer obesity with its prevalence at 8,0% in 2018. Another burden is the prevalence of anaemia among pregnant women is still very high at 48,9% in 2018 due to lack of micro nutrients.

To analyse the roles of private sector in the sustainable food system that can support the achievement of SDG 2 in Indonesia, this study uses five commodity samples. The commodities are soybean, coffee, shrimp, sheep/ goat (small ruminants) and mangoesteen. The selection of these commodities is based on the consideration on a number of aspects that can be linked to the SDG 2 indicators: price stability, potential market at both domestic and overseas, domestic nutrition needs, and climate suitability, local wisdom and consideration of environmental sustainability.

The current situation on the value chain of the five selected commodities shows the gaps that can be the business opportunities for the private sector involvement and investment.

1. Soybean

The soybean consumption increases reaching to 2,24 million tons per year. This high demand, however, is not followed by sufficient production from the local producers. Local producers can only supply 65,61% so that import has to be done to meet the domestic needs. They are mostly still in the Java island. Farmers in different regions in the past grew different varieties of local soybean but now they do not do the same because the local soybean price cannot compete with the imported one. Low and unstable production of soybean in Indonesia is also caused by the decrease of agricultural land that can be used for growing soybean.

2. Coffee

Indonesia has around 21 coffee varieties that have Geographical Indications (IG) from the Ministry of Law and Human Rights. Coffee is a superior export commodity in industrial crops in Indonesia. In 2017 the coffee export reached 467.790 tons with the value of US\$ 1,19 billion. The domestic consumption of coffee products increases 7% per year based on the Ministry of Industry projection. This significant increase, however, is not balanced with the production increase, namely only 1-2% per year. The coffee plantations are also old already and need to be rejuvenated.

3. Mangoesteen

Mangoesteen is also part of superior export commodities that has big demand in international market, particularly China. The mangosteen export, based on the data from the Ministry of Agriculture in 2018, reached 60 thousand tons or increase 553% from 2017 which was only 9,167 tons. This export constitutes 38% of the total national production in 2018. Only the challenge is how to improve the quality and quantity of the mangoesteen products through control of plant diseases, provision of land for increased plantation and post-harvest technology.

4. Vaname shrimp

Vaname shrimp is food commodity that both contributes to meet the domestic animal protein needs and to increase the national export value. Most of the Vaname shrimp products (90%) are exported and only 10% are sold to the domestic market. The challenge is how to increase this shrimp products by providing more variety of shrimp seeds and increased facilities for shrimp cultivation so that increased shrimp productivity will contribute more for the domestic animal protein needs and increased exchange reserves from the export.

5. Sheep and goat

There is also increasing demand for the sheep and goat commodity in both domestic and international markets. The export of this commodity does not only reach the South East Asian countries, such as Malaysia, Singapore and Brunei Darussalam but also reach the Arab Saudi market. For the domestic needs itself, the productivity of this commodity needs to be strengthened. Among ASEAN countries, the average consumption of goat meat in Indonesia is still relatively low with 0.4 kg compared to 1kg in Malaysia and 1.7 kgs in Vietnam. The challenge is how to improve the productivity of this commodity by providing improved financial support to farmers and improved technology in the entire value chain.

GENERAL OVERVIEW

1.1. Background

Indonesia is one of the United Nations member states that has commitment and adopts the 2030 Agenda for Sustainable Development. The President Regulation No. 59 was issued in 2017 as legal framework for the implementation of SDGs in Indonesia giving mandate to the National Development Planning Ministry (BAPPENAS) as the implementation coordinator. Since then, the efforts for the SDGs achievement has been mainstreamed and integrated into the National Medium-Term Development Plan for 2015-2019 and later on for 2020-2024. The Indonesian Government has also developed Road Map and National Action Plan to guide the achievement of SDGs at both national and regional levels. Being aware that SDGs are not merely the state responsibility, the Indonesian Government has also engaged non-state actors to participate in the planning and monitoring of the SDGs National Action Plan.

Food and agriculture is a key sector to achieve the SDGs, also in Indonesia. This sector directly relates to the achievement of SDG 2: Zero Hunger that includes to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture. Food and agriculture can also contribute to the achievement of other goals, such as SDG 1 (No Poverty), SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 15 (Life on Land) and Goal 17 (Partnership for the Goals).

Agriculture sector, including forestry and fisheries also plays important role in the Indonesian economic. The sector contributes 13,80 % to the national GDP or 25,84% together with agriculture-based food and beverages industries (BPS, 2019). One of the leveraging factors for the increased GDP in agriculture sector is the export. The value of agricultural export in 2019 increased 25,19% compared to previous year, namely at US\$ 0,32 billion. The increased agriculture export value becomes important variable that contributes to the national export increase of 12,42% in 2019 or at the value of US\$ 14,74 billion. However, the Indonesian export growth is still seen as slow with under 7%. One reason for this is due to the low productivity and high dependence on import.

Agriculture sector also provides the highest employment in Indonesia with around 35% people above 15 years old working at this sector. However, the high employment in agriculture sector is not followed by high income. The average income of farmers is still seen as small, namely at around Rp 1,761 million per month. The farmer households are dominated by smallholder farmers (*petani gurem*). They just own the agricultural land less than 0,5 Ha. Small holder farmers consist of around 55,33% from the total farmer households, including forestry, livestock and fisheries sectors.

Indonesia is going to face more complex challenges and risks in food and agriculture sector. Demand on food will increase in line with increasing population growth that will reach 311-318 million by 2045. Increasing demand for food requires bigger agricultural products in one side. But in another side, there are risks and challenges that are contrary to these efforts. For example, inputs for agricultural production has been constrained by damaged infrastructure condition. Out of the total irrigation infrastructure (7.15 million ha), 46% is said in damaged condition (Ministry of Public Works, 2014). A decreasing number among the youth that have interest to work in agriculture sector is another problem. The age of farmers above 45 years old reaches 64.2% (BPS, 2018). Urbanization has been increasing with 49,9% population live in urban area in 2010 and is projected to increase by 69,1% in 2045 (Bappenas, 2019). Moreover, there has been the conversion of agricultural land for other purposes. The availability of agricultural land has been decreasing significantly from 7.750.999 Ha in 2013 to 7.105.145 Ha in 2018 (Ministry of Land and Spatial Planning, 2018). Climate change also creates new risks for agriculture productivity. Hydrometeorology disasters, such as floods and droughts cause the harvest failures among the farmers. Another challenge among farmers on the ground is the emergence of plant-harming organism that can also threat the agriculture productivity.

On the nutrition, Indonesia is also still facing triple burdens. The prevalence of stunting among children under five years old is still high in 2018, namely 30,8%. Meanwhile, other children suffer obesity with its prevalence at 8,0% in 2018. Another burden is the prevalence of anaemia among pregnant women is still very high at 48,9% in 2018 due to lack of micro nutrients (Ministry of Health, 2018).

The Government of Indonesia is committed to ensuring more sustainable food system and implementing intensive agricultural practices that increase productivity and maintain ecosystems, strengthen adaptive capacity to climate change, natural disasters and progressively improve the quality of land by developing sustainable agriculture. This goal will be focused on food commodities including Rice, Corn, Soybeans, Chili, Shallots, Peanuts, Cassava and Jalar, Vegetables, Fruits, Cooking Oil, Sugar, Meat, Eggs, Milk and Fish (Food Security Body, Ministry of Agriculture, Strategic Plan of Food Availability and Insecurity Center, 3rd Revision, 2018).

1.2. Conceptual Framework: Role of the Private Sector in Sustainable Food System to Support SDG 2

The private sector has pivotal role in the development of sustainable food system that supports the achievement of SDG 2 in Indonesia. There are three major concepts that will be used as analysis tools in this study: sustainable food system, private sector role and SDG 2.

First, the concept of sustainable food system here integrates the idea of sustainability in the food system. Food system is understood as the interlinked value-adding activities with their entire range of actors involving in the food products from production, processing, distribution, consumption and disposal. Then, sustainability is defined as the intersection of three dimensions: economic sustainability, social sustainability and environmental sustainability.

The FAO food system wheel as shown in the figure below can help to understand comprehensively sustainable food system by taking into account all stakeholders, actors, elements and their interwoven linkages and related effects. The central goal of sustainable food system is to achieve food security, nutrition and poverty reduction. The achievement of this goal will be sustained by unseparated three dimensions of sustainability: economic, societal and environment.

As described in this figure, the overall performance of sustainable food system will be determined by the conduct of the interlinked actors in the food system structure. The food system structure itself consist of core system, societal elements and natural elements. Core system refers to the entire activities of the food products flow from production, aggregation, processing, distribution, consumption and disposal. The services activities supporting this flow are also parts of core system. The core system activities are operating in both societal and natural context. The societal context includes socio-cultural norms, policies, laws and regulations, infrastructures and organizations and environmental. And the natural context deals with air, soils, water, climate, ecosystem and genetics.

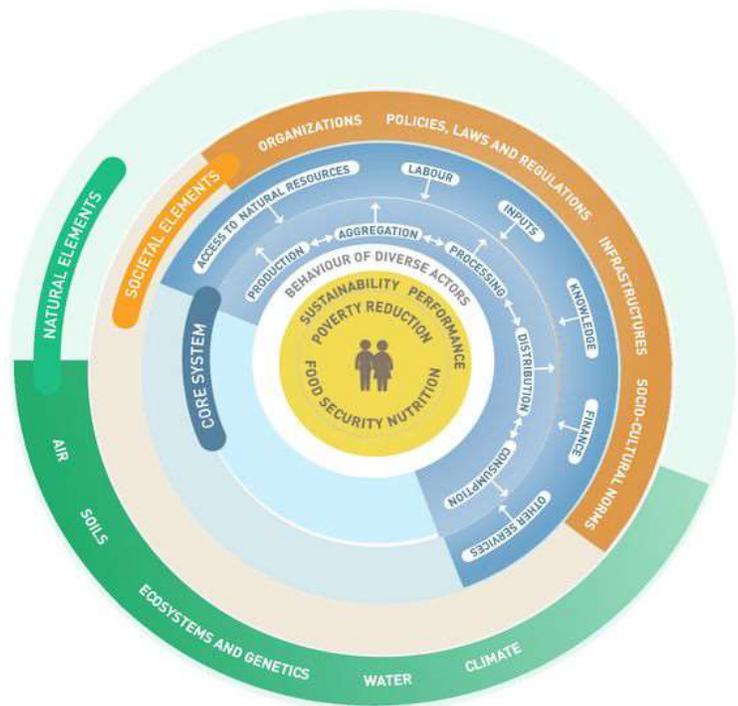


Figure 1. Food System Wheel (Source: FAO, 2018)

Second, the role of private sector here is understood as their involvement and investment in the in the value chain of the core system ranging from production, aggregation, processing, distribution, consumption to the end of life management of their products. The role of private sector also includes their role in providing supporting services to the value chain, such as services in finance, product inputs, knowledge, human and natural resources. And the private sector itself is defined as not only big and multi-national companies but also micro, small and medium enterprises as well as cooperatives.

Third, the concept of SDG 2 refers to the targets and indicators of the Sustainable Development Goal 2: end hunger, achieve food security, improved nutrition and promote sustainable agriculture. To help analyse the role of private sector in five selected commodities, the originally 14 complete indicators of SDG 2 will be categorized into 5 groups as follow:

1. Prevalence of undernourishment (PoU)
2. Prevalence of Food Insecurity Experience Scale (FIES)
3. Increase of agricultural productivity and smallholder incomes
4. Sustainable agriculture practices
5. Maintenance of genetic diversity of seeds

1.3. The Purpose of the Investment Opportunities Report

This Investment Opportunities Report basically aims to respond the main question of this study, “What roles can private sector play in the development of sustainable food system that can support the achievement of SDG 2 in Indonesia. This question is raised in the context of problems facing the development of sustainable food system to achieve SDG 2 in Indonesia as described in the background.

The basic assumption of this study is that private sector can play pivotal role in the entire activities of the value chain in the food products from production, processing, distribution, consumption to the disposal and the private sector also can play important role in the supporting services to the value chain. With such roles, the private sector can support the achievement of the central goal of sustainable food system, i.e. to achieve food security, nutrition and poverty reduction and thus also support the achievement of SDG 2 with the indicators as explained in 1.2 above.

This study uses the samples of selected five commodities to analyse the roles of private sector in the sustainable food system supporting the achievement of SDG 2 in Indonesia. The commodities are from different food commodity groups as described in the figure beside.

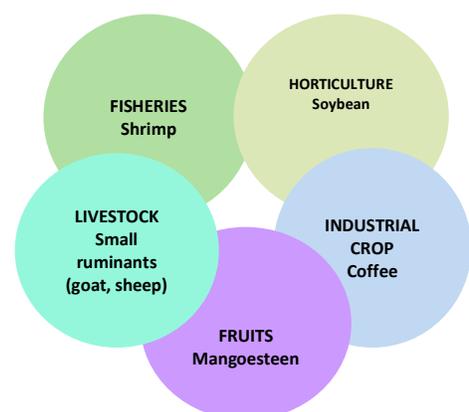


Figure 2: Food Commodity Groups

The justification for the selection of these commodities is based on the following considerations:

- a) Fulfilment of domestic needs: selected commodity meets the domestic (protein) needs
- b) Price stability (not affected by inflation): selected commodity has price stability and not so much affected by inflation
- c) Market potential: selected commodity has market potential at both domestic and overseas so they can increase the farmer income
- d) Consider climate suitability, conserve natural environment and local wisdom: selected commodity is suitable with local wisdom/ culture and climate and do not harm the natural environment

For the locations of the commodity samples, basically there is no specific consideration, except to follow the locations in which the selected commodities become the flagship or superior commodities. Based on the desk review data, East Java region is seen as good for the shrimp, coffee and soybean commodities and West Java is for small ruminants and mangoesteen.

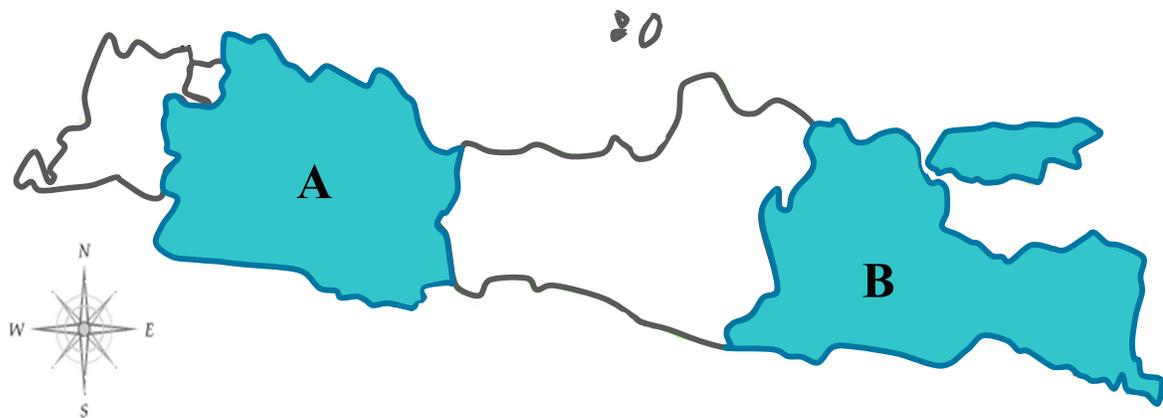


Figure 3: Locations of the commodity samples in West Java (A) and East Java (B)

The Report on *Investment Opportunities of the Private Sector in Sustainable Food System to Support the Achievement of SDG 2 in Indonesia* is formulated as exercise to mobilize the involvement of the private sector to build inclusive food system in Indonesia through potential investment in the value chain of selected commodities, i.e. soybean, coffee, shrimp, sheep/ goat (small ruminants) and mangoesteen. The report contains the information and analysis to be consider for investment opportunities:

- a) Informations on the current condition of the value chain in each selected commodity with mapping of relevant actors and their roles
- b) SWOT analysis on each selected commodity
- c) Analysis on the investment opportunities for the private sector in the value and supply chains of the selected commodities and their impact for the SDG 2.

COMMODITY VALUE CHAIN LANDSCAPE

2.1. Business Environment Situation in Commodity Value Chain

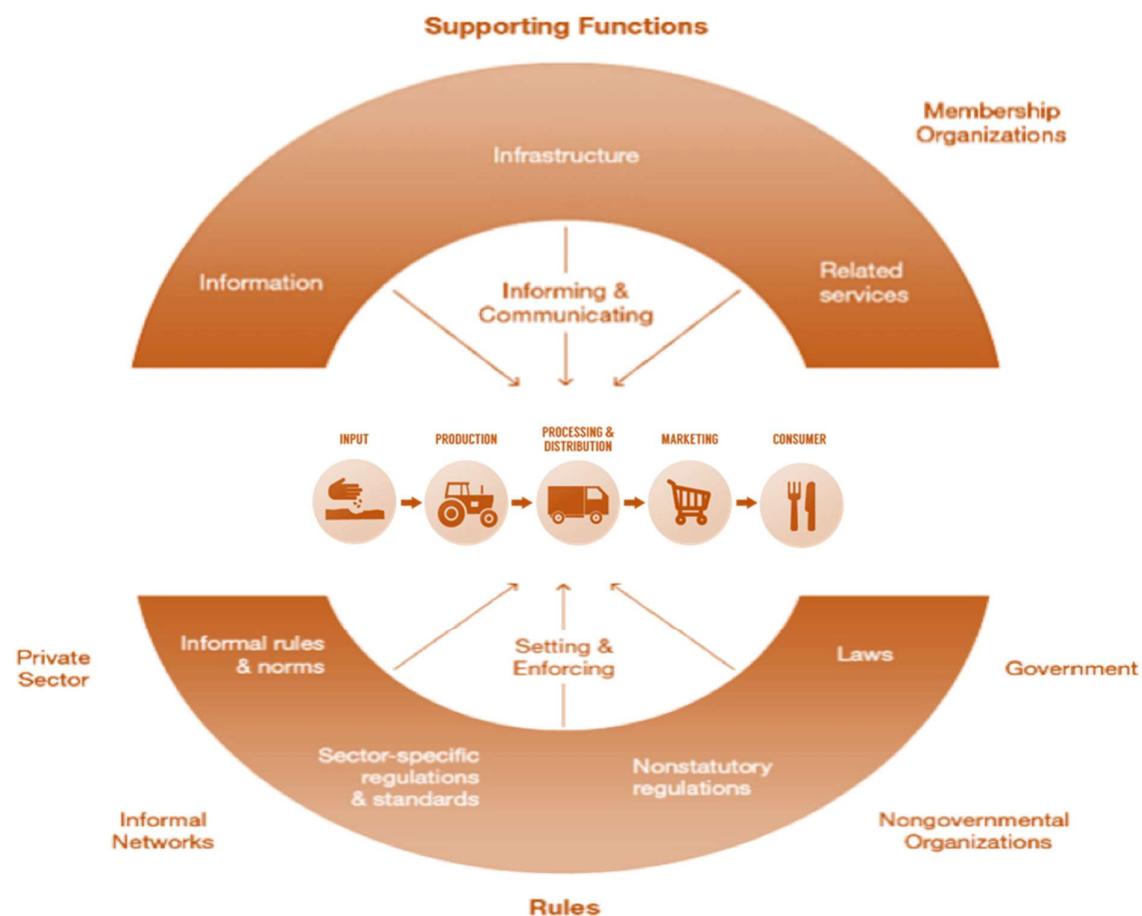


Figure 4. Commodity Value Chain and Supporting Lens - Investment Research Approach
(Source: IFOAM 2015)

Commonly, in the value chain of soybean, coffee, mangosteen, Vaname shrimp, goat and sheep commodity, the actors are the same or it called commonality of value chain. The on-farm level consists of **Smallholders** as the raw material producer/commodity cultivator. Meanwhile, most of the production input (seed/seedlings and fertilizer) still produced by the **Seed/Seedlings Industry** and **Government** assistance.

Most of smallholders yields then distributed to the **Collectors/Commodity of Collectors**. The collectors are categorized as small collector, middle collector and big collector depend on the the capital supply, storage capacity and distribution scale in village, subdistrict and district level. Only a little smallholder who sell their yields directly to processing industry and exporter. Furthermore, the collectors/collector communities will sell their product back to micro, small, and medium enterprises (UMKM/SMEs), processing industry and exporter. Usually, the collectors/collector community have signed the mutual contract as the price and quality specification needed.

Processing Industry and SMEs being the actors in off-farm sector where the raw material is processed as the innovation and product speciality needed by the **Consumer**. The processing industry needs technology instrument from the sorting and processing machine, quality control, packing, storage and distribution. This process is different with the proces in SMEs that dominatd by traditional equipments and tools. Five commodities that observed has a high export value will be taken by **Exporter** who will be the actor here.

Each commodity actor has different situation, character and regulation that effect the value chain and commodity supply chain.

Now, the five object commodites face the primary obstacle that is the **low productivity and commodity quality** (*give effect to the low supply of food and nutrition*). These are some major factors that effect the low productivity and quality:

- The lack of research and availability of superior seeds that fit with the micro climate condition in the production area;
- Limited land ownership for the smallholders (Indonesian farmers are dominated by smallholders);
- The lack of knowledge and Good Agriculture Practices (GAP) and Good Handling Practices (GHP) application by the smallholders;
- The decrease of soil quality and high attack by plant intruder organism;
- Most of the five commodities are stil being side commodities for the smallholders especially coffee and mangosteen commodities that many of the crops are old plants and have low productivities;
- The lack of technology input and mastery in crop cultivation and post harvest; and
- The weak market access, capital access and ecosystem law that support the commodity development which most of smallholders still be the development object.

Value chain and resistance analysis in each commodity will be explained in this sub-chapter:



2.1.1. Soybean Commodity

A. National Situation of Soybean Commodity

In 2017-2018, the soybean was still being the strategic commodity. The high demand of national soybean commonly to fulfill the need of tempe, tahu and soybean sauce ingredients. Unfortunately, the rise of national soybean demand wasn't followed by the increase of domestic soybean production. Based on the data from Outlook of Crops and Horticulture 2017- Indonesian Ministry of Agriculture and Development Analysis of Staples in Domestic and International Market - Indonesian Ministry of Trade, the national soybean production in 2013-2017 decreased averagely 6.3% per year. Significant decrease happened in 2017 by 36.90%, from the production in 2016 or from 859.65 thousand tons to 542.45 thousand tons in 2017. Production decrease was the excess from the decrease of soybean harvest area large in 2017 by 38.13% or about 220.01 thousands hectares from 576.99 thousand hectares in 2016 to 356.98 thousand hectares in 2017.

During the period of 2013-2017, the soybean production in Java Island was still dominating the production of all with the production of 62.97% from total of national soybean production.

Main center of the soybean production in Java island in 2013-2017 located in East Java Province which contributed around 37.33% from the average of national production that was about 820.05 thousands tons. The next province level was filled with Central Java Province with 13.21% production and West Java Province with 10.10% production.

The development of processing industry (especially small and middle industry) inline with the increased consumption of soybean that reached more than 2.24 million tons each year. The domestic soybean production only reached about 65.61% of domestic consumption (FAO, 2013), the rest was supplied by the import. The soybean production instability in Indonesia caused by a decrease in soybean harvest area which is not balanced with an increase in soybean productivity. (Malian 2004).

B. Value Chain of Soybean Commodity

Generally, the value chain actor in soy food system are including farmer, trader (in village to district level), cooperative, BULOG, distributor, importer, tempe and tahu craftsmen and other food processing that explained in the graphic below:

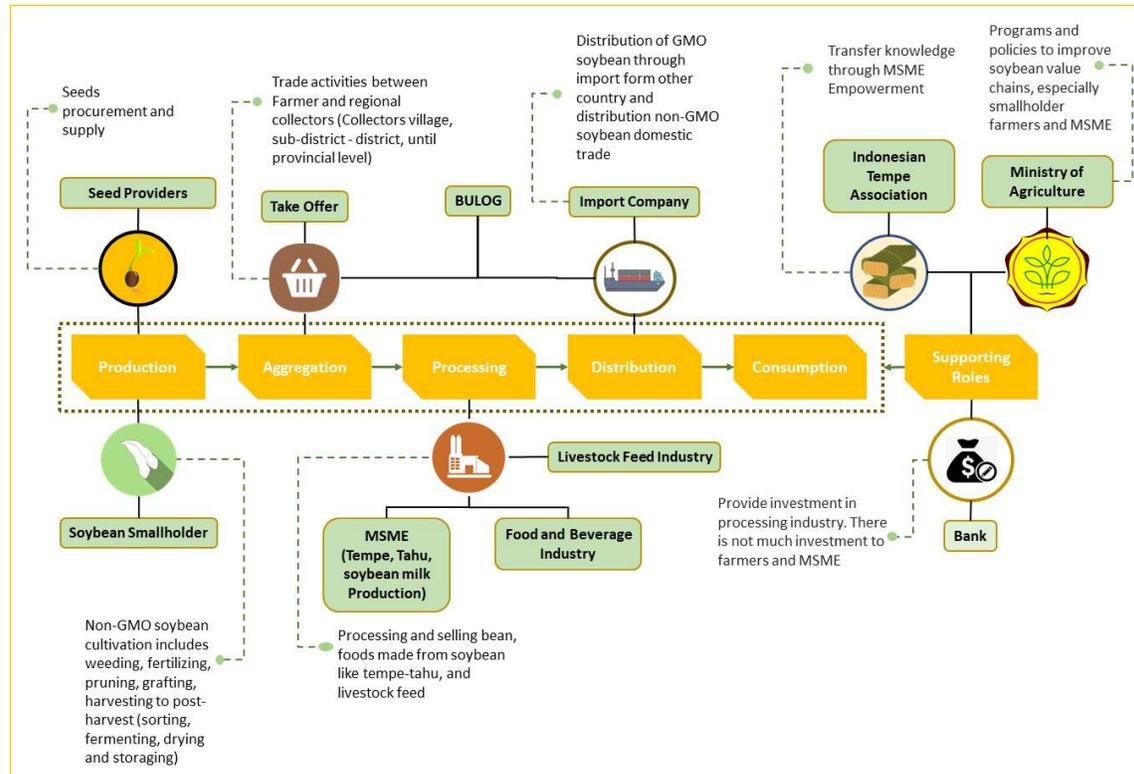


Figure 5. Soybean Value Chain (East Java Province)

Production (Smallholders)

Most of the soy seed supply are come from the industries and government assistance. The rest of the supply are from the farmer. The types of soy varieties that are commonly cultivated by the farmers are in Anjasmoro and Klokos. The new variety, Gepak Kuning, that has a fast planting period and high productivity is still less desirable because most of the farmers are loyal to only one variety. The average of harvest period of soy are 75 to 90.days.

The problems and challenges in icreasing soy production and quality:

- The lack of availability of qualified local seeds;
- The soy seed distribution to the farmer is in uncertainty. Moreover, the seed distribution from the government is done in unappropriate time of the planting period so the seeds given then sold to the tempe/tahu craftsmen (consumption);
- The decrease of soy plantation area. Soy farming is considered not giving more profit so many farmers turn to other more profitable crops. The other reason is, they see the soy as only a rotating crops that hasn't been intensively cultivated yet and still have uncertain food commodity price in farmers level;

- The deterioration of soil health and the high attack of plant intruder organism, the high use of chemical fertilizer and chemical pesticides that not according to recommended dosage; and
- The soybean drying process is done manually (dried in the sun) takes a long time and high risk of damage to seeds in rainy season or unfavourable weather for drying process.

Aggregation (Village-District Level Collectors, BULOG, Cooperative and Importer)

Most of the farmers’s soy crops sell directly to collectors and middlemen in the village/district level and then sell to big level collectors in district/provincial level or directly sell to processing industry. The sales are done in the form of stemmed soybeans (water content + 17%) or soybeans (water content + 14%). Big collectors has sell-buy function, sorting, packing, trasporting and unloadeing (profit margin + 10%). Besides, BULOG and Cooperative also have the same role, as the soybeans collectors from the farmers dan middlemen in village level (profit margin of BULOG + 3% and cooperative + 8%).

In national level, the soybean market tends to oligopoly, gives bad impact on supply instability and the price of imported soybean (Nuryanti, 2007). Oligopoly is a form of market where there are only a small number of sellers and usually dominated by only a view collectors. As a result, there is price game played by the soybean cartel. Moreover, the fulfillment of soybean needs through imports is only controlled by 14 importers who hold import licenses. Then that’s why, actually by controlling the market by 65% so the 14 importers will have a high bargaining power in determining soybean prices in the market.

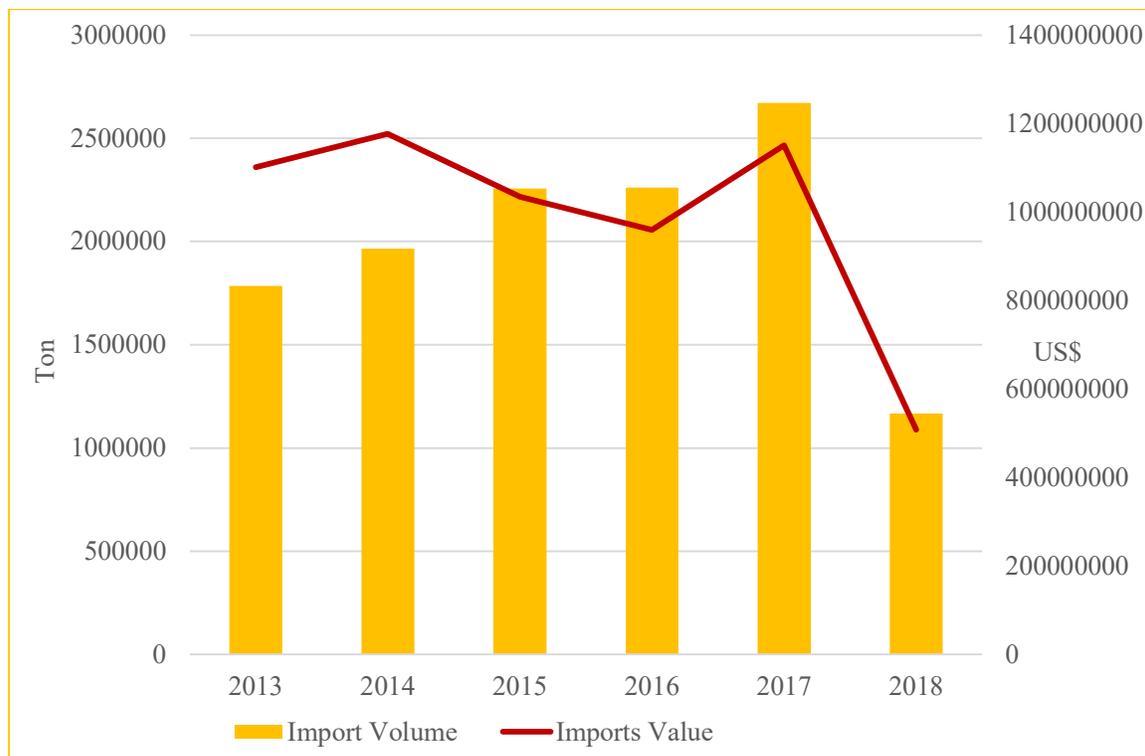


Figure 6. Volume and Import Value of Indonesian Soybeans (2013 – June 2018)

Source: Badan Pusat Statistik (BPS), 2018

Processing (Processing Industry)

Soybeans commodity, for food processing industry in Indonesia commonly used as the raw material for making tempe, tahu, soysauce, tauco, soy milk, cereals, etc. Tempe/tahu occupies the largest proportion as processed products made from soybeans. Based on the data from Indonesian tempe and tahu producer cooperative association/Gabungan Koperasi Produsen Tempe Tahu Indonesia (Gakoptindo), the production volume of tempe and tahu to the end of 2019 can reach 5.7 million tons from the realization in 2018 that reach 5.5 million tons. The portion of tempe production from the soybean is 70% and the rest 30% is for tahu production. Tempe/Tahu processing industry is dominated by small-medium level enterprise that consist of more than 1 million craftsmen. The soybean raw material supply is taken from the big trader or the trader in sub-district level. Nowadays, the processing industry (UMKM) face the following obstacles:

- The obstacle of uncertain local soybean quality, the tempe/tahu taste actually depends on the soybean quality (it's difficult to get the good quality soybean unless the ones with the high prices);
- The insufficient hygiene of production process, the domestic tempe and tahu producers equipment must revitalized their tools from the used oil and lubricant storage drums into the stainless steel equipment; and
- The lack of waste treatment technology, because most of the industries area in small to middle level industry. (BOD level about 5,000 – 10,000 mg/l, COD level about 7,000 – 12,000 mg/l).

Note:

- a) Based on Presidential Regulation (PP) No. 44 Year 2016 concerning List of Closed Business Sector and Opened Business Sector with Requirement in the Field of **Investment the tempe industry is not open to foreign investors who wish to invest their capital**. If calculated, the domestic tempe industry is worth around IDR 48 trillion – 60 trillion at the end of 2018.
- b) Gakoptindo: Encourage the Ministry of Trading to assist the promotion of local tempe and tahu selling by Indonesian Trade Promotion Center which has been expanded to almost 50 countries in the world. The number of producers that can export tempe and tahu will be increased around 5%-10%, in other word, qualified producer exporter of tempe and tahu will be increased around 7,500-10,000 units in 5-10 years.

Distribution (Infrastruktur dan Jasa)

- New farmers use high quality superior seeds if there is supply or assistance from the government that commonly related with the production development program. When the program end, the farmers will back to use low quality seeds. This will continuously effect the soybean production development effort.
- The exist soybean seeds production system has not been able to provide enough seeds in the appropriate time and has not been able to distribute well the seeds to all plantation area and give affordable prices.

- The supervision and quality control system in the superior soybean seeds distribution to the farmers level is still low. It means that the supply chain of source seeds to be dispersed seeds needs to be escorted to the lowest chain (farmers), to guarantee that the seeds not used inappropriately (consumption).

Consumption (Household Consumer)

The purchase pattern in soybean by the household consumers is very low. Most of the consumer tend to buy processed soy products such as tempe, tahu, soysauce, tauco, soymilk, cereal, etc. Based on data from SUSENAS (2011), the amount of household expenditure for tempe and tahu consumption is only 3.8% but if mixed with the consumption for soysauce, oncom, tauco and soy bean would become 6.8% from Indonesian domestic household expenditure.

Based on BAPPENAS data (2015) in a study called Identification of Food Security and Consumer Preferences for Consumption of Soy Staple Food, the soy consumption by Indonesian society surely will be increased each year by follow considerations: increasing population, increase in per capita income and public awareness of food nutrition. Compared to animal protein, the soy protein is cheap and affordable for most of the society. Then, according to Food Expectation Patterns (Pola Pangan Harapan/PPH) year of 2000, society consumption to bean was raised to 35.88 grams per day per capita compared to 13.00 grams per day per capita in 1987 as recommended by FAO. Besides, household consumers have better perception about local soy quality. Meanwhile, the perception to price affordability not effect the the consumer preference. They still considered that import and local soy has a good quality dan has affordable price.

Supporting Roles (Association and Banking)

- **The Gakoptindo** will encourage the cooperatives and UMKM in producing export quality tempe and tahu. Gakoptindo encourage the craftsmen to revitalize their equipments from the used oil and lubricant storage drums into the stainless steel equipment to produce qualified and hygiene product.
- **The Banking System:** The capital resource of soy processing mostly (57%) come from own capital, only 26% of them come from the banking capital. This will be an opportunity for the banking system to contribute in soy development effort by financing with the small enterprise credit (Kredit Usaha Rakyat-KUR).

Note:

Quarter I-2018, lending to the agricultural sector experienced quite high growth. Based on Indonesian banking statistics released by the Financial Services Authority (OJK) credit to the agriculture, hunting and forestry sectors reached IDR 319.6 trillion as of the end of March 2018. The amount has increased by 12.35% on an annual basis or year on year (YoY) from March 2017 position of IDR 284.46 trillion. Banking initiatives:

- PT Bank Mandiri Tbk is collaborating with the State Logistics Agency (Bulog) to prepare financing as working capital for farmers on Bulog's on-farm partner (7% interest).
- BRI has formed a partnership with PT Pertani (Persero). BRI uses the People's Business Credit (KUR) scheme for farmers. KUR to farmers in Yogyakarta with an average credit ceiling of IDR 10.5 million to IDR 12.5 million per hectare for rice cultivation.



2.1.2. Coffee Commodity

A. National Situation of Coffee Commodity

Coffee is a superior export commodity in plantation sub-sector that play important role in national trading and economic. Coffee gives a real contribution as a foreign exchange earner. By the statistic data (Directorate Generale of Plantation, 2016), Indonesian coffee production in 2016 reached 639.30 thousand tons (consists of 81.8% robusta coffee and 18.13% arabica coffee). This production was come from 1.23 million hectares of coffee plantation area that 95.37% was managed by society plantation with the ownership less than 1 hectare, meanwhile the rest area were managed by private corporate plantation about 2.49% and the government corporate plantation about 2.25%. Nowadays, Indonesia has at least 21 types of coffee categorized as coffee speciality that has been certified in Geographical Indication from the Ministry of Law and Human Rights as a qualified and specified product.

Based on national total production, Java Island is the second biggest coffee producer after the Sumatera Island that produce 108,358 tons hectares with total area 187,181 hectares (Plantation Statistic 2015-2017). The biggest coffee producer in Java is East Java Province with total production about 65,414 tons and plantation area 106,564 hectares. The District of Banyuwangi being the biggest district coffee producer with total production reach 13,839 tons with total plantation area 17,979 hectares. This position followed by the District of Jember with total coffee production about 13,863 tons with total plantation area 18,284 hectares.

The potential of the coffee industry in Indonesia and the market access is still widely opened. In global platforms, national coffee export remain to increase every year. In 2017, the export reached 467,790 tons or averagely about US\$ 1.19 billions, some to these destination countries: United States, Germany, Italy, Japan and Malaysia. In the mean time, the ministry of industry projecting that the growth in consumption of processed coffee products in the country will increase averagely 7% per year.

B. Value Chain of Coffee Commodity

Commonly, the value chain actor in coffee food system consists of farmer, collector (village to district level), cooperatives, exporter, UMKM (coffee shop, roasting, packaging) and coffee processing in industrial level that explained in the graphic below:

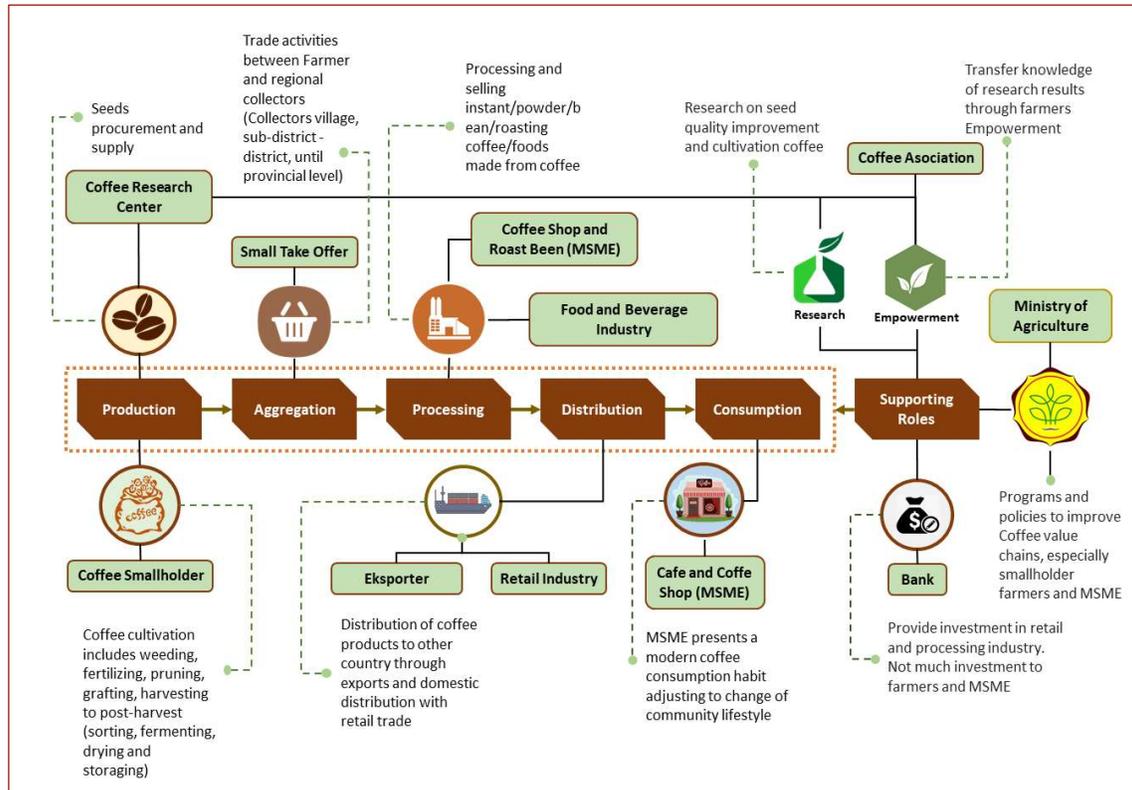


Figure 7. Coffee Commodity Food System

Production (Smallholders, Puslitkoka/Coffee and Cocoa Research Center and PTPN XII)

The next step of coffee cultivation done from the procurement of seeds, weeding, fertilizing, pruning, grafting, harvesting to post-harvest (sorting, fermenting, drying and storing). The seeds supply come from the government, PTPN XII, Research Center of Coffee and Cocoa (Pusat Penelitian Kopi dan Kakao / Puslitkoka) and the farmers themselves. One of the coffee superior seeds provider in East Java is Puslitkoka. Puslitkoka plays role in upgrading the single variety coffee quality and having specialty coffee quality. The superior seeds from the Puslitkoka research sold and distributed to many places to be developed and empowered as its potency and geographical character. Some varieties that has been developed by Puslitkoka are Gayo 1, Gayo 2, Komasti, Andongsari, Hibiro, 795, AS2K, etc. But still, the smallholders face following production challenges:

- The low plant productivity caused by many old, damaged and unproductive plants. (Robusta coffee productivity: 0.53 ton per hectares from total potential around 2 tons per hectares, Arabica coffee: 0.55 ton per hectares from total potential around 1.5 tons per hectares).
- The lack of superior seeds development (especially for specialty coffees).

- The increased attack of plant pests, the low of cultivation technical mastery and post-harvest technology with the weak organizing in farmers level.
- The limited of financial access for the farmers.
- The coffee seeds supply chain now is still not efficient yet because still has a long chain. (commonly, the farmers sell their crops directly to the collector in the village or sub-district level in green beans form without the sorting).
- The farmer's coffee quality is unstable because the farmers do not have sufficient knowledge to process coffee with the same quality in each harvest.

Note:

- Due to Puslitkoka being under the BUMN, the Research Center of Industrial and Refresher Plant (Balai Penelitian Tanaman Industri dan Penyegar / Balittri) is currently encouraged to become a coffee breeder and research institute in Indonesia. The big challenge at this time is the production of superior seeds in accordance with the local context of each region, given the different agro-climate regions in Indonesia. It also produces seeds that are adaptability to climate change.
- The first stage of Nawacita succeeded in building 1000 independent seedling villages. The second stage of Nawacita will provide 500 million seedlings provided by the Ministry of Agriculture. It is hoped that the independent villages of the seedlings will be able to answer coffee productivity through superior seeds in accordance with the local context.

Aggregation (Village, Subdistrict, District and Provincial Collectors, Gapoktan, Cooperative of PTPN XII, Puslitkoka, Balittri and Exporter)

Coffee commodity supply chain has a different supply chain with other commodity. Coffee supply chain has many variety/type with a long chain and uneffective. Besides, the types of coffee (arabica and robusta) and their qualities (specialty) also effect the coffee supply chain itself.

Commonly, the market actors of coffee commodity are collectors from village, sub-district, district and provincial level. They build relationships with the collectors below. There is no detail area determination to each collector but the subdistrict collectors have strong networking to the villages in their subdistrict areas to outside villages. The collectors in sub-district level build relationships with the collectors below in the form of capital investment to village collectors. Collected products in sub-district level then distributed to district collector or directly to the exporter or industrial consumer in limited amount. Most of coffee product in this aggregation position in the form of green beans that have been sorted as their consumer needs. The long supply chain of coffee bean effect the quality control weakness where many coffee bean mixing case happened in collector level. This case will effect in decreasing the trust of market or consumer.

Besides, other market scheme created by farmers organization (Gapoktan) or farmers cooperative in village or sub-district level. Gapoktan and cooperatives facilitate the coffee bean selling from the member farmers then sorting it to sell to the district/provincial collectors, exporter or directly to industrial consumer.

On the contrary, the big plantations have special unit to local market or export and have good relationships directly to foreign buyers so they have a relative short distribution chain.



Figure 8. Indonesian Coffee Export Volume and Value (1998 – April 2019), *Source: Badan Pusat Statistik (BPS), 2019*

[Processing \(UMKM/Café and Coffee Shop, Processing Industry\)](#)

In the country, the coffee processing is quite variable (123 coffee processing industries – data from Ministry of Industry, 2019), starting from the cafe or coffee shop that selling instant or powder/bean/roasting coffee to big level coffee industry. The processing sector play important role as the market and consumer education facility.

The industry actors face following challenges:

- The fast speed of changes in demand that need high quality, big quantity, equal size, environmental friendly, product continuity, timely delivery and competitive prices. In the same time, the coffee farmers still face the low productivity dan harvest quality.
- How to make their coffee and the product created have strong competitiveness inside or outside the country, including how to face the increased consumer demands of nutrition information, health guarantee and food safety.
- Economic manifestation of public awareness of environmental sustainability and human rights.
- Limited coffee bean production facility (machine/equipment: dryer, peeler and sorter), primarily in low to middle level of industry.
- The low implementation of Good Manufacturing Practices (GMP), Hazard Analysis Critical Control Point (HACCP) and ISO, so the product quality is low and inconsistent.
- The lack of product research, innovation and diversification ability as the domestic or international market demands (Figure 7).

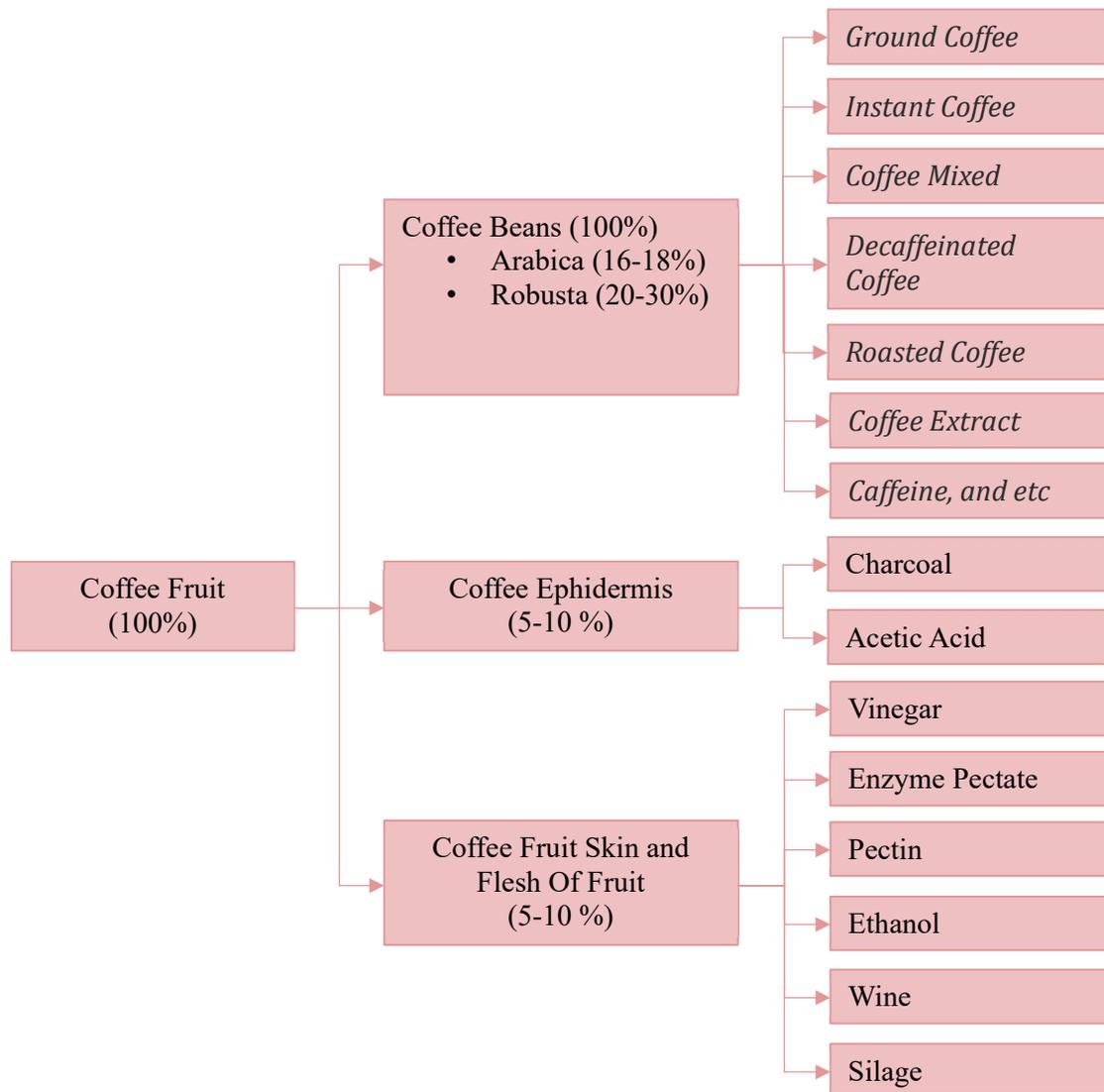


Figure 9. Coffee Processing Industry Tree (Innovation Opportunity)

Note:

Initiative, as an effort to help realize the sustainability of Indonesian coffee production (Sustainable Coffee Production), since 2000, Nestlé has been working with the Indonesian government through the Coffee and Cocoa Research Center (Puslitkoka) in Jember to find and select superior coffee seeds through Genetic Mapping technology, namely a technology that can accelerate the process of finding superior coffee seeds.

Furthermore, Nestlé has donated Somatic Embryogenesis technology, which is a technology for multiplying plants in large numbers in a relatively short time, where the seeds produced will have the same characteristics as the parent. In 2008, the Minister of Agriculture inaugurated the first Somatic Embryogenesis Center for cocoa in Indonesia in collaboration with technology transfer from the Nestlé R&D Center in Tours, France. By Puslitkoka, Somatic Embryogenesis technology is used to accelerate the revitalization process of society cocoa plants.

Distribution (Infrastructure dan Service)

Commonly, the trade pattern of coffee farmer effected by the availability of access and transportation facilities because most of coffee producers (farmers) are in remote areas. Besides, the availability of access also effects the long or short supply chain.

The areas with good transportation access will give good effect to the farmer to sell the coffee directly to big trader/industry (short supply chain). On the contrary, low access will extend the supply chain or commerce where the coffeebean sold to the collectors in village or subdistrict level. These are some of the infrastructure challenges that have to be considered:

- The lack of transportation infrastructure support and conveyance in coffee cultivation business level especially for arabica coffee in highlands.
- The superior coffee seeds distribution hasn't reached the remote areas that being the superior coffee central.

Consumption (Household Consumer)

Based on National Economy Social Survey (Susenas) BPS, coffee consumption in Indonesia was starting to raise 8.25 percent per capita in 2017 to 2018. Moreover, the consumption per capita was predicted to sustain in range 0.864 kilograms in 2019-2020 from 0.798 kilograms in 2017. In the same time, the demand of processed coffee product in food or non food tend to raised in each year as the effect of the increase in the welfare of the middle class community and the change of community lifestyle marked by more modern coffee consumption habit (instant coffee and ready to drink coffee product variant that cause the change in coffee consumption in Indonesia).

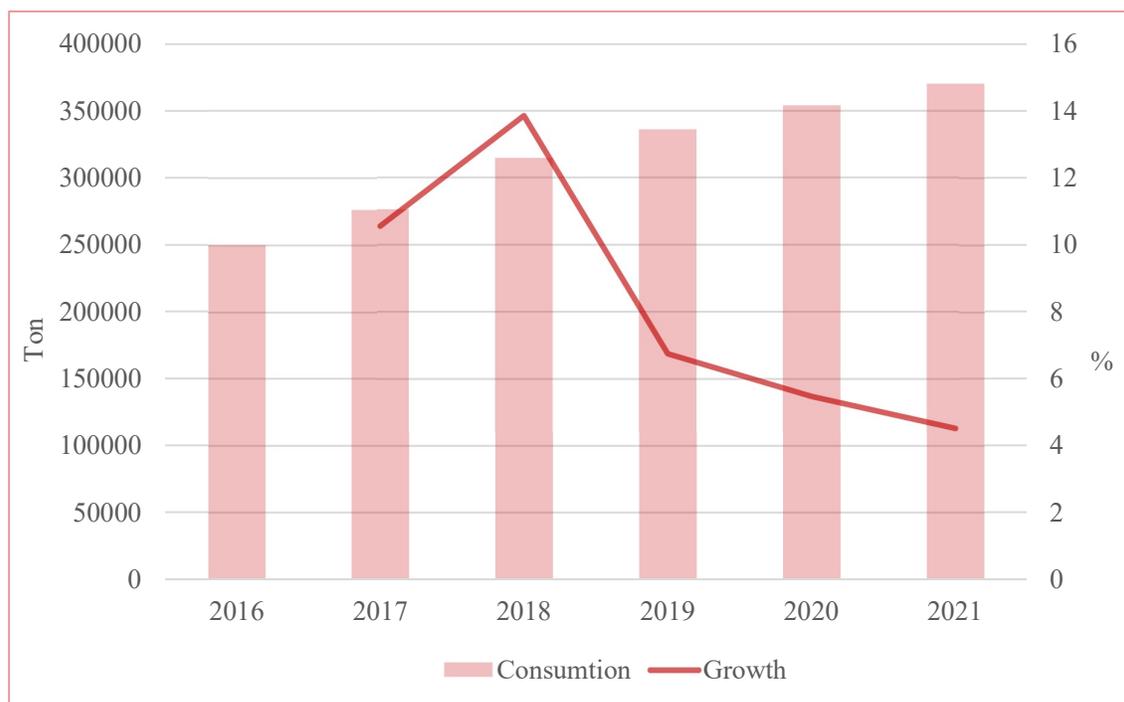


Figure 10. Prediction of National Coffee Consumption in 2016-2021
(Source: Ministry of Agriculture, 2018)

The high market demand of coffee commodity being an opportunity and also a big challenge for the UMKM or the industry because the coffee consumers and lovers now not only looking for coffee taste. Consumer preference has expanded to types, origin and processing of coffee. For example, the arabica coffee lover now has trend that not only enjoy the coffee with its acid taste but enjoy the story of where the coffee comes from, the plantation geographical condition and the processing steps. This is a trend to reach emotional bonding between the consumer and the product consumed.

Especially for the small to middle industry, the coffee specialty development with traceability approach become a power that can gives advantages to improve the productivity and competitiveness in coffee processing industry.

Supporting Roles (AICE dan Banking System)

The main challenge in supporting roles is unoptimal communication forum and coordination between stakeholders especially that which leading to the formation of partnership cooperation. Association of Indonesian Coffee Exporter and Industries (AICE/AEKI) plays important role in Indonesian coffee commerce. AICE is a foundation of all exporter company, coffee processing industry and other coffee companies in Indonesia. AICE playes role in enhancing the general skill and knowledge of the farmers, UMKM and other coffee industry actors. AICE also encourage the partnerships between farmer, UMKM, processing industry, banking system and the government, strengthening market acces and giving recommendation to the policy to support the partnerships.

The financial access come from banking system by the scheme of micro finance system by stakeholders collaboration. The farmers will receive convenience in the requirements but still need to be strengthen in the farmers organization, farm business planning and the partnerships to accelerate the access of financial grant.

Note:

- PT Nestle is currently training farmers involved in their value chains from upstream to downstream. In addition, Nestle also provides access to capital for their fostered farmers.
- Initiatives, related to Rabobank Indonesia's coffee supply chain, can provide access to funds for the purchase of raw materials, working capital, investments to buy equipment such as coffee machines or warehouses to the transportation of transport vehicles.
- Initiative, PT Bank Rakyat Indonesia Tbk (BRI) in collaboration with the Financial Services Authority (OJK) is organizing a Sustainable and Upgrading Program for Coffee Farmers and MSMEs. This program is an active role of BRI to participate in promoting the competitiveness of the Indonesian coffee industry on the international scene. SMEs especially coffee farmers can enjoy BRI products, including the Small Enterprises Credit (KUR), Kupedes, the Food Credit Program, and the Working Capital Credit.



2.1.3. Mangosteen Commodity

A. National Mangosteen Commodity Situation

Mangosteen commodity is a superior horticulture commodity in Indonesia that become the focus of production enhancement by the Ministry of Agriculture. This can be seen in Indonesian fruit export that also dominated by mangosteen commodity which also take the first place in national fresh fruit export to other countries. The export destination countries are China, Thailand, Australia, New Zealand, Malaysia, Vietnam, The Emirates, France, Netherland, Arabian Saudi, Oman, Qatar, Hong Kong, Cambodia, Kuwait, Bahrain, Italy, Singapore, Swiss, Spain, Canada, Germany, England and Timor Leste. China is the biggest destination of Indonesian export.

Quarantine Agency on Ministry of Agriculture noted the total mangosteen trading value in 2018 is IDR 11.62 trillions with the total export to November 26,939 tons increasing from 2017 with total export 11 thousand tons that did not meet the target of the ministry which was projected about 60,000 tons in 2018. This export wss 16% of total national mangosteen production in 2018 that was about 166,725 tons. The Ministry of Agriculture mentioned that mangosteen has big potential market that supported by exalating export demands and the government effort to expand new markets.

In the national total production in 2018, Java Island is the second biggest producer after the Sumatera Island. In the production side, West Java take the first place in mangosteen producer that is about 42,122 tons (26% of national production) that followed by West Sumatra in the second place with productivity reach to 34,422 tons (21% of national production). In West Java, District of Tasikmalaya become the biggest producer with 28,638.9 tons, followed by District of Purwakarta with total production 3,250.6 tons.

B. Value Chain of Mangosteen Commodity

Generally, the value chain in the food system includes coffee farmers, traders (village-to district level), exporter will be explained in the graphic below:

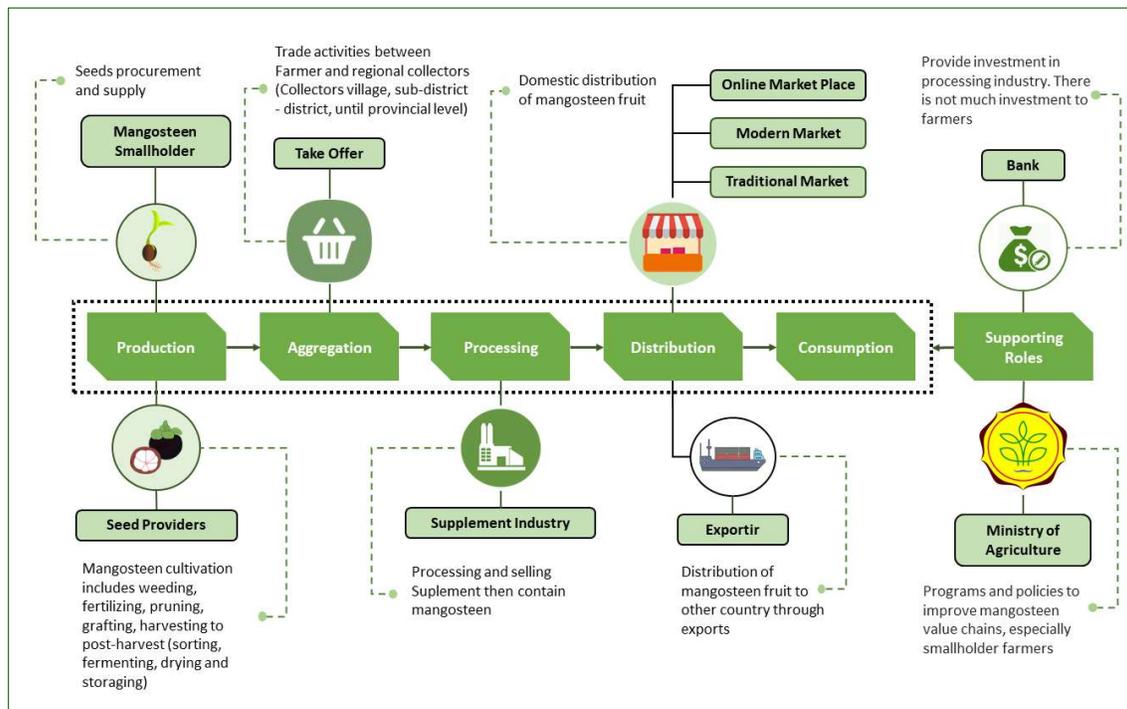


Figure 11. Mangosteen Commodity Value Chain (West Java Province)

Production (Smallholders)

During this time the role of mangosteen farmers is in very weak position, both in the acquisition of market information and determining the selling price. So, the selling price of mangosteen fruit at the producer (farmer) level is relatively very low. Mangosteen is not yet the main commodity for farmers' livelihoods, due to the seasonal harvest cycle. In West Java, mangosteen cultivation is intercropped with tea, nutmeg and clove plants even as an intercrop in the yard or garden. Mangosteen seeds are obtained from government assistance (Regency and Provincial of Agriculture Service) and the propagation of farmers themselves. In addition to providing seeds, the Regency Agriculture Service also conducts training on mangosteen cultivation starting from care, fertilizing, pruning, and postharvest. So far, the mangosteen crop is sold directly to local collectors (villages and sub-districts) without sorting (generally sold with a slash / piece system). Mangosteen farmers have several major obstacles, namely decreasing productivity and fruit quality, due to the lack of application of Good Agriculture Practices (GAP) and Good Handling Practices (GHP) procedures, the community still considers mangosteen to be a by-product and many mangosteen trees are old.

Aggregation (Village, Subdistrict, District and Province Collectors and Exporters)

Mangosteen harvest from farmers is always sold directly to collectors at the village / sub-district level. Village / sub-district collectors sell back to large district collectors and directly exporters.

Sorting activities are carried out by district wholesalers and exporters. Fruits that do not enter export quality will be sold in the local district markets.

Challenges in implementing mangosteen exports include: (1) Consistency of supply and quality of mangosteen from farmers (requirements for shape, size, taste and other quality requirements requested by the buyer); (2) The limited technology for storing freshness of fruit, considering that mangosteen has a high level of damage; (3) packaging and labeling constraints in the location of production centers; and (4) phytosanitary aspects which export destination countries require Indonesian fruits to be free from fruit flies. While the current condition of the Indonesian government does not yet have facilities for commercial scale that can be used as quarantine treatments, both hot water treatment facilities, vapor heat treatment, and gamma irradiation.

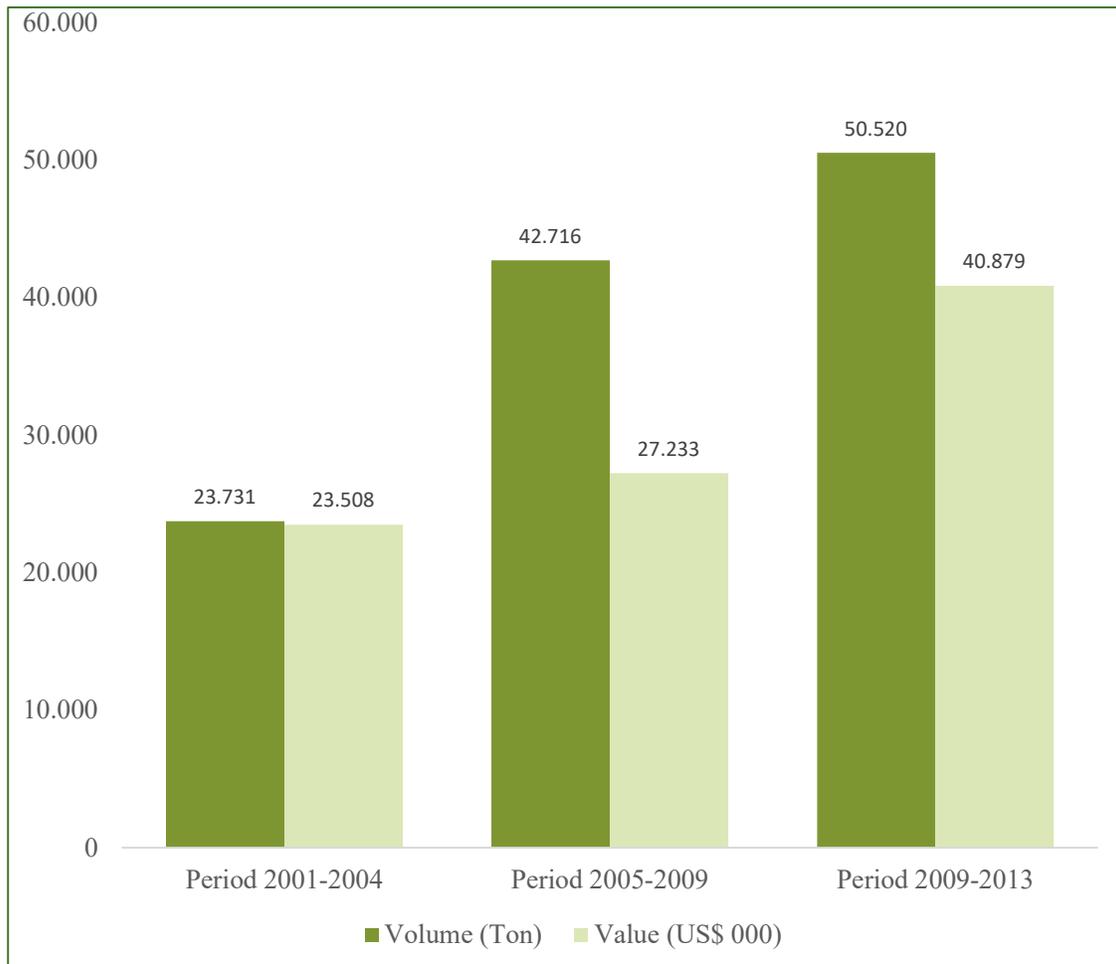


Figure 12. Mangosteen Export Volume and Value in the Period of 2001-2013

There are at least 10 exporters from several provinces ready to supply the Asian market are PT Bumi Alam Sejahtera in Limapuluh Kota (West Sumatra), PT Alamanda Sejati Utama in Bandung, and PT Agung Mustika Selaras in Jakarta, PT Buah Angkasa in Tangerang, PT Nusantara Segar Global in Tasikmalaya , PT Radja Manggis Sejati in Tabanan, PT Mahkota Manggis Sehat in Bogor, PT Langit Biru Sukses in Bekasi and PT Bintang Kiat Kemagung in Purwakarta.

Processing (UMKM and Processing Industry)

Currently there are still not many industries or MSMEs that focus on processing mangosteen into coloring, mangosteen flour, juices, cocktails, syrups and herbal capsules of mangosteen peel, which is an opportunity for greater development. At present only a few companies are processing mangosteen flour, namely the Great Center for the development of Agricultural Mechanization and PT Inti Kiat Alam. There are still obstacles in the processing of mangosteen products, especially for SMEs and Farmers Groups, including the lack of support in strengthening the technical capacity of mangosteen fruit production and the lack of simple technological support for mangosteen fruit processing.

Distribusi (Infrastructure and Services)

The main factor in the distribution of mangosteen is infrastructure (warehousing and storage technology). In general, the most important distribution constraints at the farmer, wholesaler and exporter level are inadequate storage systems which cause very high loss in weight and quality.

Consumption (Household)

Mangosteen consumers in the global market since 2002 until now exports continue to increase with destination countries Hong Kong, China, Vietnam, United Arab Emirates and Saudi Arabia. While the consumption of fruits among the domestic is still low, according to data presented by the SEAFAST Center-IPB, consumption of vegetables and fruits of Indonesian society is still far lower at 35 kgs per year and per person from the target of the World Food Organization (FAO) of 80 kgs per year and per person. Based on the IAI IndexBox, Platform states that the consumption of mangoes, mangosteen and guava in Indonesian society is 9.27 kgs per year.

Supporting Roles (Banking)

The forum for communication and coordination between stakeholders has not been optimal yet, mainly leading to the formation of partnership cooperation. Availability of Bank Mandiri Micro Business Credit (KUM), with 20% interest and KUR Bank Mandiri is subsidized by the government with an interest of 7% for farmers. This capital opportunity needs to be balanced with strengthening farmer institutions, farm planning and partnerships to further facilitate access to financial grants.

2.1.4. Vaname Shrimp Commodity

A. National Situation of Vaname Shrimp Commodity

Shrimp is a commodity in the fisheries sector that contributes to the fulfillment of food sources of animal protein in Indonesia. In 2016 Indonesia imported shrimp up to 145,077.9 tons to several countries such as Japan, Hong Kong and China. In 2013-2017 national shrimp production shows a growing trend in a positive direction with an average annual growth of 15.7%. Shrimp became the prima donna commodity for the national fisheries sector, over the past 5 years (2013 -2017) BPS recorded an average growth of 6.43%.

Shrimp export volume until the end of 2018 is predicted to be able to reach 180 thousand tons, up from 147 thousand tons in 2017. The export value also increased from USD 1.42 billion to USD 1.80 billion.

Shrimp production in East Java Province amounted to 20,645.15 tons. District of Lamongan is a shrimp producer district of 14,947.83 tons. Followed by Surabaya Regency with 1,886.72 tons and District of Jember with 1,339.10 tons. Based on these data optimistic that national shrimp production can continue to be boosted to the maximum value. Shrimp development continues to prioritize the principle of managing a responsible production process and applying the principles of sustainable aquaculture.

Warm tropical climate and broad coastline, Indonesia has a very high growth potential in the shrimp industry sector. Some of which inhibit the potential pace of this industry one of which is the change in traditional farming practices to intensive (modern) cultivation. To be competitive, shrimp farming in Indonesia must adopt modern equipment and production techniques. Although the majority of aquaculture actors consist of home industries that may not have sufficient capital and skills to modernize shrimp farming techniques.



B. Value Chain of Vaname Shrimp Commodity

The Vaname Shrimp Food System starts from shrimp farmers who carry out the cultivation process. Not only smallholder shrimp farmers carry out economic activities in shrimp farming, but also some private sectors also carry out cultivation. In the shrimp food system, the role of the private sector covers seed supply, processing shrimp products to the market. The following is a brief explanation of the vaname shrimp food system:

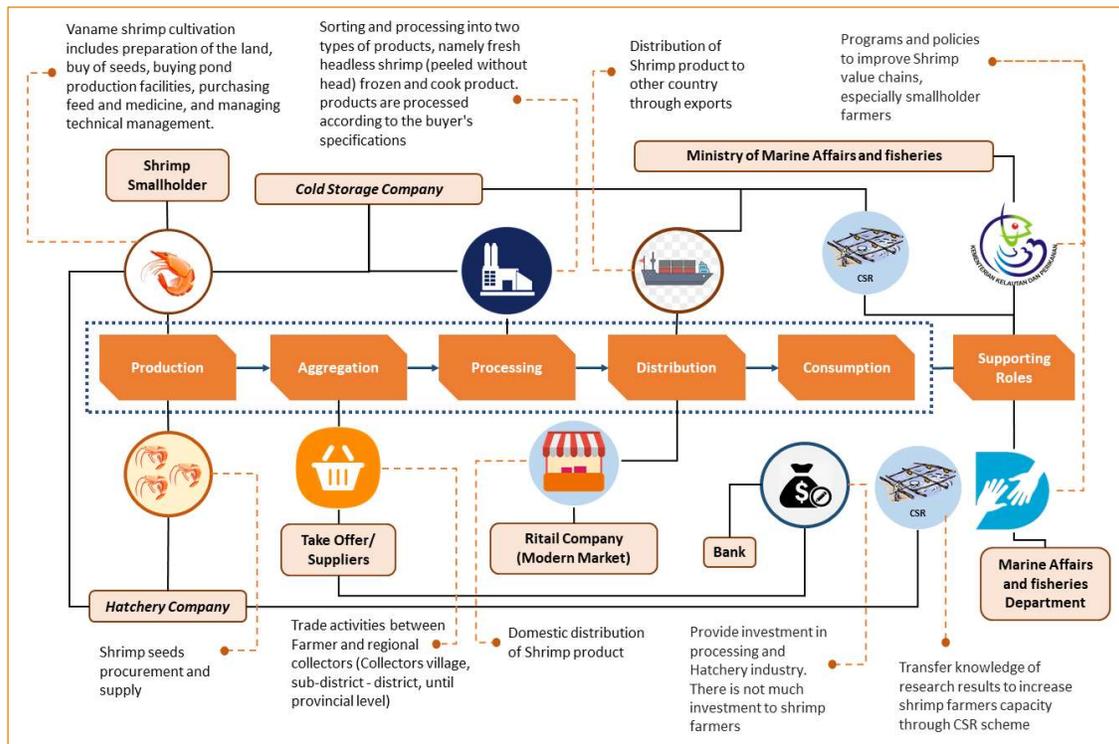


Figure 13. Vaname Shrimp Commodity Value Chain (East Java Province)

Production (Smallholders, Fishery Industry)

The process of cultivation carried out by smallholder shrimp farmers and private companies have in common starting from the preparation of the land, procurement of seeds, buying pond production facilities, purchasing feed and medicine, managing technical management. The difference is only in the pond capacity owned. The company has more than 10 ponds, while smallholder shrimp farmers only have two to three ponds. All cultivation processes by smallholder shrimp farmers are still carried out intensively, causing high production costs, in contrast to extensive cultivation that requires a low cost. Hatchery companies supply most of the needs of smallholder farmers, in addition to seedlings, Hatchery also provides production facilities and infrastructure for smallholder shrimp farmers, including pumps, windmills, HDPE (*High Density Polyethylene*) plastics, feed, vitamins and medicines. Potential production in one hectare of ponds requires about one million seedlings / fries with post larvae size (PL) 8 - PL 12, with an average yield of 20 tons of shrimp. The entire harvest of smallholder farmers' shrimp is sold to collectors at the village or sub-district level. In general, smallholders do not sort in the post-harvest process. Cultivation constraints faced by smallholder shrimp farmers are:

- Lack of availability of superior shrimp seeds;
- Declining water quality;
- Shrimp pests;
- Low level of technology application, considering that the majority of vaname shrimp farming actors consist of home industries that have small capital and lack sufficient skills to modernize cultivation techniques; and
- Lack of integration between downstream processing industries and upstream farmers, where seed growers, farmers and processors act independently and make it difficult to coordinate production to meet market demand. The relationship between processors, collectors, and farmers is purely transactional, so there is less cooperation.

Aggregation and Processing (Collectors, Processing Industry and Exporter)

There are two types of collectors, namely collectors who do not sort and collectors who carry out quality sorting and sampling before they are sold to the processing industry (cold storage) or exporters. Cold storage companies and exporters do sorting and processing into two types of products, namely fresh headless shrimp (peeled without head) frozen and packaged and cook product products are processed products which will be processed by the buyer and the products according to the buyer's specifications or called retail packs. On average 90% of products are exported and 10% are sold to the domestic market. The challenge for collectors, industry and collectors is the continuity of supply and quality of products from shrimp farmers.

Distribution (Infrastructure and Service)

At present the distribution of vaname shrimp is more on the foreign market, compared to domestically despite increasing domestic demand. This is because foreign prices are higher than those in the country. Some challenges in the future to increase the quantity and quality of shrimp for the export market and fulfillment in the country it is necessary to:

- Increase production and quality by providing superior seeds;
- Cross-sectoral support for business development and provision of infrastructure and cultivation technology for small farmers;
- There is a synergy of central government policies or ministries, regions and stakeholders; and
- Integration of upstream-downstream production units such as hatcheries, cold storage, ice factories, shrimp pond areas, airports, export ports and various other supporting infrastructure.

Consumption (Households)

The average consumption of fresh fish and shrimp per capita in Indonesia in 2018 is 1.469 kgs. The level of public consumption in 2018 rose by around 9.9 percent from 2017 which was only 1.323 kgs per capita. Along with the growth of national shrimp production with an average annual rate of 15.7%. Then this increasing trend becomes an opportunity for farmers and industry to increase the production and quality of shrimp products, in order to meet the demands of consumers both domestically and abroad.

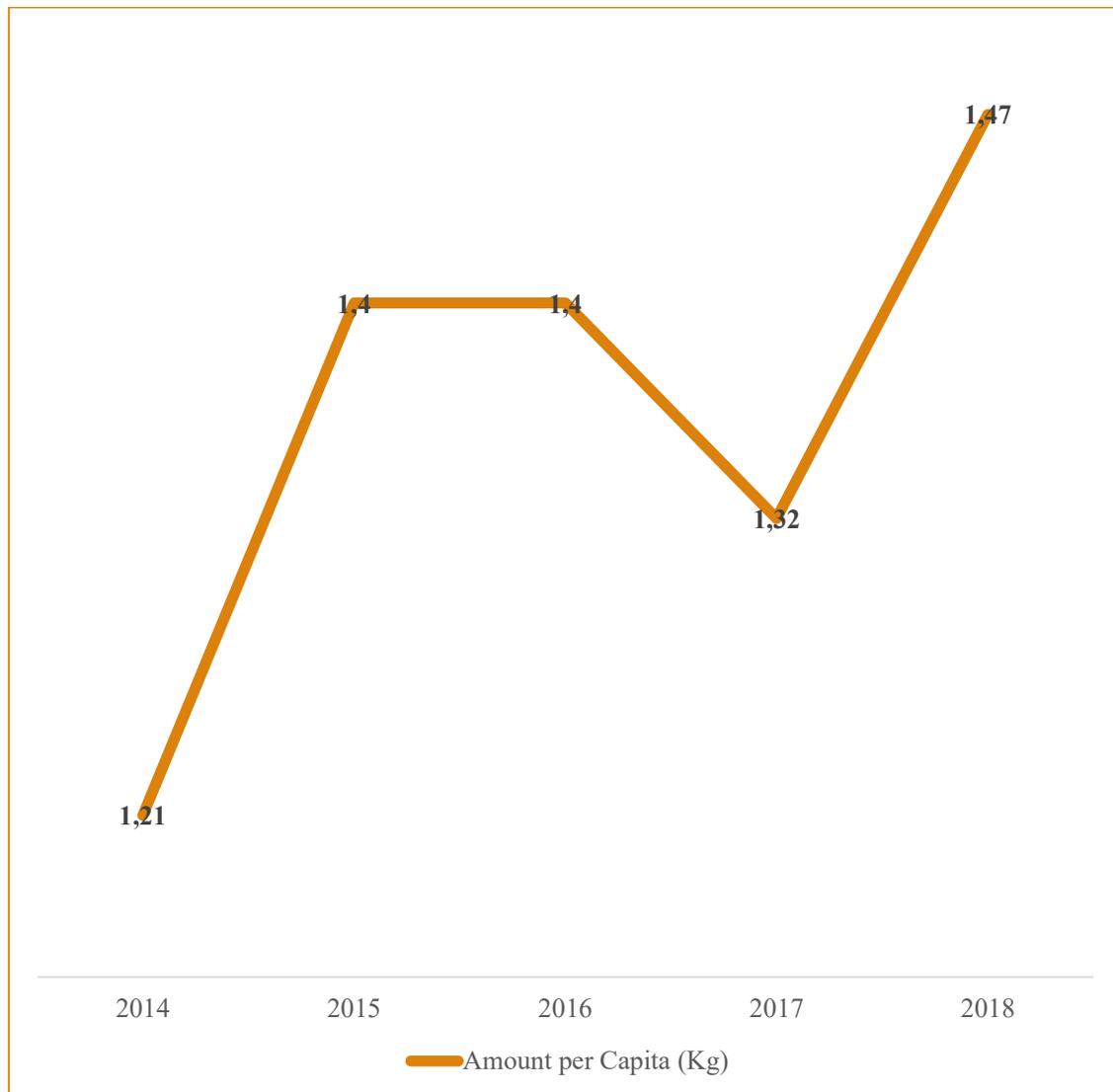


Figure 14. Consumption of Fresh Fish and Shrimp in Indonesia, 2014-2018
(Per capita in one week)

Supporting Roles (Banking System)

So far, the banks do not have a special loan scheme for shrimp farmers. Beginner folk shrimp farmers use more of their own capital. Some smallholder shrimp farmers also get capital from collectors or hatchery companies where the loan mechanism does not require formal legal requirements. It's just that the harvest will be sold at the capital provider. This capital loan culture makes many smallholder shrimp farmers still depend on collectors or hatchery companies.



2.1.5. Goat and Sheep Commodity

A. National Situation of Goat and Sheep Commodity

Goats and sheep are commodities that contribute to the fulfillment of animal protein sources in Indonesia. Based on BPS data in 2018, the population of Indonesian goats and sheep reached 36,118,402. West Java as the province with the highest number of goats and sheep in Indonesia with a population of 12,883,107 tails, followed by Central Java (6,503,543 tails), and East Java (4,805,376 tails after West Java). During the 2013-2018 period, West Java Province contributed 36% of the total national goat and sheep population. Of the total population of goats and sheep in West Java Province (BPS 2016), District of Purwakarta as the most regency in the population of goats and sheep is 4,236,657 heads, followed by District of Garut by 1,423,797.

Goats and sheep have high demand in the domestic market, Indonesian goats and sheep are currently favored by export markets, such as Singapore, Malaysia, and Brunei Darussalam. According to the Director General of Animal Husbandry and Animal Health, in 2018 Indonesia has begun exporting thin-tailed sheep to Malaysia, with a demand of 5,000 per month. In addition, Indonesia also exports Garut sheep to the United Arab Emirates (UAE), with a demand of 3,600 per year. In addition to the two countries, the Asia, Africa and Pacific regions are also very promising export markets for goat and sheep livestock.

This high demand and potential certainly pushes Indonesia to boost the export, so there must be a guarantee of continuous and sustainable availability of livestock. At present the government has encouraged partnership between business actors (exporters) and sheep / goat farmers involving financial institutions (banking and non-banking) in providing capital. Provision of capital for farmers can be through the Small Enterprise Credit (KUR) scheme with low interest and access that is now very easy for farmers.

B. Value Chain of Goat and Sheep Commodity

In general, value chain actors in the goat and sheep food system include farmers, traders (village-to district level), exporters which are described in the following figure:

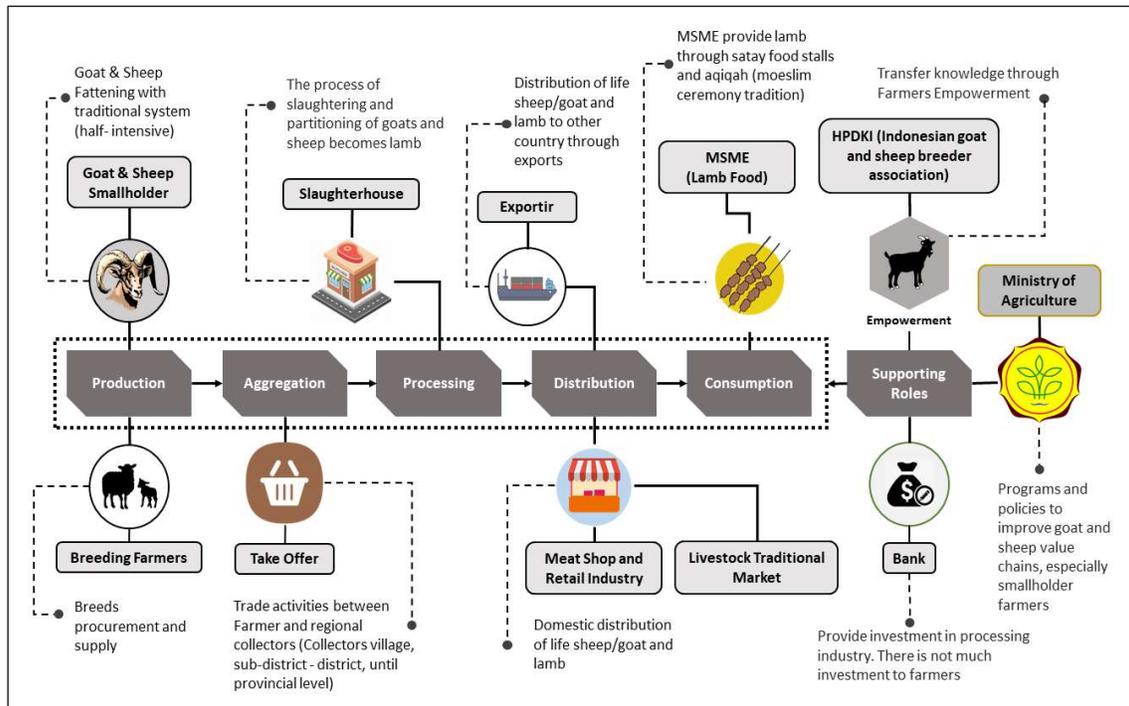


Figure 15. Goat and Sheep Commodity Value Chain

Production (Smallholders)

Goat or sheep breeders perform maintenance with the traditional system or are herded and semi-intensive (cut and carry). Semi intensive maintenance is carried out with 50 goats or sheep while maintenance with the system is herded with 10 goats or sheep. In general, goat or sheep breeders generally build a stable around the house with an average of 10 goats or sheep ownership. Goats and sheep owned by smallholder farmers are savings or economic reserves of the family, not a major business.

The minimum number of goats and sheep owned by breeders, it is not focused on fattening, but only limited to breeding. Majority breeders sell directly to collectors or animal markets. Goat and sheep breeders currently have several obstacles, including the following: (1) The lack of going / superior seeds and the implementation of breeding technology at the farmer level. The lack of superior seeds affects the ability of farmers to meet market demand and has potential broodstocks. Likewise, introducing breeding technology with artificial insemination will help farmers in the production of quality seeds; and (2) The lack of education on making quality feed for fattening.

Note:

Currently, the Garut Sheep has been designated as a local Indonesian sheep family from Garut District, West Java Province based on the Decree of the Minister of Agriculture No. 2914 / Kpts / OT.140 / 2011. Garut sheep has a carcass percentage that is large enough to reach 49.10%. Maintenance is also suitable in the tropics, because sheep have a lower level of heat stress sensitivity than cattle.

Aggregation and Processing (Village Traders, Market Appellant Traders, Inter-Regency / Province Collector Appellant Traders, Exporters, Butchers)

The majority of People's Farmers sell to Animal Collectors through direct schemes or animal markets, few farmers sell to slaughterhouse (RPH). Supply chain actors consist of several levels are village traders, market appellant traders, inter-regency / provincial collector livestock traders, butchers, exporters and Food Processing Industries.

Village Traders are also called Goat / Sheep Mobile Vendors who are sold by farmers at the village level. Traveling Traders, sell back to Animal Market or Livestock Traders. Livestock traders sells back to Inter-Regency / Province Collecting Livestock Traders (up to 80% of total cattle sold by livestock market). Meanwhile 20% of them are sold to butcher or slaughterhouse.

The potential export and high market demand for goats and sheep currently do not guarantee the welfare of the sheep farmers. One of them is the low selling price of sheep at the farm level (with an average of IDR 20,000 per kgs still alive). There is a standardized mechanism for regional markets where consumers generally will not buy sheep above of 25 kgs. This system is very detrimental to breeders because sheep weighing below 25 kgs can certainly drop prices and in some cases are not purchased.

Processing (Slaughterhouses and SMEs)

Slaughterhouse can directly buy livestock at the animal market to meet with the small livestock traders or through inter-regency / province collector livestock traders. One of the constraints of the goat and lamb meat processing industry is waste management and slaughterhouse sanitation Standard Operational Procedures (SOP). Not only that waste that has the potential as a derivative product such as goat and sheep skin also need an internal handling scheme to support business sustainability. Another obstacle that is often found is the lack of stock of the processing industry which is rooted in the production aspect.

Another issue that is important to overcome is quality standards, especially the Australian market. Well-known Australian standards for sanitary and phytosanitary aspects need to be considered by the government and the private sector in implementing SOPs that are in line with Australian quality standards. Moreover, Australian SPS is among the best in the world, if our SOP is able to meet the Australian market, it is also possible to enter European and American markets.

Distribution Infrastructure, Technology and Services)

The distribution of goat or lamb meat in Indonesia is mostly absorbed in the MSME / food processing industry, hotels and muddy markets as much. Besides being distributed to the supermarket, mutton or lamb meat is also exported to international markets with meat SOP that

is in accordance with demand. For export distribution, the need for safer meat packaging and storage technology to maintain quality. Meanwhile, to meet regional market demand between cities and provinces, the need for good standardization / SOP for transportation to mitigate the effects of stress (blood expenditure, drip loss, and changes in the color of meat).

Consumption (Household)

In terms of goat meat consumption, according to the Organization for Economic Co-operation and Development (OECD) data released in 2018, consumption of goat meat in Indonesian society in 2017 only reached 0.4 kg of goat meat. This amount is compared to other ASEAN countries, Indonesia is far below. Referring to OECD data in the same period, neighboring countries such as Malaysia have a consumption level of 1 kg of goat meat, the Philippines has reached 0.5 kg of goat meat while Vietnam has 1.7 kgs of goat meat.

The average level of meat consumption in Indonesia is still far below the average level of world consumption which reaches 1.7 kgs of goat meat. Of course, with the low level of meat consumption also affects the low level of animal protein intake in Indonesian society, especially for the lower middle economic class. This is reinforced by the FAO data stating that the level of consumption of animal protein in Indonesia in 2017 is still lagging behind developed countries even with some ASEAN countries. Of the total protein consumption, the consumption of animal protein in Indonesia has only reached 8%, while Malaysia has reached 30%, Thailand 24%, and the Philippines reaching 21%. Whereas animal protein is an excellent food source for the growth and development of children because of its complete amino acid content.

Supporting Roles (HPDKI)

The Government and The Indonesian Goat and Sheep Breeder Association (HPDKI) are increasing the strategic role of the development of goat and sheep farms which are directed at 5 (five) aspects that are superior to goats and sheep livestock. These advantages include: (1) Sheep farming as an activity that is relevant to the empowerment and economic drivers of rural communities; (2) Goat and lamb meat as an alternative source of animal protein and alternative substitutes other than chicken and beef; (3) Community-based farm development; (4) Establish a goat breeding corporation in order to increase population and productivity to ensure the sustainability of sheep and goat farming businesses; and (5) Providing community food needs, filling supplies for export markets to ASEAN regional countries.

Note:

Initiative PKBL funding program (Community Development Partnership Program) from PT BTN (Bank Tabungan Negara).

Realizing a sheep cluster of 6,000 production capacity, with a model of economic community development that is fostered directly by the HPDKI of West Java. As many as 310 farmers have participated in intensive education and training related to the clustering of goat and sheep farming. The breeder gets PKBL financing of Rp 4.1 billion from BTN (Bank Jabar Banten), where the realization of PKBL credit is accessed by 18 sheep breeders and 57 breeders for sheep fattening activities. Distribution of PKBL distribution in the goat / sheep breeding cluster is two, namely partnership pattern (PK) and KUR scheme. KUR Scheme cooperates with off takers (PT Agro Investama and UD Gumukmas).

INVESTMENT OPPORTUNITIES ANALYSIS

CHAPTER

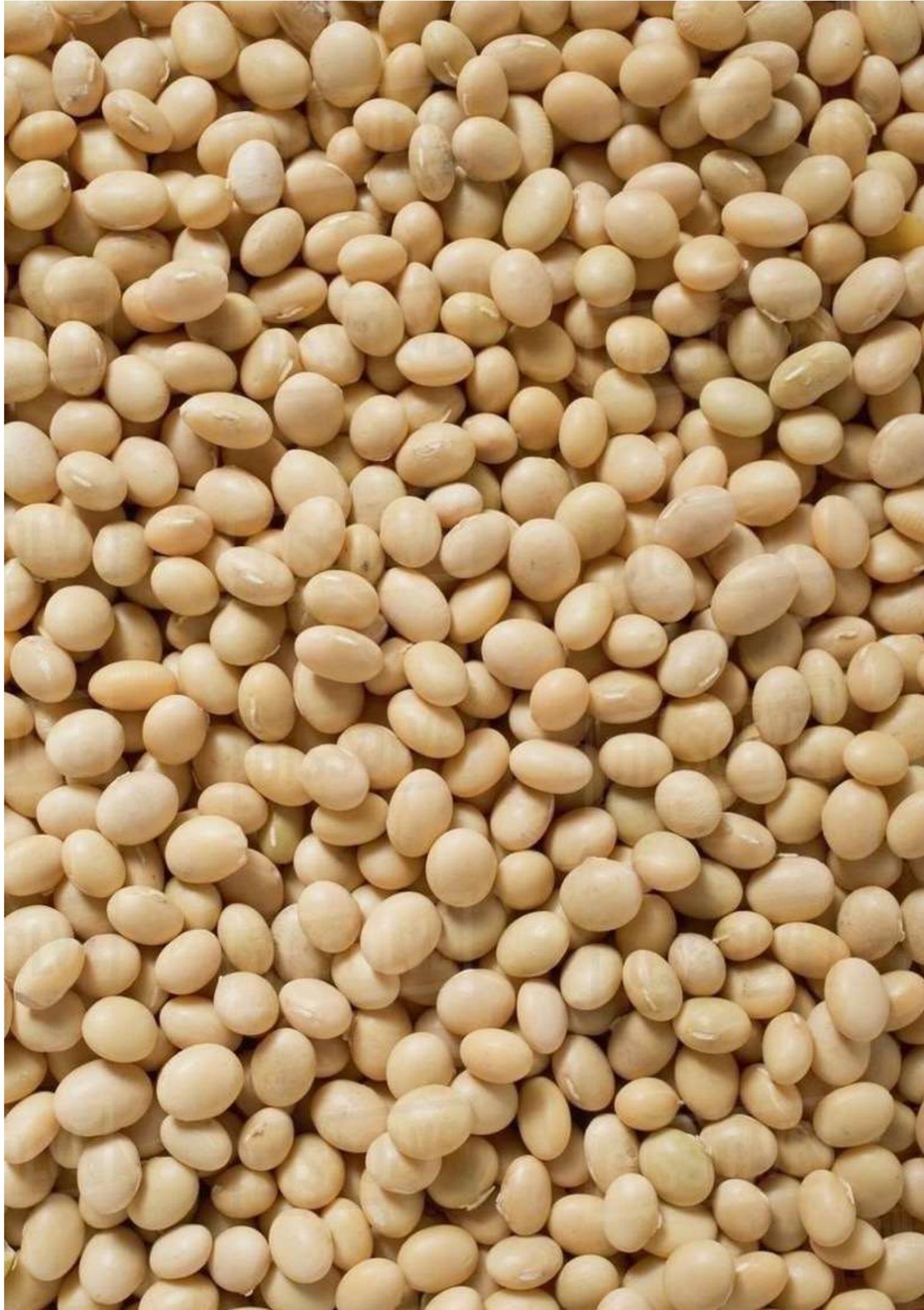
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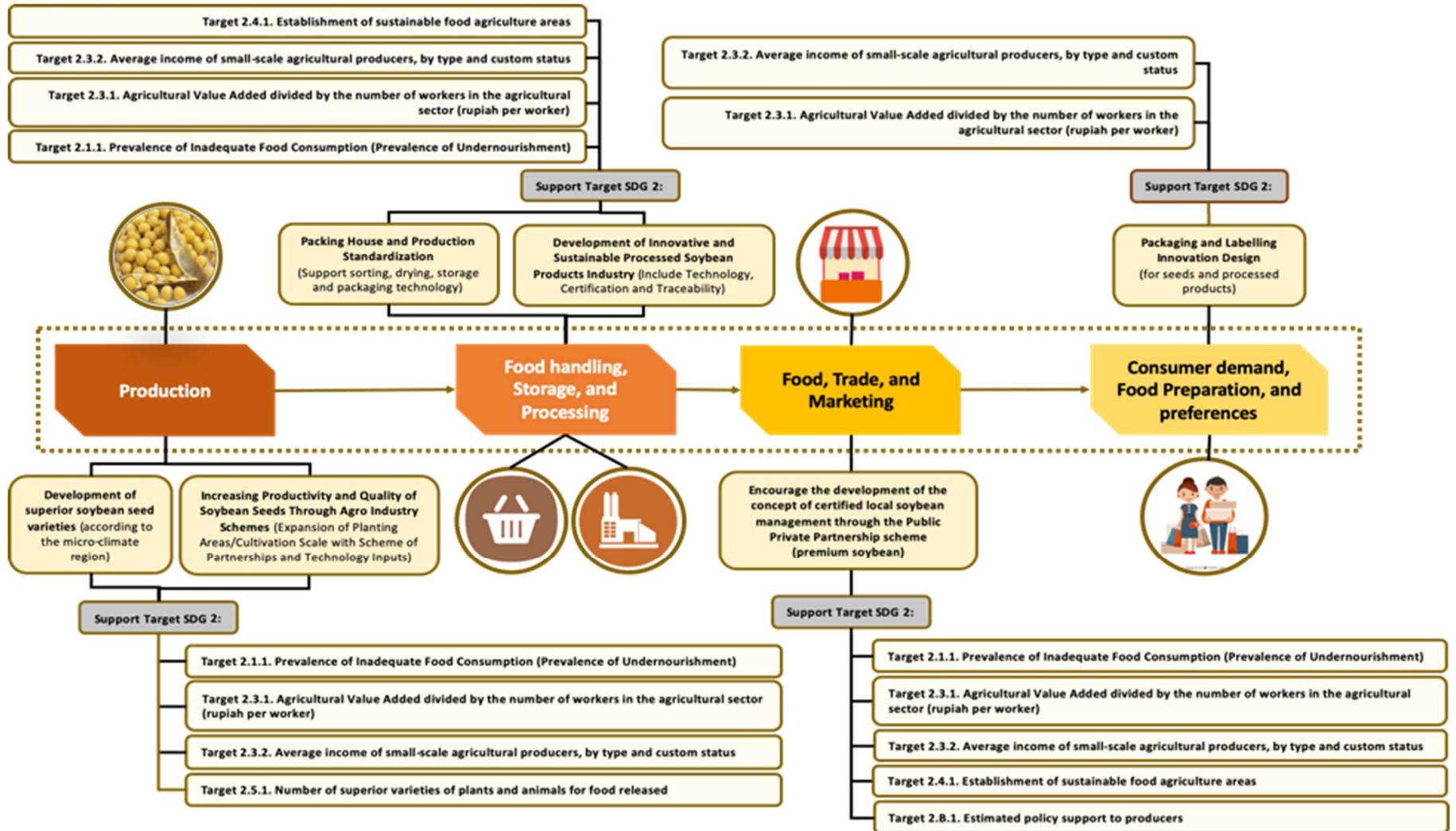
Indonesia is facing the challenges in increasing demand for food and agricultural products in line with the significant increase of the population. At the same time, new problems arise, such as land conversion and fragmentation, low capacity in agricultural cultivation techniques and technology, unstable prices for agricultural products and less interest among the youth to be farmers. If these problems are not anticipated and tackled as early as possible, there will be real risks for the sustainable food system in Indonesia.

To overcome this challenge, the government cannot walk alone. The role of the industrial sector, SMEs, banks, associations, as well as the farmers and ranchers community is needed to meet together in facing these food security challenges. The private sector and the community need to collaborate to create partnership programs that will not only increase production capacity, but also improve the welfare of smallholders in aspects of quality, nutrition, environmental health and create a thriving economy, the industrial sector and UMKM help every user of processed agricultural products. As consumers, the industrial sector buys raw materials from agricultural producers (farmers), it becomes an important role in supporting food security and production sustainability.

The following is a detailed explanation of the potential investment opportunities in the five food commodity sectors in an effort to support the achievement of food sovereignty:



3.1. Investment Opportunity of Soybean Commodity



3.1.1. Food Production

Food Production

*(Support SDG 2 on Target:
2.1.1; 2.3.1; 2.3.2; and 2.5.1)*

The production approach aims to increase the productivity and quality of local / premium (Non-GMO) soybeans that are cultivated by smallholder farmers. The principle that needs to be applied is the intensification of production starting from the supply of superior seeds, the application of GAP and GHP to support product quality to meet domestic food demand and safety.

a) Development of Superior Soybean Seed Varieties

The need for agricultural products, especially soybeans, is increasing along with population growth and awareness of nutrition and food safety, so efforts are needed to increase the productivity and quality of soybeans through the innovation of superior seed varieties. This innovation is not just finding superior seed varieties, but also supported by local micro-climate compatibility and seed varieties that are resistant to climate change. Considering that Indonesia has a complicated and different micro-climate in each region / region. **The development of Superior Seed Varieties** is a sizable investment opportunity, which can be done in several stages including: (1) Establishing a seed (biotechnology) research institute in each location of soybean production centers (including: mini lab facilities and green house); (2) Development and propagation of superior seed varieties in each soybean production center area (including: hatchery land can be through partnership schemes with farmers, mini factories supported by harvesting / thresher machinery technology, drying, sorting, packaging and storage; and (3) Preparation of GAP and GHP standards according to superior varieties adapted to local micro-climate. Soybean seeds previously were not yet an attraction for the company.

b) Increasing Productivity and Quality of Soybean Seeds Through Agro Industry Schemes *(Expansion of Planting Areas/Cultivation Scale with Scheme of Partnerships and Technology Inputs)*

Based on the problems currently faced, starting from the industrial system of superior soybean hatchery which is underdeveloped, the high attack of pests and plant diseases, soybean is still a side commodity, narrow land ownership, causing farmers to be reluctant to plant soybeans. Therefore, we need a **Soybean Agro Industry** that is managed intensively and comprehensively (Industrial scale), it is important to be a particular concern in terms of sustainable investment. The efforts to improve the productivity and quality of industrial scale soybeans are as follows: (1) Expanding the planting area, preferably in areas that were once the centers of soybean production and optimal land use by increasing the planting index (either new land or partnerships); (2) Increase productivity, use of improved seed varieties according to local micro-climate, application of GAP and GHP, irrigation, etc.; (3) Securing production, technology input (mechanization of cultivation and post-harvest); and (4) strengthening the institutional agro-industry of soybean industry, strengthening access to business planning, marketing, capital and partnerships with farmers, government, processing industries, academics, etc.

Investment opportunities in the industrial development sector of superior soybean seed varieties and the agro-soybean industry support SDG 2 objectives on: Target 2.1.1. Prevalence of Inadequate Food Consumption (Prevalence of Undernourishment); Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector (rupiah per worker); Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.5.1. Number of superior varieties of plants and animals for food released

3.1.2. Food Handling, Storage and Processing

Food Handling Storage and Processing

(Support SDG 2 on Target: 2.1.1; 2.3.1; 2.3.2; and 2.4.1)

Soybean is the third most important commodity after rice and corn. In addition, soybean is also a commodity that is rich in protein. Fresh soybeans are needed in the food industry and soybean meal is needed for the feed industry. Soybean acts as a source of vegetable protein which is very important in the context of improving community nutrition, because besides being safe for health it is also relatively inexpensive compared to animal protein.

To maintain nutritional quality and guarantee food safety for consumers, good post-harvest handling from storage, packaging and distribution is essential. Investment opportunities to maintain quality post-harvest include:

a) Packing House and Production Standardization *(Support sorting, drying, storage and packaging technology)*

Develop post-harvest processing centers that introduce sorting, drying, storage and packaging technologies to avoid the deterioration in the quality and nutrition of soybean seeds. This investment is focused on the location of soybean production centers or areas that were once soybean production centers.

b) Development of Innovative and Sustainable Processed Soybean Products Industry *(Support Technology, Certification and Traceability)*

Opportunities in the processing sector are still quite large, namely the development of innovative soy products (tahu, tempe, soy sauce, oncom, tauco, soybeans, soybean extracts, soy flour, seasonings, and other processed soybeans). The development of innovation industry based on sustainable soybean management (certification and traceability) is a great opportunity to increase market access and competitiveness of innovation products (tempe, tahu, soy flour, oil, etc.) at the export level. Government support and involvement, both in terms of policy and assistance, are particularly important, especially the Ministry of Trade to help promote the sale of local tempe and tahu through the Indonesian Trade Promotion Center in almost 50 countries around the world.

Through this investment activity it contributes to support the achievement of SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the

number of workers in the agricultural sector (rupiah per worker); Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.4.1. Establishment of sustainable food agriculture areas. This investment can be made by the manufacturing industry sector, distribution services, large traders, farmer groups, UMKM and BULOG.

3.1.3. Food Trade and Marketing

Food Trade and Marketing

*(Support SDG 2 on Target:
2.1.1; 2.3.1; 2.3.2; 2.4.1; and
2.B.1)*

Soybean demand is currently growing very rapidly but has not been able to be matched by regional production. In particular, soybean marketing does not have special constraints, but rather price fluctuations that affect most of the domestic market. Investments that can be made in the aspect of developing market access:

Encourage the development of the concept of certified local soybean management through the Public Private Partnership scheme (*premium soybean*)

Partnerships from the government, the industrial sector / UMKM and farmers provide product development opportunities to target new markets that are now starting to become aware of nutrition, health, and environmental aspects, both domestic and export. This investment contributes to achieving SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.4.1. Establishment of sustainable food agriculture areas; Target 2.B.1. Estimated policy support to producers.

3.1.4. Consumer Demand, Food Preparation and Preferences

Consumer Demand, Food Preparation and Preferences

*(Mendukung Tujuan SDG 2
Target: 2.3.1 dan 2.3.2)*

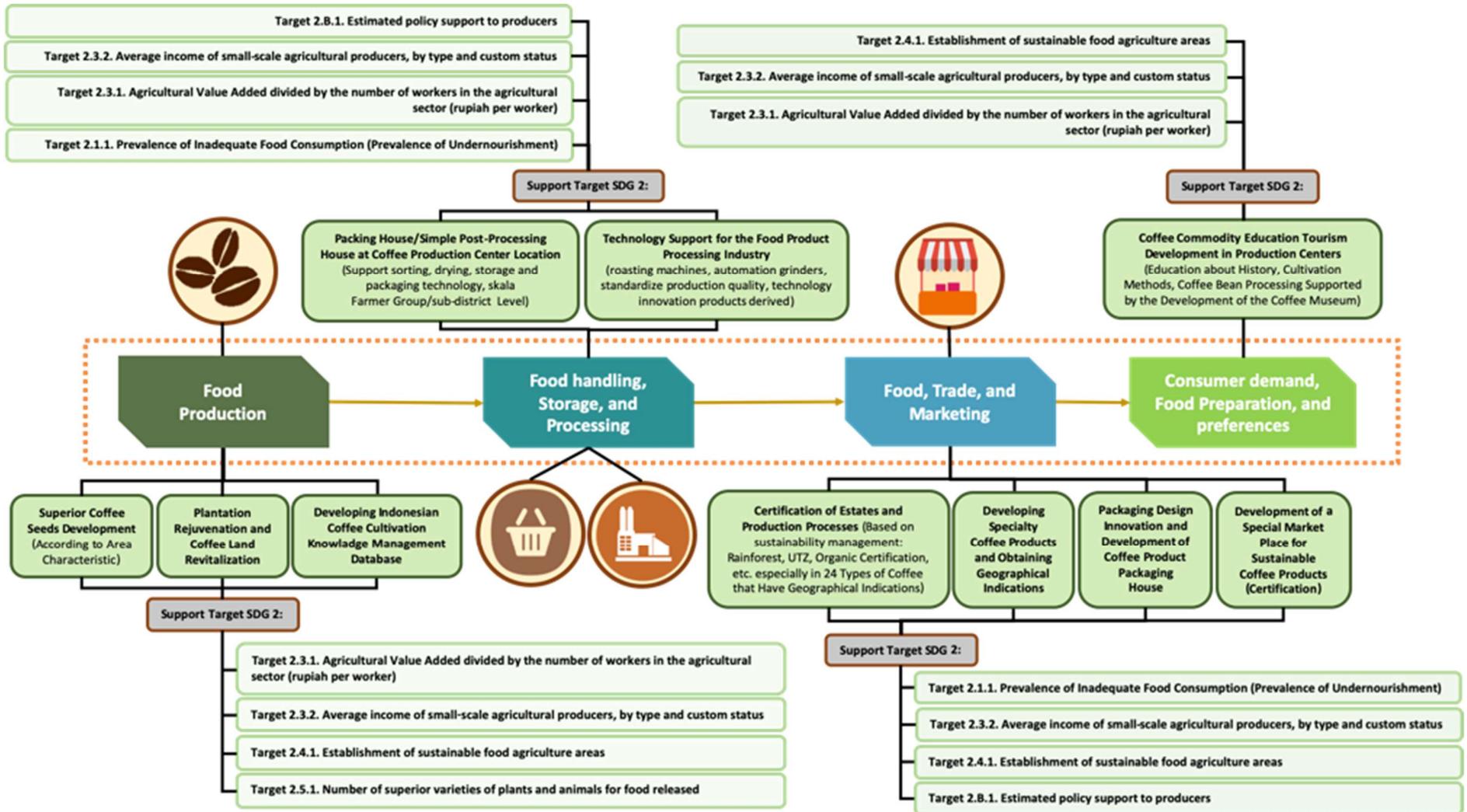
Consumers need to gain trust regarding certified local soybeans by providing information related to nutritional value and food safety guarantees. The existence of certification will help educate consumers to be more concerned in choosing local processed soy products that are safe and full of nutrition. Therefore an effective educational method is needed for consumers to always use certified soybean processed products.

Packaging and Labelling Innovation Design (seeds and processed products).

The need for innovative packaging design and labeling that is informative and attractive to consumers. Aiming at protecting products, building consumer confidence, making a difference and building consumer appeal. Investments contribute to achieving SDG 2 in: Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector (rupiah per worker). Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status.



3.2. Investment Opportunity of Coffee Commodity



3.2.1. Food Production

Food Production

*(Support SDG 2 on Target:
2.3.1; 2.3.2; 2.4.1; and 2.5.1)*

Small farmers (smallholders) are still faced with various challenges of cultivation, namely low productivity, limited superior seeds, low land tenure, low application of GAP and GHP, high attack of plant pests, and low mastery of technology. Seeing this situation, we need some strong support and partnership from all sectors involved in the coffee commodity value chain and supply chain, in an effort to improve coffee productivity and quality. Then some investment is needed in the production sector, including:

a) Superior Coffee Seeds Development (*According to Area Characteristic*)

Indonesia has very diverse regional and micro climate characteristics, this has an impact on and influences the diversity of fruit characteristics and the taste of coffee itself. This diversity is an opportunity and a large enough potential to boost coffee archipelago. Therefore a series of research and development of superior coffee seedlings are needed that are tailored to the characteristics and micro-climate of the local area, especially for the development of quality Arabica coffee seeds (specialty) which is currently lacking in availability.

b) Plantation Rejuvenation and Coffee Land Revitalization

The low productivity and quality of coffee beans, one of which is influenced by the low application of GAP and GHP, this is compounded by coffee plants that are old. Then the need for rejuvenation of the garden and land revitalization. Rejuvenation needs to be supported by capacity building activities of GAP, GHP and sustainability (sustainable coffee production) for smallholders / farmer groups and establish an institutional Internal Control System (ICS), as a supervisory unit.

c) Developing Indonesian Coffee Cultivation Knowledge Management Database

The low productivity and quality of coffee beans is caused by the low access of smallholders to information about good coffee cultivation. Then we need a special forum that accommodates knowledge about best practices in managing ITE-based Indonesian coffee commodities. The database contains information that contains various knowledge about the cultivation, post-harvest, packaging, and marketing of sustainable coffee commodities in Indonesia.

The investment opportunities above support SDG 2 in: Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector (rupiah per worker); Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.4.1. Establishment of sustainable food agriculture areas; Target 2.5.1. Number of superior varieties of plants and animals for food released.

3.2.2. Food Handling, Storage and Processing

Food Handling Storage and Processing

(Support SDG 2 on Target: 2.1.1; 2.3.1; 2.3.2; and 2.B.1)

The right post-harvest process will produce quality coffee products with a distinctive taste and safe for consumption. The development and application of post-harvest technology has an important role for Farming, UMKM, Industry or Exporters in increasing the added value of coffee beans, efficient production and quality improvement. The rapid development of coffee production at this time needs to be supported by the readiness of post-harvest technology and facilities that are suitable and in accordance with regional conditions, starting from how to harvest, sorting, processing, storing and creating / engineering post-harvest tools and machines.

a) Packing House/Simple Post-Processing House at Coffee Production Center Location *(Support sorting, drying, storage and packaging technology)*

The lack of application and mastery of post-harvest technology at the farm level as well as the high cost of the equipment, has an impact on the low quality and selling price of farmers' coffee beans. Therefore, it is necessary to introduce / disseminate simple post-harvest technology at an affordable price. For example, introduction of tools and machines for peeling, washing, drying, sorting, packaging and warehousing systems for storage.

Through the development of a simple post-harvest processing house at each coffee production center point both at the level of farmer groups / cooperatives at the district level. It is expected to be able to reduce yield losses, prevent quality degradation, and maintain stable quality coffee stocks for buyers. In addition, it is necessary to establish an ICS unit as a monitoring function, to avoid the current high level of coffee copying / counterfeiting.

b) Technology Support for the Food Product Processing Industry *(roasting machines, automation grinders, standardize production quality, technology innovation products derived)*

The increasing number of coffee consumption in Indonesia can be an opportunity for the coffee processing industry in Indonesia. The industry must be able to meet the ever-increasing demand for coffee, as well as consistently serving the best quality coffee to keep consumers interested. Then the most strategic investment opportunities are utilizing technological developments, including: (1) Innovation of conventional roasting and grinder machines becoming more modern by adding automation technology, to ensure coffee quality is always consistent; (2) Carrying out certification of plantations and production units; (3) Design and packaging innovation; (4) Developing more specialty Arabica coffee products; (4) Innovation of beverage and food products (For example: innovative specialty cachet, instant and liquid coffee).

Through the two schemes above, it can support SDG 2 on: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.B.1. Estimated policy support to producers.

3.2.3. Food Trade and Marketing

Food Trade and Marketing

(Support SDG 2 on Target:
2.1.1; 2.3.1; 2.3.2; 2.4.1; and
2.B.1)

The strategy to strengthen and expand market access, especially exports, needs investment in several sectors, including:

a) Certification of Estates and Production Processes
(Based on sustainability management: Rainforest, UTZ, Organic Certification, etc. especially in 24 Types of Coffee that Have Geographical Indications).

An environmentally and business sustainable certification scheme is a branding and an important part of the current market system, especially for consumers who are aware of increasing sustainability products.

Certified coffee products will provide quality and safety guarantees for consumers, while also expected to increase bargaining power and higher selling prices, especially in the export market. To support these investment opportunities, the private sector needs to collaborate with farmers / farmer groups and the government to encourage the acquisition of coffee certifications such as Rainforest, UTZ, organic, etc.

b) Developing Specialty Coffee Products and Obtaining Geographical Indications

Encourage more development of specialty coffee products in other regions, both in the development process and new. It also needs to be supported by the acquisition of Geographical Indications and Coffee Traceability to strengthen marketing access.

c) Packaging Design Innovation and Development of Coffee Product Packaging House

Packaging design is not the only factor that drives sales, but it is an important part of the buyer consideration. Thus, this field is important to develop attractive packaging design innovations to introduce branding and increase sales.

d) Development of a Special Market Place for Sustainable Coffee Products (Certification)

To simplify and expand market access, it is necessary to have a special and specific Start Up Market Place portal for certified coffee products and Geographical Indications. As well as a means of promotion and education to consumers to be more concerned with the issues of nutritional recovery and the issue of sustainability of production and the environment.

The above investment schemes that function to strengthen and expand market access, it is necessary to do as well as partnerships between farmers as producers with processors, packaging industries, traders (exporters) and the government as the policy owner.

It is hoped that this investment scheme will be able to contribute to the achievement of SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural value added is divided by the number of workers in the agricultural sector; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.4.1. Establishment of sustainable food agriculture areas; Target 2.B.1. Estimated policy support to producers.

3.2.4. Consumer Demand, Food Preparation and Preferences

Consumer Demand, Food Preparation and Preferences

(Support SDG 2 on Target: 2.3.1; 2.3.2; and 2.4.1)

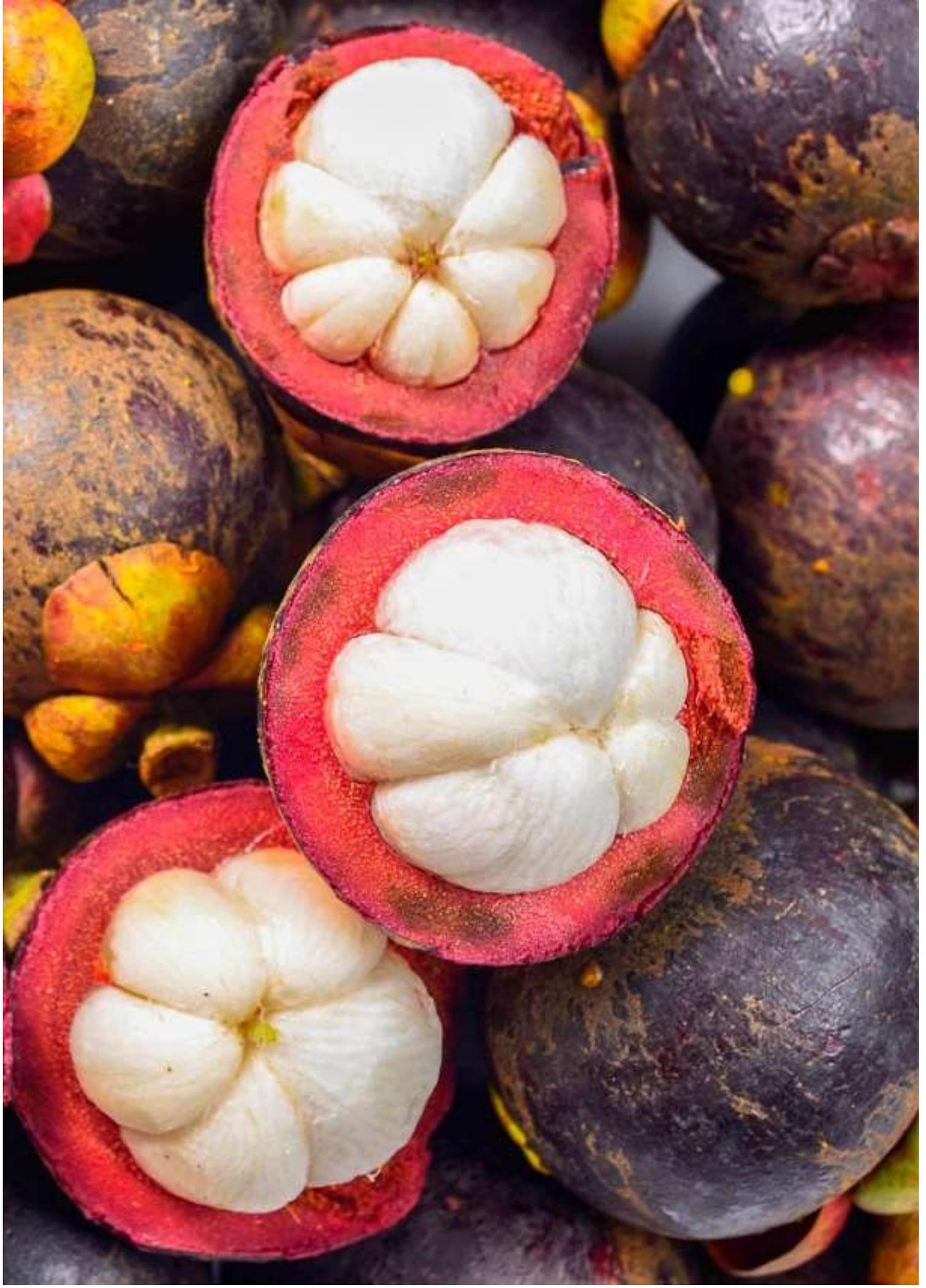
Strategies to expand market access, specifically to build coffee customer loyalty and build sustainability values to consumers, as well as investment opportunities that can be done.

a) Coffee Commodity Education Tourism Development in Production Centers

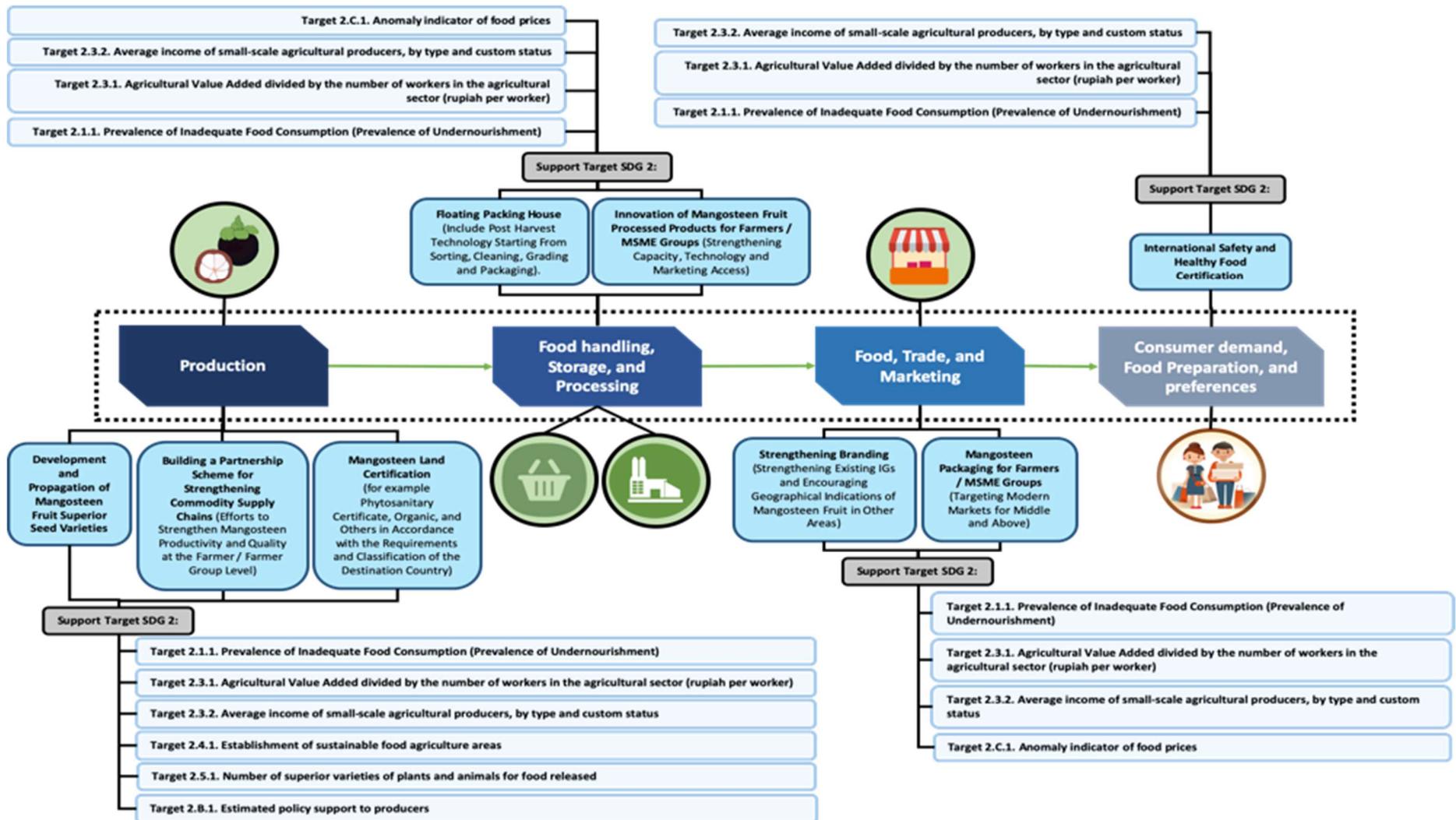
The concept of Coffee Commodity Education Tourism was developed to convey information on the history of the struggle and development of coffee commodities from the past to the present and their illustrations in the future.

The main objective of developing educational tourism in the location of the production center is to increase the interest and concern of the community, especially the younger generation towards coffee cultivation. The concept of tourism is also supported by the development of the Coffee Museum which is expected to be able to present a new method of learning history that is not tedious.

The development of coffee education tourism is expected to contribute to the achievement of SDG 2 to: Target 2.3.1. Agricultural value added is divided by the number of workers in the agricultural sector; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.4.1. Establishment of sustainable food agriculture areas.



3.3. Investment Opportunity of Mangosteen Commodity



3.3.1. Food Production

Food Production

(Support SDG 2 on Target: 2.1.1; 2.3.1; 2.3.2; 2.4.1 and 2.B.1)

The efforts that must be made to make Indonesian fruit enter the global market is the preparation of products starting from upstream (on-farm) to downstream (off-farm), by involving all stakeholders.

In the upstream part, the main problems are low productivity and fruit quality caused by low quality of seedlings, poor implementation of Good Agriculture Practices (GAP) and Good Handling Practices (GHP), lack of planting areas for farmers, and mangosteen farming is still a side income (not a priority crop).

To encourage increased productivity and quality of mangosteen fruit can be done through several investment activities including:

a) Development and Propagation of Mangosteen Fruit Superior Seed Varieties

To increase crop productivity, it is necessary to develop superior new varieties adapted to the characteristics of micro climate, especially in the area of mangosteen production centers. And supported by developing GAP and GHP guidelines that are appropriate to the region's varieties and micro climate.

b) Building a Partnership Scheme for Strengthening Commodity Supply Chains (Efforts to Strengthen Mangosteen Productivity and Quality at the Farmer / Farmer Group Level)

To maintain sustainable production and strengthen supply chains, given that mangosteen fruit has serious problems in the aspect of cultivation. Then a partnership scheme is needed between farmer groups, fruit processing industries, exporters and the government, aimed at boosting the scale of production and increasing the productivity and quality of fruit at the farmer and private sector levels.

The Partnership Scheme is supported by strengthening the capacity and mentoring of GAP and GHP practices and developing an internal monitoring system (ICS) and traceability of mangosteen commodities to ensure the implementation of GAP and GHP at the farm level, to produce good mangosteen.

c) Mangosteen Land Certification (for example Phytosanitary Certificate, Organic, and Others in Accordance with the Requirements and Classification of the Destination Country).

In order to strengthen the partnership scheme formed and to strengthen the global / export market, a certification instrument is needed to ensure that post-harvest cultivation and processing practices have fulfilled health, safety, safety and environmental criteria. Garden certification which correlates with increasing selling prices will encourage farmers to produce mangosteen in a sustainable manner.

Investment in the production sector through the scheme of developing superior seeds, partnerships and certifications will contribute to achieving SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector (rupiah per worker); Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; 2.4.1. Establishment of sustainable food agriculture areas; Target 2.5.1. Number of superior varieties of plants and animals for food released; Target 2.B.1. Estimated policy support to producers.

3.3.2. Food Handling Storage and Processing

Food Handling Storage and Processing

(Support SDG 2 on Target: 2.1.1; 2.3.1; 2.3.2 and 2.C.1)

Post-harvest and processing sector, we need a post-harvest technology/tool, storage system and appropriate transportation system to maintain the quality of mangosteen, considering that mangosteen has a high risk of fruit damage. Then the important investment opportunities to do are:

a) Floating Packing House

(Include Post Harvest Technology Starting From Sorting, Cleaning, Grading and Packaging).

It needs an investment in appropriate post-harvest technology infrastructure, aimed at extending the shelf life and attacking pests of mangosteen. The development of containerized houses is one of the infrastructures expected to be in locations of mangosteen fruit production centers to shorten the distribution and post-harvest treatment in order to maintain the quality of mangosteen. It also encourages the registration / certification of containerized houses and fresh food safety certification (Prima 1,2,3) to strengthen the export market.

b) Innovation of Mangosteen Fruit Processed Products for Farmers / SMEs Groups *(Strengthening Capacity, Technology and Marketing Access)*

Mangosteen processed products such as syrup, dodol, mangosteen peel extract, etc. have considerable market opportunities, both local and export markets. Therefore, it is necessary to develop innovative products especially for farmers / SMEs to increase the selling price of mangosteen. So that it is necessary to strengthen processing capacity, support simple production technology and marketing access.

Through the investment scheme above, it is hoped that the private sector can contribute to the achievement of SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector (rupiah per worker); Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.C.1. Anomaly indicator of food prices

3.3.3. Food Trade and Marketing

Food Trade and Marketing

(Support SDG 2 on Target: 2.1.1; 2.3.1; 2.3.2 and 2.C.1)

The partnership scheme formed will be able to increase the sales quota of farmers / farmer groups' yields. However, it is necessary to increase sales access to wider market access both locally and internationally or directly to the producers of mangosteen processed products. The activities to strengthen market access that need to be carried out are:

a) Strengthening Branding (*Strengthening Existing IGs and Encouraging Geographical Indications of Mangosteen Fruit in Other Areas*). Together with the government, mangosteen needs to be encouraged to be registered as a commodity of Geographical Indications, striving to increase

the selling value of mangosteen in the local and international markets. The expectation from geographical indications is the increase in farmers' welfare along with the increase in selling value of mangosteen.

b) Mangosteen Packaging for Farmers / SMEs Groups (*Targeting Modern Markets for Middle and Above*)

With the support of land certification, IG, and traceability that has been obtained. A support for packaging technology facilities and infrastructure for farmer groups and SMEs is aimed at expanding marketing access in local markets (specifically modern markets). The impact of the existence of safe and healthy fruit packaging will increase the selling value of products and farmers' income. The activity of strengthening access to the mangosteen market will encourage the achievement of SDG 2 on: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.C.1. Price anomaly indicator.

3.3.4. Consumer Demand, Food Preparation, and Preferences

Consumer Demand, Food Preparation and Preferences

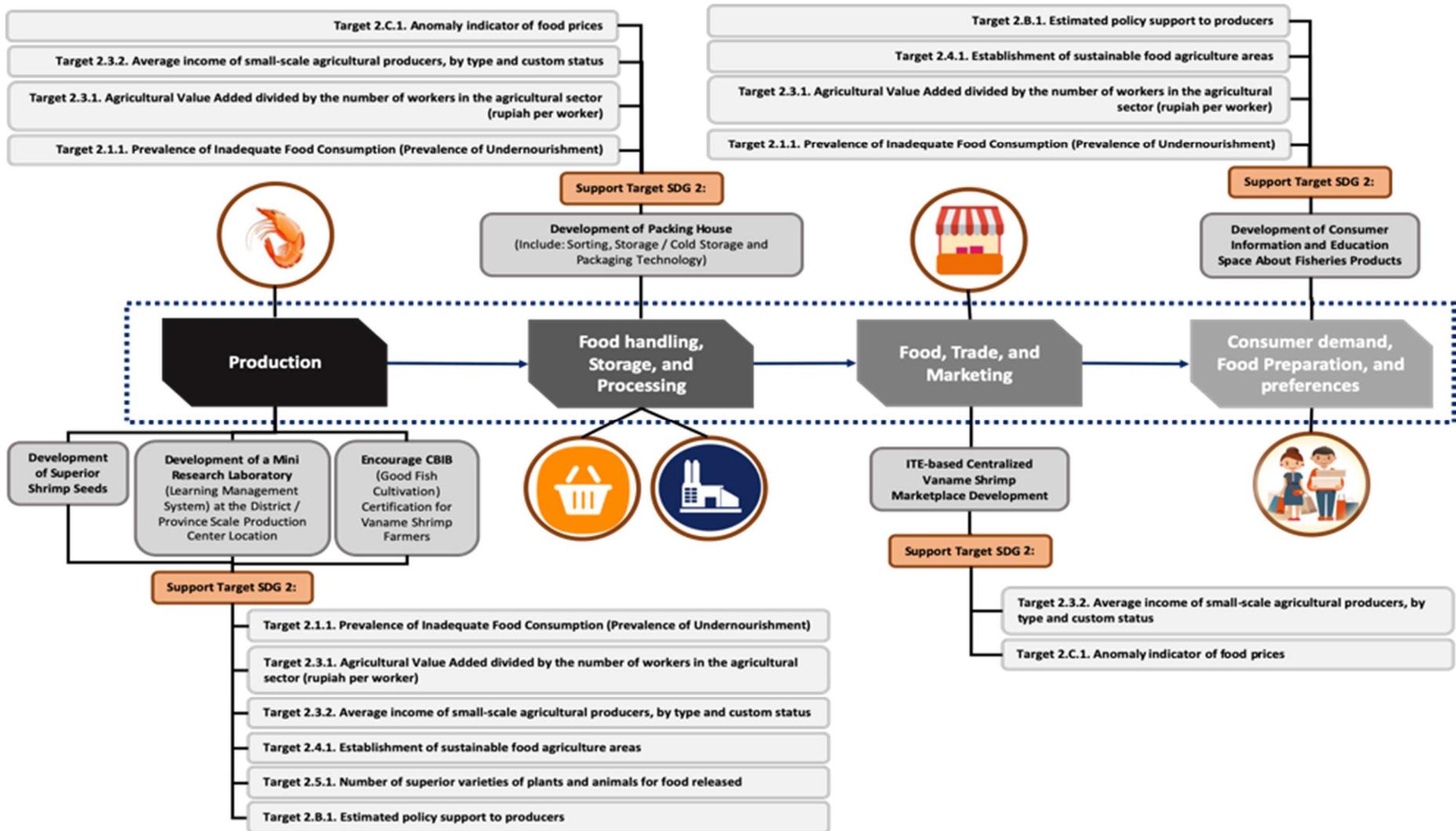
(Support SDG 2 on Target: 2.1.1; 3.2.1 and 2.3.2)

The high demand for mangosteen on the international market needs to be supported by policies that have an impact on increasing production and quality of mangosteen products. There needs to be a scheme that encourages mangosteen products to get **International Safety and Healthy Food Certification** as a form of guarantee to consumers. The certification will guarantee the mangosteen fruit is safe, healthy and hygienic, especially for European consumers who are very concerned about health. This health and safety scheme strongly support SDG 2 achievements in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural value added is divided by the number of

workers in the agricultural sector; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status.



3.4. Investment Opportunity of Vaname Shrimp Commodity



3.4.1. Food Production.

Food Production

(Support SDG 2 on Target 2.1.1; 2.3.1; 2.3.2; 2.4.1; 2.5.1 and 2.B.1)

The global shrimp export trade competition is predicted to be tighter, along with global consumer preferences that continue to rise. So, the key word that must be fulfilled in encouraging acceptance of national shrimp products is how to create competitive national shrimp product competitiveness. There are two main factors to create competitiveness of national shrimp products, namely how to:

- 1) Create production efficiency
- 2) Quality assurance (food safety).

The following are investment opportunities that can be done:

a) Development of Superior Shrimp Seeds

Encourage partnerships between the People's Farmers Group and Hatchery or Cold Storage Companies in the development of superior vaname shrimp seeds.

b) Development of a Mini Research Laboratory (Learning Management System) at the District / Province Scale Production Center Location

The development of a laboratory to conduct mini research as a means to support consultation and assistance in the field of cultivation technology and control of shrimp disease pests in supporting the quality of ponds and smallholder vaname shrimp products.

c) Encourage CBIB (Good Fish Cultivation) Certification for Vaname Shrimp Farmers.

This area is anticipated because there were still weak start from the lack of application of biosecurity, the use of production inputs that are not measured, and the lack of control over aquaculture waste. So, it is important for the existence of certification that can drive the shrimp aquaculture production process carried out responsibly by applying the principles of sustainable aquaculture (Sustainable Aquaculture). The aspect of sustainability becomes a necessity in ensuring the sustainability of the national warehousing business by integrating environmental, economic and social aspects into its management approach.

Investment in the production sector through the scheme of developing superior seeds, partnerships and certification will contribute to achieving SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector (rupiah per worker); Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; 2.4.1. Establishment of sustainable food agriculture areas; Target 2.5.1. Number of superior varieties of plants and animals for food released; Target 2.B.1. Estimated policy support to producers.

3.4.2. Food Handling Storage and Processing

Food Handling Storage and Processing

(Support SDG 2 on Target 2.1.1; 2.3.1; 2.3.2 and 2.C.1)

Post-harvest handling is an important thing to consider, especially in improving quality, developing product innovation and expanding marketing access. The investment activities that can be carried out to strengthen the post-harvest and processing sectors are:

a) Development of Packing House (Include: Sorting, Storage / Cold Storage and Packaging Technology)

The investment in proper post-harvest technology aims to extend the shelf life of vaname shrimp. The development of container houses is expected to be in locations of vaname shrimp production centers to shorten distribution and post-

harvest treatment to maintain quality. In addition, the existence of a registered or even certified container house will support food safety certification in order to strengthen the export market.

Through the investment scheme above, it is expected to contribute to achieving SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector (rupiah per worker); Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.C.1. Anomaly indicator of food prices.

3.4.3. Food Trade and Marketing

Food Trade and Marketing

(Support SDG 2 on Target: 2.3.2 and 2.C.1)

The popularity of vaname shrimp farming has increased in recent years. Its existence is able to rival and even shift the cultivation of tiger shrimp, which has become an idol of business people since many years ago. This is very positive for the development of shrimp farming business in Indonesia, which continues to increase from year to year. So, there are several things needed for investment in developing the vaname shrimp sector, namely:

a) ITE-based Centralized Vaname Shrimp Marketplace Development.

Indonesia is now faced with a new era of very dynamic development of information technology, or what is called industry 4.0. In order to continue to compete globally, the aquaculture sector especially the shrimp farming business in Indonesia must continue to take advantage of developments in information technology. The effort to transform the aquaculture business into industry 4.0 is expected to provide the best solution, especially in building a production system that is more efficient and measurable starting from the technical aspects, management, strengthening human resources and marketing access.

Private sector investment will be able to contribute to achieving SDG 2 in: Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.C.1. Anomaly indicator of food prices.

3.4.4. Consumer Demand, Food Preparation and Preferences

Consumer Demand, Food Preparation and Preferences

(Support SDG 2 on Target: 2.3.1; 2.4.1 and 2.B.1)

a) Development of Consumer Information and Education Space About Fisheries Products

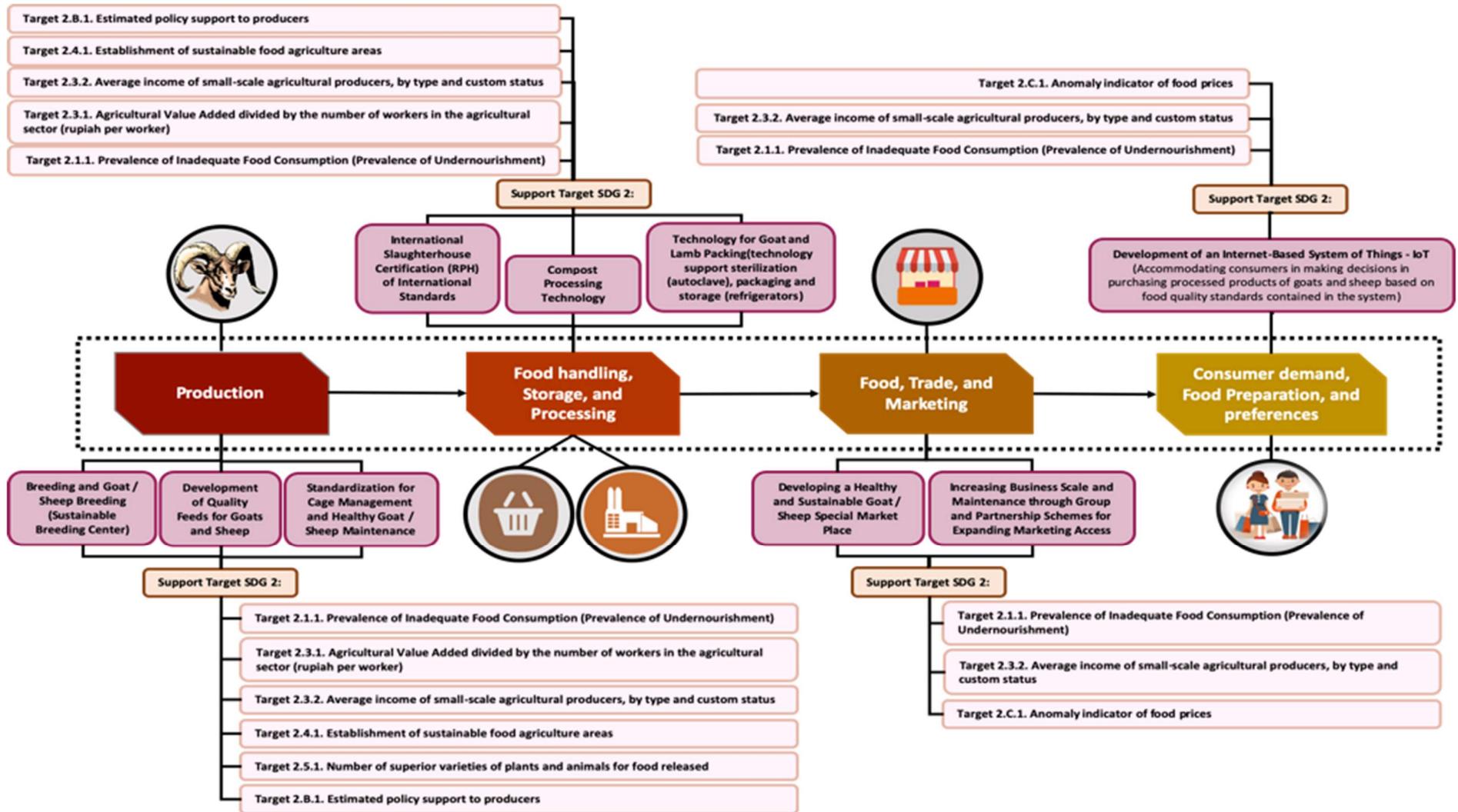
The high international market demand for Vaname shrimp is a great opportunity to create increased income for farmers and the country through increased exports. Although demand continues to increase, it is important to be balanced with consumer education about the awareness of consuming shrimp products that apply sustainability / certification practices.

Specific for the private sector (industry and distributors) engaged in the industry and marketing of vaname shrimp-based products, it is necessary to educate their customers to buy and consume certified / sustainable shrimp. Through consumer education will indirectly force shrimp farmers and industry to produce and provide healthy, safe and environment-based food. Consumer awareness of food quality and safety will affect selling prices and increase in income.

This investment activity will support SDG 2 on: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector (rupiah per worker); Target 2.4.1. Establishment of sustainable food agriculture areas; Target 2.B.1. Estimated policy support to producers.



3.5. Investment Opportunity of Goat and Sheep Commodity



3.5.1. Food Production

Food Production

(Support SDG 2 on Target: 2.1.1; 2.3.1; 2.3.2; 2.4.1, 2.5.1 and 2.B.1)

There are still many goat and sheep breeding businesses that are side businesses and are done traditionally. This is very unfortunate, given the goat livestock business opportunities are still wide open and very profitable, because of high market demand. The modern way of livestock is the answer to the high demand for goat meat on the market. In addition, modern goat raising has many advantages, including cost efficiency, time, labor, feed, and management. Modern goat livestock can be applied in various business scales, ranging from small to medium scale businesses, to large.

In encouraging the management of modern farms, it is necessary to support the strengthening of capacity for smallholder farmers from the government and industries engaged in meat processing. Support can be done in several schemes including:

a) Breeding and Goat / Sheep Breeding (Sustainable Breeding Center)

The main problem of breeders in the production aspect is the decline in genetic quality of livestock, this is due to the lack of implementation of breeding technology at the farmer level, traditionally raised livestock, limited scale of ownership. The concept of breeding center is a system of providing superior males and mating cages in one location. Breeding center facilities consist of mating cages, legume forage gardens and bore wells. Breeding center is a simple solution to overcome breeders in detecting heat and limitation of superior males, besides animal health is more guaranteed and controlled, genetic quality improvement and parent performance can be achieved, so that seedling production increases. The breeding process will introduce artificial insemination technology to help farmers in the production of quality seeds.

Provision of superior seeds from the practice of sustainable breeding of goats and sheep is the key in increasing the productivity and quality of meat for small farmers. The role of the government and the private sector cannot be separated in providing seed supply services, it is necessary to develop a business scheme for sustainable breeding and breeding of goats and sheep.

b) Development of Quality Feeds for Goats and Sheep

Simple education and processing technology for feed is an important support for small farmers in processing high quality feed with the best composition, with reference to the potential availability of local feed sources. Animal feed processing technology can be used to meet basic nutritional and living needs, such as production (fattening and milk) and for reproduction (breeding and breastfeeding).

c) Standardization for Cage Management and Healthy Goat / Sheep Maintenance

Modern cage management and maintenance are also important points in aspects of improving the quality, safety and health of meat. Currently there are still many farmers who do not consider the health of the cage, which in turn will have an impact on the declining quality of the goat and lamb meat itself.

Investment in the production sector will contribute to the achievement of SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.4.1. Establishment of sustainable food agriculture areas; Target 2.5.1. Number of superior varieties of plants and animals for food released; Target 2.B.1. Estimated policy support to producers.

3.5.2. Food Handling Storage and Processing

Food Handling Storage and Processing

*(Support SDG 2 on Target:
2.1.1; 2.3.1; 2.3.2; 2.4.1 and
2.B.1)*

a) International Slaughterhouse Certification (RPH) of International Standards

There is a need for a Public Private Partnership scheme in the establishment and propagation of Slaughterhouses (RPH) that refers to a certain standard demanded by the international market (halal food, GMP, HACCP, ISO, and health food), which aims to improve the quality of export products and expansion of domestic and international market networks. Slaughterhouses need to implement an internal control system to ensure the traceability of goat and sheep post-harvest products from the cutting process to the

marketing of processed meat. This will increase market confidence in the quality of goat and sheep meat from Indonesia.

b) Technology for Goat and Lamb Packing

The need for technology support sterilization (autoclave), packaging and storage (refrigerators). The technology becomes important to avoid contamination of harmful microbes and bacteria that result in the distribution process of meat that is not sterile and risky contamination during travel.

c) Compost Processing Technology

Besides meat, the demand for livestock waste (manure) has increased, due to the high awareness of modern agriculture that is environmentally friendly (organic) and consumer awareness of health and nutritious food.

Thus, the three investment items mentioned above will contribute to the achievement of SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.1. Agricultural Value Added divided by the number of workers in the agricultural sector; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.4.1. Establishment of sustainable food agriculture areas; Target 2.B.1. Estimated policy support to producers.

3.5.3. Food Trade and Marketing

Food Trade and Marketing

(Support SDG 2 on Target 2.1.1; 2.3.2; and 2.C.1)

The relation between farmers and markets is one of the weaknesses, because small farmers generally do not have the ability to make direct transaction relations. They are very dependent on the traders.

a) Developing a Healthy and Sustainable Goat / Sheep Special Market Place

Directly accommodating small farmers and slaughterhouses that apply a modern livestock system, so that marketing becomes more centralized and creates wider export market opportunities and farmers have a bargaining position on prices.

b) Increasing Business Scale and Maintenance through Group and Partnership Schemes for Expanding Marketing Access

Improving relations between small farmers, the private sector (off taker), banking and government also needs to be encouraged even greater. Multi-stakeholder relations aim to improve livestock quality and open up export opportunities. It is also to encourage small farmers to shift towards profit-oriented by making communal cages and groups.

Private sector investment will contribute to achieving SDG 2 in: Target 2.1.1. Prevalence of Undernourishment; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.C.1. Anomaly indicator of food prices.

3.5.4. Consumer Demand, Food Preparation and Preferences

Consumer Demand, Food Preparation and Preferences

(Support SDG 2 on Target: 2.1.1; 2.3.2 and 2.C.1)

Internal control system (internal control system) of processed goat and sheep products that contain product traceability and refers to the standardization of food quality (halal food and healthy food) aims to ensure food safety and healthy processed products of goats and sheep. Investment activities that can be carried out by the private sector are:

Development of an Internet-Based System of Things - IoT (Accommodating consumers in making decisions in purchasing processed products of goats and sheep based on food quality standards contained in the system).

This system will develop to provide certification of goat and sheep products that refer to certain quality standards. The certification aims to increase consumer confidence in the product. Private sector investment is expected to contribute to achieving SDG 2 in Target 2.1.1. Prevalence of Undernourishment; Target 2.3.2. Average income of small-scale agricultural producers, by type and custom status; Target 2.C.1. Anomaly indicator of food prices.

Matrix of Investment Opportunities of the Private Sector in Five Sample Commodities

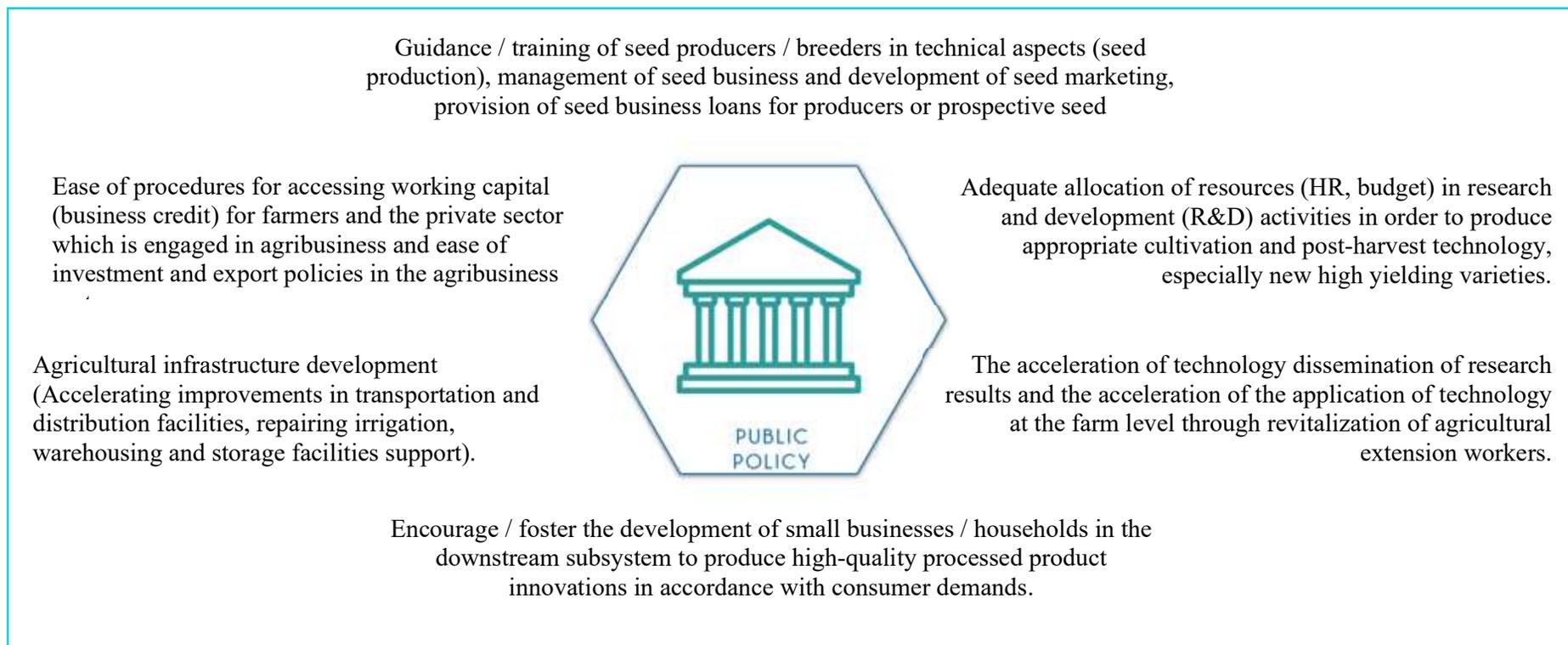
Type of Comodity				
Soybean	Coffee	Mangosteen	Shrimp	Goat & Sheep
1. Food Production				
1.1. Opportunity Investment of Private Sector				
<p>a) Development of Superior Soybean Seed Varieties, According to Regional Characteristics and Micro-Climate (<i>industry scale: include technology production and Production house</i>)</p> <p>b) Soybean Agro-Industry Developemnt (Indusry Scale), (<i>Expansion of planting area, input technology production, harvesting and irigation</i>)</p>	<p>a) Development of Superior Coffee Seed Varieties, According to Regional Characteristics and Micro-Climate (<i>industry scale: include technology production and Production house</i>)</p>	<p>a) Development of Mangosteen Fruit Superior Seed Varieties, According to Regional Characteristics and Micro-Climate (<i>industry scale: include technology production and Production house</i>)</p> <p>b) Mangosteen Agro-Industry Development (Indusry Scale), (<i>Expansion of planting area, input technology production, harvesting and irigation</i>)</p>	<p>a) Development of Superior Shrimp Seeds. (<i>Encouraging partnerships between Smallholder Farmers Groups and Hatchery or Cold Storage Companies in developing superior vaname shrimp seeds</i>)</p>	<p>a) Breed and Goat / Sheep Breeding (<i>Sustainable Breeding Center: include breeding house, technology breeding</i>)</p> <p>b) Development of Quality Feed for Goats and Sheep (<i>includes simple feed processing technology at group level</i>)</p>
1.2. Opportunity investment of Public Private Partnership (PPP Models)				
<p>a) Strengthening capacity and mentoring of Good Agriculture Practices and Good Handling Practices at farmer group level)</p>	<p>a) Plantation Rejuvenation and Coffee Land Revitalization</p> <p>b) Development of an Indonesian Coffee Cultivation Knowledge Management Database (<i>ITE-based database containing information knowledge about the cultivation, post-harvest, packaging and marketing of sustainable coffee commodities in Indonesia</i>)</p>	<p>a) Strengthening capacity and mentoring of Good Agriculture Practices, Good Handling Practices and developing internal monitoring systems (ICS) and mangosteen commodity traceability (<i>Building a Partnership Scheme for Strengthening Commodity Supply Chains</i>)</p> <p>b) Mangosteen Land Certification (<i>for example Phytosanitary Certificate, Organic, and Others in Accordance with the Requirements and Classification of destination country</i>)</p>	<p>a) Development of a Mini Research Laboratory (<i>Learning Management System at the District / Province Scale Production Center Location</i>)</p> <p>b) CBIB Certification (<i>How to Cultivate Fish for Farmers</i>)</p>	<p>a) Standardization for Cage Management and Healthy Maintenance</p>

Type of Comodity				
Soybean	Coffee	Mangosteen	Shrimp	Goat & Sheep
2. Food Handling, Storage and Processing				
2.1. Opportunity Investment of Private Sector				
a) Packing House and Production Standardization (Includes sorting, drying, storage and packaging technology) b) Development of Innovative and Sustainable Soybean Processed Products Industry (Include Technology, Certification and traceability)	a) Floating Packing House (includes post-harvest technology from sorting, cleaning, packaging and storage) b) Technology Support for the Food Product Processing Industry (roasting and grinder automation machines, standardization of production quality, packaging design, technology innovation of derivative products)	a) Floating Packing House (includes post-harvest technology from sorting, cleaning, packaging and storage)	a) Development of Packing House (Include: Sorting, Storage / Cold Storage and Packaging Technology)	a) Goat and Lamb Packing Technology b) Waste Management Industry Development (Compost Fertilizer Processing, Include processing technology)
2.2. Opportunity investment of Public Private Partnership (PPP Models)				
-	-	a) Mangosteen Processed Product Innovation for Farmers /SMEs Groups (Strengthening capacity, support technology and marketing access)	-	a) International Standard Slaughterhouse Certification (RPH)
3. Food Trade and Marketing				
3.1. Opportunity Investment of Private Sector				
-	a) Developing Specialty Coffee Products and Obtaining Geographical Indications at other region b) Packaging Design Innovation	a) Mangosteen Packaging for Farmers / SMEs Groups (Targeting Modern Markets for Middle and Above)	-	a) Scale Up Business and Maintenance Through Group Schemes and Partnerships for Expansion of Marketing Access

Type of Comodity				
Soybean	Coffee	Mangosteen	Shrimp	Goat & Sheep
3.2. Opportunity investment of Public Private Partnership (PPP Models)				
a) Encourage the development of the concept of certified local soybean management through the Public Private Partnership scheme (<i>premium soybean</i>)	a) Certification of Estates and Production Processes (<i>Based on sustainability management: Rainforest, UTZ, Organic Certification, etc. especially in 24 Types of Coffee that Have Geographical Indications</i>). b) Development of a Special Market Place for Sustainable Coffee Products (Certification)	a) Strengthening Branding (<i>Strengthening Existing IGs and Encouraging Geographical Indications of Mangosteen Fruit in Other Areas</i>).	a) Development of an ITE Certified Vaname Shrimp Specific Marketplace (<i>Centralized marketing of shrimps from a healthy and sustainable modern fishing system</i>)	a) Develop a Healthy and Sustainable Goat / Sheep Specific Market Place based on ITE (<i>centralized marketing of goats and sheep from modern, healthy and sustainable animal husbandry systems</i>)
4. Consumer Demand, Food Preparation and Preferences				
4.1. Opportunity Investment of Private Sector				
a) Packaging and Labelling Innovation Design (<i>Packaging of processed soy products for export purposes</i>)	a) Coffee Commodity Education Tourism Development in Production Centers (<i>Education on cultivation, post-harvest, baristas, museums. Increasing the interest of young people towards coffee cultivation</i>)	-	-	-
4.2. Opportunity investment of Public Private Partnership (PPP Models)				
-	-	a) International Safety and Healthy Food Certification (<i>As a form of guarantee to consumers. Guaranteeing safe, healthy and hygienic mangosteen, especially European consumers who are very concerned about health</i>)	a) Development of Consumer Information and Education Centers on Fisheries Products	a) Development of Internet-Based System of Things - IoT (<i>Accommodating consumers in making decisions in buying processed products based on quality standards</i>)

Matrix Policy Support to Encourage Mobilization and Private Sector Investment.

To achieve increased productivity and quality for food security and nutritional needs, policy support is needed starting from the upstream subsystem to the downstream sub-system. Policies needed include:



Each sector has potential and problems faced by each, but in increasing productivity and quality of products for food safety, a strong partnership and collaboration model is needed between the government, the private sector and farmers (Public Private Partnership). So that the process of improving the value chain and commodity supply chain can be carried out effectively and sustainably, in order to encourage food security and achievement of the SDG 2, which is zero hunger.

CONCLUSION

The current situation, the five commodities (soybean, coffee, mangosteen, vaname shrimp, goats and sheep) have high potential for product development and markets, especially the export market. Although consumer demand is quite high, the production sector is still faced with the main problem, namely, the instability of commodity supply and low quality. This has an impact on the weakness of the food system and the unmet market demand.

Generally, food system actors in five commodities have almost the same problems, including:

- **The Category of Producers (Smallholders)** is faced with low productivity and quality of yields. This is due to the lack of availability of quality seeds, land ownership that is narrow and not managed intensively not a priority, does not apply Good Agriculture Practices (GAP), pest and plant disease, cultivated plants are not productive or the age of old plants (especially coffee and mangosteen) and the low mastery of cultivation and post-harvest technology due to the majority of old farmers.
- **The Category of Collector** is faced with the challenge of decreasing commodity supply from farmers, besides that some collectors are traditional, have not yet been treated with good post-harvest treatment, lack of mastery/application of post-harvest technology, warehousing/storage systems that have not been standardized, as well as the abundance of waste. This has an impact on the declining quality and quality of commodities.
- **The Category of Industry (Major/MSMEs).** Generally, at the industry level, the challenge is to continue to increase awareness and consumer demand for quality products, at the same time the quality of raw materials is declining and uncertain. This will have an impact on the sustainability of production. Especially for small and medium industries, many are faced with low quality products so it is difficult to compete with large industries, especially on the price side. This is due to the weak marketing strategy, less efficient production process, lack of application of technology and weak quality control.

To respond the high market demand, a joint action/ innovation among food system actors is needed, especially in increasing productivity and quality. The private sector has a strong enough contribution in solving the problems of the food system that is happening right now, namely through investment schemes in the production, processing, marketing and consumer education sectors. The investment scheme opportunities that are considered as a settlement solution include:

a. Food System Downstream Sector (Aquaculture)

- Investments in the development and production of superior seeds (including production houses and seeds for breeding and breeding technology inputs);
- The private sector that is in contact with the commodity, needs to develop an agro-industry scheme (large scale commodity development: expanding the planting area in partnership with smallholders, aquaculture technology inputs and irrigation systems). For intensive management and easier monitoring of productivity and quality of yields; and
- Management of aquaculture waste into innovative products (soybean waste for animal feed, coffee shells for briquettes and fertilizer, goat manure for compost). This development requires investment in the technology sector and production houses.

b) Middle Sector Food System (Post Harvest and Processing):

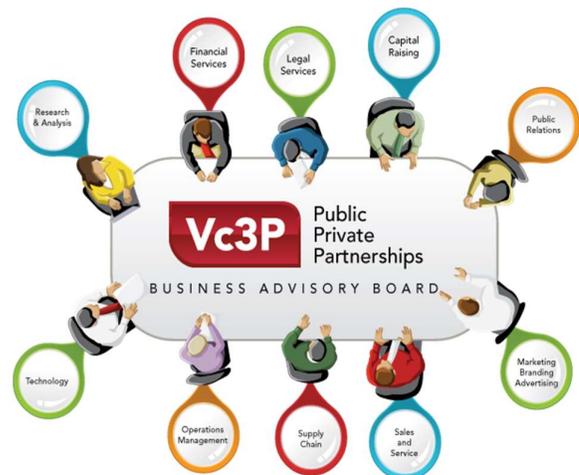
- Development of international standard packing houses (export), as a post-harvest processing center that introduces sorting, drying, storage and packaging technology to avoid quality degradation. This investment is focused on the location of production center or areas that were once commodity production center. At the same time the scheme shortened the relatively long supply chain of commodities; and
- Technology support for the development of innovations related to export standard commodity related products (drying technology, roasting and grinder automation machines, processing and storage technology and packing technology).

c) Upstream Food System Sector (Marketing and Consumer):

- Strengthening branding and marketing strategies, investment is carried out by developing innovative designs and labeling, developing market places specifically for ITE-based certified products; and
- Development of eco-tourism and creating information center on fisheries or other commodities products, etc.

As for increasing collaboration / partnership schemes through Public Private Parties (PPP) in an effort to improve productivity and quality of commodity related products including:

- a) Strengthening farmer groups on the application of Good Agriculture Practices (GAP) and Good Handling Practices (GHP) with a partnership with industry or exporters, also developing an internal control system (ICS) and commodity traceability;
- b) Certification support (land, cultivation, processing) such as Rainforest, UTZ, Organic Certification, Phytosanitary Certificate, etc to improve export marketing access;
- c) Support of intellectual property protection certificates - Geographical Indications (IG) in other regions, to strengthen branding;
- d) Development of special and centralized market places for exported and certified commodities; and
- e) Development of a Mini Research Laboratory (Learning Management System at the District / Province Scale Production Center Location) and serves as a data manager and knowledge management.



Given the increase in productivity and quality of commodity products cannot be done by smallholders themselves, the investment of the private sector and through the PPP scheme is expected to improve the quality and efficiency of the current food system. Where all the value chain actors do not walk individually but collaborate with each other to improve the quality of their value chains and supply chains. The intended investment is not only in terms of funding but also the transfer of knowledge, technology support, networking / partnerships, marketing access and policies that support the investment itself.

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