Indonesia

Preparatory Survey for BOP business on promoting Cacao Production in Boalemo, Indonesia

Final Report

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Japan International Cooperation Agency(JICA）

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1. Overview

1.1 Background

Since FY2011, Kanematsu and the Gorontalo Provincial government have signed a Memorandum of Understanding, in aim of cooperatively conducting a feasibility study commissioned from the Global Environment Center (GEC), and the Ministry of Economy, Trade and Industry's survey of greenhouse gas (GHG) emissions reduction project (specifically for REDD+[1]). As a result of this survey, deforestation was identified in the Boalemo District, due to the exclusive slash-and-burn corn cultivation especially on the steep slopes of mountainous areas which are unsuitable for agriculture. In addition, there was not a sufficient incentive for the locals to cultivate the land sustainably. Through discussion with the local government and experts, cacao production, which is commonly cultivated in the southern part of Sulawesi Island, was cited as a means to supplement corn agriculture.

The Boalemo District Government has set up a policy to promote cacao production, and since 2012 the Agricultural Department implemented a cacao production promotion program (One million cacao program) under the leadership of the governor of the Boalemo District ("BUPATI") and advanced efforts to nurture it as one of the district's major industries. Although some farmers have already begun to introduce cacao, due to insufficient incentives for cacao production, the plantation area of cacao in the district is still approximately only 1/20th of that of corn (514 tons in 2012). Therefore, cacao cultivation has still not spread as widely as corn, and is in need of support to improve production technology and to build a value chain for high quality cacao in order to promote its production.

In response to these issues, this project was designed in cooperation with the Boalemo Government to study the promotion of cacao production in this region, and with Kanematsu to promote value chain development. In order to advance cacao production, we will introduce the technical knowledge of Dari K, which has previous experience in introducing and promoting high quality cacao cultivation on Sulawesi Island in the West Sulawesi province.

1.2 Objective

About 70% of the workers are farmers in Boalemo, and the poverty rate exceeds 20% (2012). Also, in the Gorontalo province (within which the Boalemo district resides), corn slash-and-burn agriculture is being implemented especially on the steep slopes of forested land, which is causing deforestation. Besides the slash-and-burn cultivation of corn, incentives to encourage sustainable land use are not sufficient, and farmers are suffering low profits due to sluggish corn prices.

This project aims to suppress the slope-side slash-and-burn agriculture of corn as a driver of deforestation by disseminating high-quality cacao production in Boalemo, and also to contribute to the improvement of BOP farmers' livelihoods expanding the cacao industry in Boalemo in the future. This study investigated the feasibility of building a value chain for domestic middle class markets and the Japanese market.

1.3 Study Area

Indonesia, Sulawesi Island

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[1] REDD+ : Reducing Emissions from Deforestation and Forest Degradation

Location of Boalemo District, Gorontalo Province
(Source：U.S. Central Intelligence Agency)

1.4 Survey Method/ Survey Team

This survey was mainly conducted by Kanematsu, who is engaged in a REDD+ feasibility study, and also has built strong relationships with the Boalemo District government and local partner companies. Kanematsu’s local entity Kanematsu Trading Indonesia (KTI) was responsible for local marketing research. For quality control and brand strategy, technical training on cacao production was conducted by Dari K Co., Ltd. (hereinafter referred to as Dari K), which is based in Kyoto. Dari K has experience in cacao production and manufacturing cacao beans in West Sulawesi. Regarding cacao cultivation technology, local experts who are instructing on the production of cacao for Dari K Company were stationed as local experts for technical assistance. ERM Japan Ltd. (hereinafter referred to as “ERM”) took charge of the planning and managing the entire survey, operation management, capacity building activities and a baseline survey for local residents and farmers, and the consideration of future possible collaborations with JICA.

1.5 Survey Period

This survey was conducted from June 2015 to February 2017.

2. Summary of Survey Results

2.1 Study of quality control methods for cacao in Boalemo

Current quality control situation of Boalemo cacao: The current quality of cacao beans in Boalemo was generally evaluated as Low. This is caused by the lack of incentives for the farmers to spend time and effort on each cultivation step, as even if they produce high-quality cacao beans, the current market situation does not provide a difference in purchase price of the beans.

Proposed improvement plan: The importance of building a system to purchase high quality cacao beans at a higher price than usual was recognized through a pilot program where farmers followed the instruction and training provided by the survey team for appropriate cultivation and post-harvest processing techniques. Therefore, the survey team developed a quality control manual for the farmers to visualize and describe what kind of beans are evaluated as poor quality beans. This manual aimed to teach the farmers to understand the concept of quality control, enabling the farmers to better understand which processes will affect the quality of the beans.

The biggest concern for farmers is the selling price of cacao. The "visualization of price" - what level of quality beans the farmers can sell at what price - was considered to be essential, due to the conventional method of price determination where the buyer decides the price depending on the international market.

Therefore, in addition to the weight, water content, contamination rate of impurities, size of beans, waste ratio content of the beans such as mold, wormholes, and germinated beans, the accuracy of fermentation was proposed as an important component for the determination of quality. Standard levels of acceptability for each component were set and the price was set to be reduced when the quality level fell below that level.

At the time of purchase, it is important to evaluate the bean price according to the above items in front of the farmers in order to ensure transparency. Therefore, the following purchase manual was developed.

1） **Weight:** Introduction of a traditional scale (left) and digital scale (right) for weight measurement
2） **Moisture:** For measurement of moisture content, British equipment that is used worldwide as a cacao moisture meter was introduced. The survey team also demonstrated that one is able to place the sensor directly into a hemp bag**.**
3） **Waste:** Calculation method for a discount (price reduction) respective to the waste ratio measurement in a 200 g sample, as well as a standard value (4% is the Indonesian national standard) were introduced.
4） **Measurement of bean size:** Introduced a survey method to count the number of beans contained per 100 g.
5） **Defective beans:** Explained a discount method for moldy, infested, or germinated beans.
6） **Fermented beans:** Explained how to test the accuracy of fermentation by the cut test.

Examination of future strategy to utilize cacao production in Boalemo District: Within the Sulawesi island of Indonesia, the Boalemo district is relatively late to develop cultivation of cacao. Therefore, it is important to first clearly understand the position of the Boalemo product and the market environment, thus the following steps were considered.

① Adding organic cultivation, which is not widely utilized yet in other cacao producing areas including Indonesia and abroad, could add additional value to the Boalemo cacao beans by developing a strong association of Boalemo as a well known organic cacao bean production area.

② By strengthening "fermentation" as a post-harvest treatment technique, high-quality cacao beans that are differentiated from other areas of Sulawesi can be manufactured.

However, compared with other areas of Sulawesi Island, land transportation costs from Boalemo are relatively high, which acts against the purchase price for cacao beans. Also, as long as it is sold as cacao beans, even if a value added premium product such as organic and fermented beans is developed, the base price is still dependent on the state of the international market, which is beyond the control of farmers. Therefore, apart from branding strategies ① and ②, another method ③ to generate additional value by processing was considered.

③ Instead of selling as cacao beans, distribute after the beans have been processed up to a semi-finished product such as cacao mass, powder, or butter, or a fully processed product such as chocolate in Boalemo.

In order to realize strategy ③, it is necessary to attract private investment or business development. Also, the Boalemo district government’s cooperation will be necessary, so every stakeholder must cooperate to promote the cacao industry. The current GDP of Boalemo, which mostly composed of farmers, is low. However, there is considerable potential to improve income by cultivating cacao, and if this succeeds, it also adds additional value to chocolate derived from Boalemo cacao by attaching a "story" to the cacao and chocolate from Boalemo.

In any case, aside from branding, cooperation between stakeholders and appropriate guidance at all stages, such as cultivation of cacao, post-harvest processing, infrastructure development for sales, processing, and marketing are required for a high quality product. Thus, in order to promote the cacao industry it is essential to have a broad overview of the entire supply chain and to promote appropriate measures.

2.2 Feasibility of Microfinance

Financial needs of corn farmers when starting cultivation of cacao: Local authorities in Boalemo currently plan to increase the total area of cacao farms from the current total of 4,000 hectares to a total of 7,000 hectares in the next 2 years, requiring an additional 3,000 hectares of cacao farmland. In particular, this will entail converting 30% of farmland where corn was planted on sloped areas. Though there was support from local government and interest from farmers, the farmers will need financial support in order to convert corn production to cacao. This study investigated the feasibility of financial support (microfinance) from private banks in Indonesia for farmers in order to facilitate crop conversion to cacao in Boalemo.

Financial Institutions and Credit Schemes Available to Farmers in Boalemo: The only banks with a strong presence in the Gorontalo province are Bank Negara Indonesia (BNI), the Indonesian state bank, and Bank Rakyat Indonesia (BRI). Between the two banks, BRI is more likely to offer financial support for cacao farmers in Boalemo. This is primarily because BRI has branches in Boalemo, which saves on commuting time and expenses for the farmers. In addition, BRI's agricultural division has experience in microfinance, and has contractual experience both with individual farmers and farming groups.

Farmers are able to choose between two different types of loans from BRI. Farmers can receive capital as an individual debtor through the KUR credit scheme, or they can receive midterm credit through an intermediary or offtaker. After discussing with BRI, it was determined that BRI could supply a KUR credit scheme especially suited to the situation in Boalemo. In order to introduce and explain the credit schemes available to locals, this project and BRI jointly hosted a workshop for farmers, extension officers, cooperatives, the Chamber of Commerce and Industry, BRI Limboto, BRI Boalemo, and staff from the Agriculture Department.

① **KUR Credit Scheme (Loan from a bank to individual farmers)**

Standard KUR: In order for a farmer to be eligible for a standard KUR, one must provide collateral such as documentation proving land ownership rights or a BPKB (automobile ownership rights). However, after conducting interviews and a baseline study, it was evident that most farmers in the area possessed neither land ownership documentation nor a BPKB. Furthermore, for farmers who only receive income during the harvest season, monthly repayments would be difficult to meet. Because of this, a special KUR credit scheme has been proposed as outlined below. However, if the scheme below cannot be provided, utilization of a midterm credit scheme through an intermediary is considered to be the best option, as farmers will not be required to provide collateral.

Special KUR tailored to this project: With a standard KUR credit scheme, the maximum principal is 25 million rupiah, the bank charges an annual interest rate of 9%, and collateral is not required. Utilizing this system as a framework, BRI created a special credit scheme uniquely tailored for this project to accommodate small businesses, including agricultural businesses. In this credit scheme, BRI offers a 1 year grace period (tenor) to farmers who have newly planted cacao, after which the farmers are able to make a single payment. If the farmer is unable to repay one's debt within a fixed period, the bank will determine a new payment deadline, for which there is a maximum grace period of 2 years. BRI Limboto does not currently have insurance for agricultural products, however, if the farmer utilizes a credit guarantee corporation (Jamkrindo) or a local credit guarantee company (Jamkrinda) by paying an additional 1% interest, that company will cover 75% of the debt incurred if a payment is late. Since this system is operated in accordance with government policies, farmers must apply individually. For this project, BRI will offer a similar system of insurance for an additional 1% interest.

Based on results from research on the Indonesia Financial Services Authority, it was found that the Indonesian government appears to be planning a special KUR credit scheme similar to the one for this project (i.e. KUR+) in 2017 targeting the poor, and organizations like Indonesia Climate Change Trust

Fund are showing interest in using microfinance as an adaptation strategy in Gorontalo. Thus, the potential of this unique KUR credit scheme designed in this project is expected for widespread use in the region.

② **Midterm credit (Loan from a bank obtained through an intermediary)**

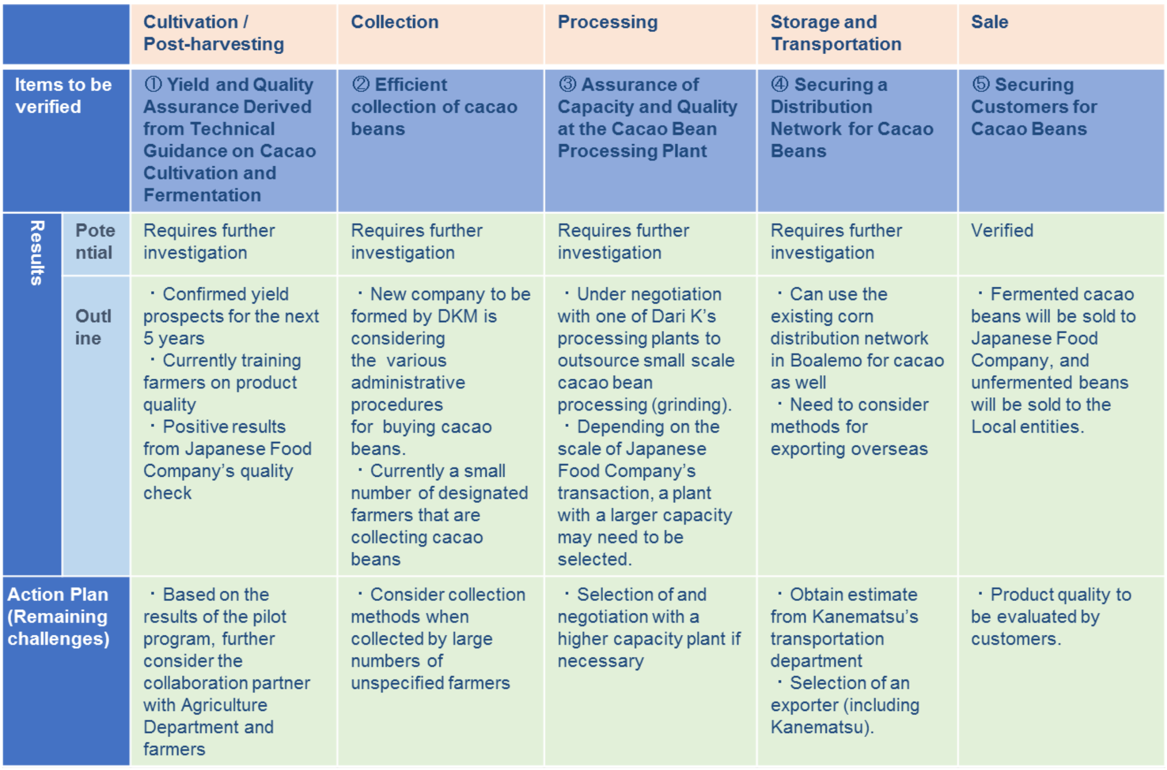
The second option, midterm credit, requires a third party company or organization to serve as an intermediary between the farmer and the bank. In addition, the intermediary must sign a memorandum as the bank's guarantor, insuring all of the farmers products (commodities). In Boalemo's case, the government could utilize this system by supporting the creation of agricultural cooperatives to establish a cacao industry. The advantage of this system is that the farmer can apply for the loan while simultaneously participating in training seminars on cacao cultivation and marketing. For example, if a cooperative is established, the 100 farmers that participated in the workshop for this project could apply for a loan through the cooperative. The total loan principal for this project would amount to 700 million rupiah. Although the bank generally first carry out an investment survey, if the local government pledges full support and guarantee, it is considered likely that the bank will approve of the loans.

2.3 Business Prospects

At this stage, Kanematsu is expected to build a value chain of the cacao production in Boalemo, and considering developing the business as a part of its company food business. Furthermore, as the primary local entity, DKM intends to take part in the project and, after carefully considering the proposed business plan, DKM committed to establish a cacao trading company in Boalemo. Furthermore, DKM has started procedures to establish the company, including a plan detailing specialists that will be sent to site.

Rationale for Business Prospects

The basis for conclusions reached regarding business prospects are displayed in the table below. The rationale for these conclusions is based on elements of the business that should be considered and the corresponding findings of this study.



		Cultivation / Post-harvesting	Collection	Processing	Storage and Transportation	Sale
Items to be verified		**① Yield and Quality Assurance Derived from Technical Guidance on Cacao Cultivation and Fermentation**	**② Efficient collection of cacao beans**	**③ Assurance of Capacity and Quality at the Cacao Bean Processing Plant**	**④ Securing a Distribution Network for Cacao Beans**	**⑤ Securing Customers for Cacao Beans**
Results	**Potential**	Requires further investigation	Requires further investigation	Requires further investigation	Requires further investigation	Verified
	Outline	・Confirmed yield prospects for the next 5 years ・Currently training farmers on product quality ・Positive results from Japanese Food Company's quality check	・New company to be formed by DKM is considering the various administrative procedures for buying cacao beans. ・Currently a small number of designated farmers that are collecting cacao beans	・Under negotiation with one of Dari K's processing plants to outsource small scale cacao bean processing (grinding). ・Depending on the scale of Japanese Food Company's transaction, a plant with a larger capacity may need to be selected.	・Can use the existing corn distribution network in Boalemo for cacao as well ・Need to consider methods for exporting overseas	・Fermented cacao beans will be sold to Japanese Food Company, and unfermented beans will be sold to the Local entities.
Action Plan (Remaining challenges)		・Based on the results of the pilot program, further consider the collaboration partner with Agriculture Department and farmers	・Consider collection methods when collected by large numbers of unspecified farmers	・Selection of and negotiation with a higher capacity plant if necessary	・Obtain estimate from Kanematsu's transportation department ・Selection of an exporter (including Kanematsu).	・Product quality to be evaluated by customers.

① Yield and Quality Assurance Derived from Technical Guidance on Cacao Cultivation and Fermentation

The aforementioned business plan was developed in accordance with the Boalemo agriculture department's current outlook on crop yield for cacao.

However, Boalemo district's government is not adequately managing the quality of cacao produced in Boalemo. In response, the study provided training to farmers. Beginning in October 2015, a pilot program on techniques for managing cacao, post-harvest processing, etc. was implemented for 65 farmers from 3 sub-districts as part of this study. Specific methods of management, an area that Dari K is experienced in, were considered beginning in August. The pilot program was used as a means to investigate whether such training could achieve improvement in quality of the cacao.

The current state of product quality is discussed in the section below.

A test was conducted in January by Japanese Food Company on product quality of fermented cacao beans produced in Boalemo. According to results, the beans had potential as a product, and although there was room for improvement in the fermenting and drying of the beans, no critical defects were identified in the test.

② Efficient Collection of Cacao Beans

DKM intends to take part in the project and, after carefully considering the proposed business plan, determined to establish a cacao trading company in Boalemo. Furthermore, DKM has started procedures to establish the company, including a plan detailing dispatch specialists on-site.

However, regarding the collection of cacao beans, while there are currently a small number of designated farmers that are collecting and providing beans to Japanese Food Company, much remains to be considered regarding distribution methods when collected by large numbers of unspecified farmers. Since the margin for intermediary distribution businesses are directly connected to logistical costs, the efficiency of the distribution businesses will have a large impact on the proposed business' expenses. Thus, it is very important to consider how this will affect the profitability of the proposed business.

Since there is a risk of the cacao beans cultivated and produced by this project to be bought out by large western companies, careful preparation is considered for collecting and distribution. Kanematsu and DKM are currently considering a mid- to long-term (about 5 years) contract with farmers, whom they have instructed on cultivation and provided technical support to, guaranteeing that all cacao produced by the farmers will be purchased with priority. The proposed business plan will be considered based on interviews with the farmers and consultation with the Local Entity, which is familiar with local business practices.

③ Assurance of Capacity and Quality at the Cacao Bean Processing Plant

Japanese Food Company is currently amidst negotiations to outsource the grinding of its cacao beans, which it procures from Boalemo, to Dari K's Polewali Plant. After the proposed business is started, beans will be processed at the Polewali Plant for a trial run, and the beans will be sold through Japanese Food Company. Furthermore, if the amount of cacao beans to be grinded surpasses the capacity of the processing plant in Polewali, a larger plant will need to be selected. Candidates for a larger processing plant are currently being identified. The next step will be to negotiate with the candidate sites based on the estimated amount of beans to be ground annually under Japanese Food Company' operation.

④ Securing a Distribution Network for Cacao Beans

Gorontalo has a network of highways with high shipping capacity for corn, one of its major industries. The unit price for shipping of cacao can likely be kept low by using the existing distribution network in Gorontalo. Kanematsu's local entity KTI was approached regarding product exports, including the price settlement.

⑤ Securing Customers for Cacao Beans

Current prospects for the proposed business largely depend on the amount of product procured annually by the Japanese Food Company. The Japanese Food Company is in the midst of producing the chocolate for actual samples, and will determine the amount of cacao it will procure annually after evaluating the chocolate samples. If the evaluation is good enough, Japanese Food Company will move forward with marketing within Japan.

As an enterprise starting a new environmental business, Kanematsu will work with its Indonesian counterpart DKM as well as other various specialists to develop a business plan, and will work together with Boalemo's local government to evaluate the feasibility of this business.

The mission of this business is to develop a new business around cacao along with farmers and the local government in Boalemo which can also be beneficial to Japanese companies, and to provide sustainable improvements to the livelihood of the local community. Furthermore, as the practice of slash-and-burn cultivation by poor local farmers is a major contributor to deforestation, the proposed business aims to contribute even a small amount to solving this issue and to environmental conservation in Indonesia. Through these efforts, the project hopes to obtain the support of both the Indonesian and Japanese governments to develop its business.

Considering that the market for chocolate, derived from cacao, continues to expand in emerging countries, the active involvement of the Gobel Group DKM (a local and trustworthy conglomerate), and the fact that projects combatting deforestation are gaining global attention due to the Paris Agreement adopted at COP 21, there is a strongly favorable business environment for this project. However, as a private company actually putting this project into action, DKM must clarify as thoroughly as possible, the risks associated with running the company sustainably. Based on this assessment, DKM must determine the amount of cash flow required for the business to be feasible, and whether the management team and stockholders will consider this a profitable business.

Remaining Challenges and Strategy for Starting a Business

This business will make clear its contribution to combatting deforestation under influence of the Paris Agreement from COP21, providing a unique story and appeal to consumers of chocolate products derived from Boalemo cacao beans. The project will also focus its efforts on building a strong value chain that reduces the premium on its products. More specifically, the project will strive to further marketing, and achieve long-term supply agreements with its customers. It is under these premises that DKM aims to be actively engaged in the establishment of a new cacao business. Furthermore, the company will obtain cash flow based on the incentive program outlined in REDD+, an important part of the Paris Agreement. Although a business plan was developed so that the company would be sustainable even without the REDD+ incentive program, considering that these are large incentives for the farmers, local government, and businesses involved, it may largely influence the success of the company.

Plan Moving Forward

Demand for chocolate in emerging countries and around the world is expected to increase. However, as cacao production in major producing regions such as various countries in Africa is sluggish in recent years, it is expected that cacao industry in Indonesia will grow in the near future (about the next 5 years). It must now be determined whether the production capacity of cacao will be sustainable without major obstacles, and what volume of production will be required to secure adequate revenue for the businesses involved. In particular, climate risk and risks associated with fluctuations of the market price of cacao must be carefully evaluated, considering the feasibility of the business after setting a limit on the amount of production capacity for which risks can reasonably be managed.

2.4 Development Impact

Income of Farmers in Boalemo, Poverty Level: Based on the results of a baseline study in Boalemo of 169 farmers, farmers that cultivate cacao and participated in the training provided in this study were shown to have statistically significantly higher incomes than those who did not participate in training. Results are displayed in the table below.

Cacao farmers who enrolled in training earned approximately 10,000,000 rupiah more per year than corn farmers, on average. There was no statistically significant difference in the salaries of cacao farmers who did not enroll in training and corn farmers. The training provided to farmers through the proposed business achieved a noteworthy improvement in the farmers' income. It is not sufficient to simply switch to cacao cultivation, but to also include training for the farmers. Banks and microfinance institutions should pay notice to the fact that investing in human capital is an effective method for increasing income.

Table2-1 Comparison of Farmers' Income Level

Type of Farmer	Sample size	Average annual income	Median annual income
Corn farmers	49	Rp 18,733,377	Rp 13,000,000
Cacao farmers that did not participate in training (GSK)	62	Rp 28,399,193	Rp 11,222,500
Cacao farmers that participated in training (JICA)	54	Rp 25,989,692	Rp 20,000,000

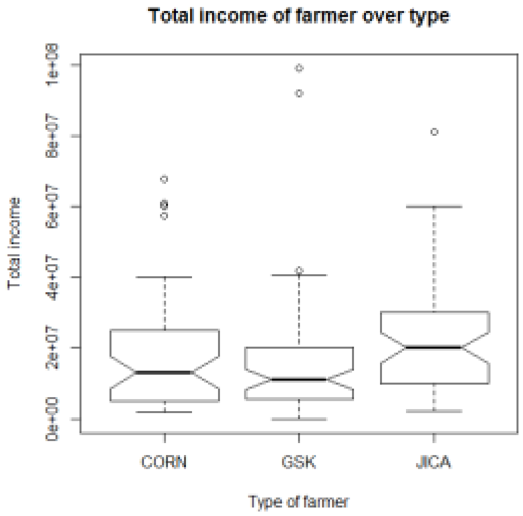


Figure 2-1 Boxplot of farmers' annual income

The median notches (the narrow part of the boxes) on the graph display confidence intervals. Notches that do not overlap show a statistically significant difference in the medians of the samples. The fact that the notches for JICA and GSK do not overlap shows that cacao farmers who enrolled in JICA's training (training for the proposed business) earned higher incomes than cacao farmers who did not enroll in this training. The dots show potential outliers.

Effect of Development from the Proposed Business: Benefits to the BOP included improvement in cultivation techniques through guidance provided to farmers, an increased number of farmers who utilized value-added processing techniques after harvest, and an increase in expected income. In addition, due to the establishment of areas to purchase and store the cacao beans there is better access to the market, which will help lead to continued expansion of the business.

Table 2-2 Considered Index(Numbers are results from a baseline study)

	Index	Corn farmers	Cacao farmers (GSK)	Cacao farmers (JICA)
Poverty level	PPI (Progress out of poverty: poverty index)	No significant differences identified in the baseline study.		
Income	Annual income (median)	Rp 13,000,000	Rp 11,222,500	Rp20,000,000
	Annual agricultural income (median)	Rp 10,000,000	Rp 8,500,000	Rp17,500,000
Post-harvest processing	Ratio of farmers that sell fermented beans	-	17%	45%
	Ratio of farmers that dry with a drying table	-	8%	14%
Cultivation techniques	Mixed plantation: Ratio of farmers that plant bananas	-	37%	72%
	Ratio of farmers that grow their own seedlings	-	1%	27%
	Ratio of farmers that use organic pesticides	-	8%	32%
	Ratio of farmers that use organic fertilizer	-	33%	50%
Environment	Awareness of the forest boundary	19%	20%	27%