

# THE FEASIBILITY OF INVESTMENT PLANTATION AND OPPORTUNITIES IN COFFEE INDUSTRY PROCESSING IN MUARA ENIM

*by Azwardi Azwardi*

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**THE FEASIBILITY OF INVESTMENT PLANTATION AND  
OPPORTUNITIES IN COFFEE INDUSTRY PROCESSING IN MUARA ENIM  
REGENCY**

**Azwardi<sup>1)</sup>**  
azwardi\_unsri@yahoo.com

**Imam Asngari<sup>2)</sup>**  
**Muklish<sup>3)</sup>**  
**Andy Mulyana<sup>4)</sup>**  
**Riswani<sup>5)</sup>**  
**Feriadi<sup>6)</sup>**

<sup>1)2)3)</sup>Economic Faculty of University Sriwijaya  
<sup>4)5)6)</sup>Agriculture Faculty of University Sriwijaya  
PDD AKN Banyuasin

**1**  
**Abstract**

The purpose of research conducted to determine the feasibility of investment in coffee plantations and coffee commodities downstream opportunities. Investment feasibility coffee plantations cover the technical aspects, production aspects, market aspects, farmer institutional aspects and financial rubber plantation business aspects. However, coffee commodities downstream cover products derived from coffee. Data used including primary and secondary data. Secondary data obtained from the relevant agencies, such as BPS and plantation department. Besides, primary data is obtained from observation and focus group discussions with farmers and coffee trader. Methods used include IRR, NPV and B/C ratio. Based on the research results feasibility of investment in coffee plantations from geographical aspect tend to be feasible in all regions of Muara Enim to cultivate coffee plants, but the centre area of the coffee in Muara Enim located in the Semende Darat Laut (44,10 %), Tanjung Agung (31,01 %), Semende Darat Ulu (11,19 %), dan Semende Darat Tengah (10,98 %). The productivity of Tengah (10,98 %) coffee plantation Tengah (10,98 %) in Muara Enim Regency. The productivity of coffee plantations in Muara Enim higher than nationwide, where the average productivity is based on the study was 1.06 tonnes per ha. Coffee products are marketed through a marketing channel that starts from farmers as producers, the majority sold to a collector, which then passed into the hands of wholesalers and exporters, to get into the hands of consumers. From the measurement of financial feasibility of coffee farming by using four eligibility criteria shows that farming is feasible to be developed with the B/C 1.20 (> 1) meaningful, any costs incurred by Rp.1 will generate profits of Rp.1.2. Coffee agro-industry and potentially cultivated in this region. Assumptions consumption amounted to 0,407 ounces of ground coffee per capita, hence the need for coffee powder as much as 338 tons per year. Investment opportunities of coffee beans, among others, can be processed into roasted coffee, ground coffee, instant coffee, coffee mix (coffee with milk), and coffee bags.

**Keywords:** Coffee, Investment Feasibility, Downstream products

## BACKGROUND

The agricultural sector during the period 2009-2015 contributed an average of 16.08 percent to the GDP of Muara Enim, and absorbed 19.23 percent of labor force, the second largest after the mining sector. When viewed from the location quotient (LQ), then the sector or sub-sector basis Muara Enim featured among other sub plantation crops that are part of the agricultural sector. Additionally premises using AHP approach to look at the determinants of the leading sectors consisting of Economic Value, SDA, HR, Production Scale, Technology, Skill Labor Market, Production, Competitiveness, Institutional, derivatives Processed Products, Infrastructure. Overall the sector sequence seeded based on 11 criteria that there is plantation sector with an average weight of 0.1587.. Based on the calculation of AHP, coffee processing industry has the third rank, is equal to 0.2136.

**Table 1. Coffee Plant Size According to Muara Enim**

No	Districts	2011	2012	2013	2014	2015	2016
1	Semende Darat Laut	11.070,00	11.077,00	11.077,00	11.076,00	11.076,00	11.076,00
2	Semende Darat Ulu	2.785,00	2.785,00	2.822,00	2.786,00	2.786,00	2.812,00
3	Semende Darat Tengah	2.720,00	2.719,60	2.757,00	2.720,00	2.720,00	2.759,00
4	Tanjung Agung	7.783,00	7.783,00	7.783,00	7.791,00	7.791,00	7.791,00
5	Rambang	0,00	0,00	0,00	0,00	0,00	0,00
6	Lubai	109,00	109,00	54,00	55,00	55,00	55,00
7	Lawang Kidul	198,00	198,00	198,00	198,00	198,00	198,00
8	Muara Enim	246,00	246,00	246,00	246,00	246,00	246,00
9	Ujan Mas	10,00	10,00	10,00	10,00	10,00	10,00
10	Gunung Megang	92,00	92,00	52,00	52,00	52,00	52,00
11	Benakat	0,00	0,00	0,00	0,00	0,00	0,00
12	Rambang Dangku	88,00	88,00	88,00	88,00	88,00	88,00
13	Gelumbang	27,00	27,00	27,00	27,00	27,00	27,00
14	Lembak	0,00	0,00	0,00	0,00	0,00	0,00
15	Sungai Rotan	0,00	0,00	0,00	0,00	0,00	0,00
16	Muara Bellida	4,00	4,00	4,00	4,00	4,00	4,00
17	Kelekar	0,00	0,00	0,00	0,00	0,00	0,00
18	Belimbing	0,00	0,00	40,00	40,00	40,00	40,00
19	Lubai Ulu	0,00	0,00	0,00	0,00	0,00	0,00
20	Belide Darat	0,00	0,00	55,00	55,00	55,00	55,00
	Total	<b>25.132,00</b>	<b>25.139,00</b>	<b>25.213,00</b>	<b>25.148,00</b>	<b>25.148,00</b>	<b>25.213,00</b>

Sumber :Statistik Perkebunan Kabupaten Muara Tahun 2016

Based on the results of data analysis of Landsat ETM + 8 with a path / row 125/063 which was acquired on 6 August 2016, the coffee plant in Muara Enim in four sub-districts Semende Inland Sea, District Semende Army Ulu, District and Sub-district Semende Middle Ground Tanjung Agung. Meanwhile, according to statistics Plantation Muara Enim 2016, coffee plants spread across 14 districts, and the districts of the most widespread coffee plant found in the same sub-district locations with the results of analysis of Landsat imagery is 4 districts.

## THEORIES

5 Internal Rate of Return is the discount rate that equates the present value of the cash inflows and investment value of a business, in other words IRR is the discount rate that produced the NPV = 0. If the capital cost of a business is greater than the IRR is the discount rate which generates NPV = 0. If the capital cost of a business is greater than IRR, the NPV becomes negative, so that the business is not feasible, the higher the IRR compared to the cost of capital, the better the business to have. Conversely, if the 5 IRR is less than the cost of capital, the project will not be taken. So the maximum capital costs which may be incurred equals to IRR.

4 Net B/C is the ratio between the sums of PV positive net benefit with the sums of PV negative net benefit. The positive present value number is the numerator and the number of negative present value is the denominator.

Net B/C shows an overview how many times the benefits obtained from the cost incurred. If the 4 net B/C > 1, then the project or business idea to be established is feasible. Vice versa, if the 4 net B/C < 1, then the project or business idea to be established is not feasible. Net B/C ratio is an additional net benefit of acceptable projects from every 1 unit amount spent.

Break Even Point is the point at which an activity is not gaining money, but it also is not losing money. Break Even Point or BEP may imply an analysis to determine and find the number of goods or services to be sold to consumers at a certain price to cover the costs incurred as well as the benefit / profit.

BEP means a situation in which the company's operations does not earn a profit and does not suffer a loss (income assessed using the total cost). BEP analysis is not solely to determine the state of the company reached the BEP point, but the analysis of BEP is able to provide information to lending companies on various levels

of sales volume, as well as its relationship with the possibility of obtaining profits according to the level of sales concerned.

## METHODOLOGY

In determining the economic feasibility using **Internal Rate of Return (IRR)**, **Benefit Cost Ratio (B / C ratio)** and Break Even Point.

### a. Intenal rate of Return

IRR can be counted manually as follows:

$$NPV = 0 = C_0 + \sum_{t=1}^n \frac{C_t}{(1 + IRR)^t}$$

Where: t is the year of investment projects  
 n is the life of the investment project  
 C<sub>t</sub> is net cash flow in year t  
 C<sub>0</sub> is the initial capital investment in year 0

### b. B/C Ratio

Formula Net B / C ratio is as follows:

$$NETB/C = \frac{\sum_{t=1}^n \frac{B_t - C_t}{(1+i)^t}}{\sum_{t=1}^n \frac{C_t - B_t}{(1+i)^t}}$$

Where :

B<sub>t</sub> is Benefit at year t  
 C<sub>t</sub> is cost at year t  
 i is Discount Factor  
 t is the year of investment projects

Indicators NET B/C Ratio is:

If the Net B/C > 1, then the project is feasible to be implemented

If the Net B/C < 1, then the project is not feasible to be implemented

### c. Break Even Point

Formula BEP is as follows:

$$BEP = \frac{FC}{P - VC}$$

Where :

BEP is *Break Even Point*

FC is *Fixed Cost*

VC is *Variable Cost*

P is *Price per unit*

S is *Sales Volume*

## RESULTS

### Feasibility Investment Plantation

#### Technical Aspect

Most areas in Muara Enim are suitable for coffee cultivation plants, but the areas that become the center of the coffee in Muara Enim regency are located in the Semende Darat Laut (44,10 %), Tanjung Agung (31,01 %), Semende Darat Ulu (11,19 %), dan Semende Darat Tengah (10,98 %). These areas have geographical conditions, climate and type of soil that ideal for growing coffee trees, especially for robusta coffee.

The areas of the centers have geographical conditions, climate and type of soil that the majority of eligible ideal for growing coffee plants, especially robusta coffee is still the dominating type of coffee farmers cultivated in this region, although the arabica coffee also been developed. Technically, robusta grows optimally at an altitude of 400-700 m above sea level, but several of them are still able to grow well and have economic value at altitudes below 400 m. While arabica coffee growing requires a higher location than robusta coffee, which is between 500-1700 m above sea level. On elements rainfall identified that rainfall is optimum for coffee (arabica and robusta) are in areas that have a rainfall average of 2000-3000 mm per year, has a dry month (rainfall <100 mm per month) for 3 - 4 months and dry months between the last period completely dry (no rain) for 2 weeks - 1.5 months.

Coffee plants generally require large amounts of sunlight at the beginning of the dry season or the end of the rainy season. It is necessary to stimulate the growth of flower buds. The wind plays a role in helping the process of moving pollen coffee from the coffee plant one plant to another. This condition is needed, especially for the type of coffee is self-sterile.

For soil, in general, coffee plants require soil that is loose, fertile and rich in organic matter. The type of soil and volcanic latosol preferred coffee plants. Soil drainage ugly, heavy clay and sandy soil that less water binding capabilities, as well as its low N content not suitable for growing coffee. In addition, the coffee plants also require soil that is slightly acidic, with pH 4,5 - 6 for robusta and pH 5.0 to 6.5 for arabica coffee. Soil more acid can be neutralized with quicklime / fertilizer, for example, bone powder or CA- (PO<sub>2</sub>) + Ca and metaphosphat or Ca (PO<sub>2</sub>). Coffee plants require water depth of soil at least, three meters from the ground. Land must have drainage and good water binding capability.

High altitude affect the low temperature. Arabica coffee grows better suited on a plateau with an altitude of 1000-1700 m above sea level. If below 1000 m above sea level, will be susceptible HV. If above 1700 m above sea level, the temperature will be too cold. Robusta coffee grows well in lowland to 1500 m above sea level, but the economic is growing at an altitude of 800 m above sea boundary. As for the type of coffee Liberika grow well in the lowlands, where the poor and heat. The terms of technical feasibility in order to be able to grow optimally coffee that has been owned by the majority of regions of coffee production center in Muara Enim. Average coffee producing areas in Muara Enim is above 600-1000 meters above sea level spread across 5 sub-districts Semende Army Ulu, Semende Central Army, Army Semende Sea, Tanjung Agung and Lawang Kidul. Rainfall in these areas also tend to be high, with variations between 35 mm to 305 mm throughout 2015 with average air temperature during the day 230C - 240C.

The majority of farmers who cultivate coffee plantations on the part of the production process using technology that tends to be simple, and in most of the other production processes have been familiar with the application of technology. In the planting process that starts from the selection of seeds, most farmers actually have used seeds, but understanding superior species that become an option for planting based on the advice of the government is not fully known. Type of coffee grown by farmers in Muara Enim Regency generally is a type of robusta coffee dominate, and Arabica are beginning to be developed.

At the stage of the treatment process, the activities undertaken farmers are weeding (land clearing), fertilization and combating pests and plant diseases. All three of these activities have not been ideal if exercised following the guidelines of Good



**Agriculture Practices** The coffee, however, was done by the farmers towards the correct maintenance practices. The technology used is also still relatively modest. Clearing land (weeding), the average farmer only use equipment that is generally used by other farmers such as machetes, sickles and hoes done by human labor generally come from within the family. Ideally, weeding must be done starting from the coffee plant immature (TBM), at this stage of the coffee plants need to be maintained to be free from the interference of weeds in a radius of 1 m is kept clean of weeds. This activity in the local language is called *besiang* or weeding. Methods of weed control can be done by a combination of mechanical and chemical means. Work of weed control include pruning, if necessary, ground-breaking light on the eve of fertilizing, and spraying.

At fertilization, fertilizing technology already known to farmers but the average application rate of adoption is still low. This is due to lack of capital to buy fertilizer to the type and amount of ideal. Fertilization needs of the coffee plant coffee plant depends on the age and condition of the plants. This is because the coffee plant nutrient requirements differ both according to age of the plant, the plant species, as well as the type of nutrient. Arabica coffee types require more nutrients than other types of robusta coffee. Therefore, it must be preceded by analysis of soil, leaf analysis and field fertilization experiment in advance. The management of the coffee crop yield (TM) is relatively the same as the TBM management activities. The difference is in the frequency and volume of maintenance and the need for fertilizers and pesticides that are larger than the TBM.

Weaknesses farmers in fertilization made recommendations good cultivation of the government may not all be met community that would affect production. For example in the case of fertilizer, which farmers may be better prioritize buy basic necessities than do the fertilization is expensive. Attractions such as the coffee plant is an annual plant which means that the income of farmers received after harvest while other needs can not be postponed.

Dose ideal coffee crop fertilization will increase production in accordance with the instructions correct fertilization. However, because of their price disparity between subsidized and non-subsidized fertilizers causing fertilizer prices for farmers is expensive and scarce. Good coffee crop fertilization.



On the coffee farmers in Muara Enim, the type of fertilizer they commonly use are urea, SP36 and KCl. The dose used is generally not adapted to the age of the plant, but given the means and the same dose with the frequency depending on financial conditions. However, the farmers who have the ability to better capital, fertilization has been done which leads to ideal conditions, as recommended.

The same condition is also seen in the activities eradication of pests and diseases, which are generally only performed if the coffee plants attacked by pests or diseases. If there is no attack, the activities eradication of pests and diseases are not carried out by the farmers.

Coffee farmers in areas producer in Muara Enim regency which is dominated by the majority of people already seek plantation coffee for generations. As is generally the smallholder, though farmers already have the experience of trying to farm the coffee was pretty long, but their understanding of doing the right cultivation techniques as recommended in the Good Agricultural Practices (GAP) coffee is still likely to be low for certain parts. For example, farmers' understanding of the categories and criteria of seeds are encouraged government and way of cultivation is still low. Even if there are already understood, still they are not sure or are still hesitant to apply it.

Behavior on the part of care despite already done but not optimal. This condition is associated with the level of technical knowledge about the correct cultivation is still low, coupled with the ability of capital which is still low. From parts of treatment should be done, it seems that part of fertilization is still a problem, so farmers need to be given guidance on correct implementation. To overcome this problem the Plantation Office Muara Enim continuously conduct training through extension activities, training and demonstration periodically to coffee farmers.

Average farmers still do fertilization activities are ideal as recommended associated frequency, dose and type of fertilizer that is appropriate to the age of the plant. Farmers tend to fertilization with equal treatment for all ages fertilizing plants with an average frequency of only once a year. And ideally, fertilization performed at least twice a year, the beginning of the rainy season with the second phase at the end of the rainy season. Dose of fertilizer given by the average farmer is still low, where young plants are immature (TBM) and plants over five years has produced (TM) were given the same dose which is about 0.5 to 0.80 kg, ideally fertilization twice , TBM

dose of about 2x50 GRM / tree (urea), 2x50 GRM / tree (SP-36) and 2x40 GRM / tree (KCL). Dose TM bermur ideally 5-10 years approximately 2x150 GRM / tree (urea), 2x130 GRM / tree (P-36) and 2x180 GRM / tree (KCL)

The next major issue is the way that has not been proper fertilization, where farmers generally make a hole with a distance of about 1 meter, whereas proper fertilization way is to make a small hole as deep as 10 cm around the plant so far  $\frac{3}{4}$  crown width, fertilizer inserted and covered with earth. Third, weeding or at least 1 meter circumference grass crops, but farmers are less concerned about the cleanliness of grass (weeds) nuisance growth of plants. Farmers generally clear land by spraying fields with weed killer (herbicide).

### **Production Aspect**

Coffee production is high and will depend on the quality of plant maintenance activities both when immature and crop yield. Farmers cultivated coffee plant in Muara Enim generally flower at the age of three years with the fruit can be harvested at the age of four years. Coffee harvest time was strongly influenced by the climate and the type of coffee. Climate affects the flowering period, fruit maturity and harvest periods.

Coffee plants flowering at once but gradually, causing their age difference of fruit in one dompolan same. Harvest is generally done in a few rotations between 1-2 weeks per rotation. In each of the coffee harvest season is divided into three stages, namely the preliminary harvest period (fruit base), a period of great harvest or harvest (banging the great) and a final harvest (fruit hose).

Farmers in Muara Enim production is generally dependent on climatic conditions and high rainfall. In the season with high rainfall production declines. In general, the coffee harvest per hectare ranges from 500-800 kg / ha of ideally 1-1, 5 tons per hectare. The level of production and productivity of coffee plants in Muara Enim regency until 2016 shows production and productivity differences between regions manufacturer. The differences are influenced by soil type, altitude, temperature, average days of rain and average rainfall. The level of production and productivity of crops to produce coffee and Plants Damaged or old plants per year according to the sub-district of the results of such studies.

Based on the level of production, all these four districts also occupy the highest production. The production rate 3 districts in Semende reached 66.02 percent and District Court headland reached 30.90 percent of the total coffee production Muara Enim regency as many as 25 213 tonnes in 2016. For the production of the eight other districts are relatively insignificant because it is not a major crop in addition does not suitable for growing coffee. In terms of productivity, the coffee plantations in Muara Enim average productivity based on the study was 1.06 tonnes per ha. Compared with the national productivity of 700 kg per ha, the productivity is relatively still slightly higher than the national productivity. However, when compared internationally, for example, state that in fact Vietnamese newcomer in the coffee trade, productivity can reach 1.54 tonnes per ha, over traditional coffee producing countries such as Brazil; 1 ton per hectare and Columbia; 1.22 tonnes per ha.

But if it is seen by the dominant four districts only, the productivity level is quite high. The highest was the District Semende Central at 1.1 tonnes per ha, followed by the District Land Sea Semende of 1.05 tons per hectare, then the district of Tanjung Agung by 1.08 tonnes per ha, and the District of Central Army Semende by 0.99 tonnes per ha.

On the primary data collection through interviews and observations, the variables discussed is how the dynamics of coffee cultivation by farmers can influence production levels throughout the year. Extracting information from it, it is known that coffee farming activities in the region is the main livelihood Semende cultivated intensively enough although combined with extending for price developments are less promising. Habits of life which is inseparable from the culture of coffee drinking also affects the level of production and productivity. Based on such case, the amount of production and productivity of coffee in the area and the district of Tanjung Agung Semende can be justified.

Based on these factors, the amount of productivity from the results of different studies with data from the Department. The average productivity of the Service data is 1.06 tons per hectare, while the FGD is 0,981 tonnes per ha. This occurs because of the statistical bias level, farmers and workers. According to the farmers is less significant as production from other districts outside the dominant four districts namely SDU, SDT, SDL and Tanjung Agung. But if these four districts were

counted then the productivity is at 1.06 which is still higher than the national productivity but still below international productivity.

### **Marketing Aspects**

Coffee Marketing in Indonesia including that occurred in Muara Enim generally carried out in the form of fresh, secondary processed products and processed products end. In general, the coffee is traded in coffee rice with a moisture content of 13%, both domestically and for export. Marketing in the form of fresh coffee will likely provide little added value when compared with selling secondary processed products or processed late.

Results of research on various agricultural and plantation products shows that farmers only get the profit margin in comparison to the merchant or medium entrepreneurs, large scale industrial entrepreneur who sells coffee in the form of processed products or final and diversification of products and markets outside of retention. Coffee marketing chain is produced by farmers who are known as coffee carelessly generally not meet the quality standards of export coffee, the water level is still high, which ranged between 16-20%. Random coffee is not sold directly to exporters, but sold through middlemen before being sold to exporters. Asalan coffee trade chain is generally quite long, ranging from mobile vendors, local traders, wholesalers and exporters

Coffee marketing chain from farmers or plantation can also through various channels to the coffee farmers' associations or directly to the collector. Furthermore, traders will sell coffee rice to wholesalers or directly to exporters and ground coffee. The prerequisite is the coffee must be of good quality and is already sorted so that it meets the quality requirements specified. In the era of free trade manufacturers are required to develop creativity in creating a quality product that can be accepted by consumers. Some of the potential products that can be developed in an effort to boost the marketing of coffee, among others: developing a wide range of coffee products in a variety of packaging, develop new products with a mixture of coffee with other products, such as milk, chocolate, cakes, confectionery, dodol, etc., develop market segments the new well for existing products and for new products that will be developed as well as strategic alliances in developing products processed coffee with various companies whose products can be combined with the coffee products, both at

home and abroad (eg in the beverage industry, food industry, industry essence, and so on) .

Forms of coffee sold in Muara Enim majority is divided into two kinds of forms of marketing that is still shaped coffee beans and processed coffee (coffee powder). This causes, perpetrators of coffee marketing in Muara Enim classified into two groups following the shape of coffee sold. The first group is marketing businesses that sell coffee in processed form (coffee powder) and the second group is a marketer who sells coffee in the form of seeds. Area marketing of coffee products in Muara Enim regency consists of domestic marketing (local and regional), as well as international marketing (export). Marketing the domestic market and export marketing is generally carried out by the producers (farmers) and the coffee industry players. Shape the domestic market has the same structure as other agricultural commodity markets, where there are relatively the same marketing channels, and the position of farmers tend to act only as a price taker, while traders in the position of price maker. In this form of marketing coffee to the international market is regulated by the International Coffee Organization (ICO) that determines the standard of world coffee prices, then in marketing Indonesia constrained by the rules of the ICO.

Coffee products are marketed through a marketing channel that starts from farmers as producers, the majority sold to a collector, which then passed into the hands of wholesalers and exporters, to get into the hands of consumers. Overview coffee industry cluster in Muara Enim in harmony with the existing marketing channels in the region, where the dry coffee beans at random as the raw material of coffee powder produced by coffee plantations. The coffee beans are then purchased by collectors of coffee, which is then processed by manufacturers of coffee, to produce ground coffee. Production of ground coffee is then distributed to local markets, national markets and there are already entering the export market.

### **Farmer Institutional Aspect**

Institutional role becomes very important because it goes beyond the role of technology and the abundance of resources. At first factor of the abundance of resources (resource endowment) is considered the most important factor for growth and technological progress factor is an important factor in improving the effectiveness and efficiency of resources value in relation to resource productivity. However, lately



recognized that the institutional role is the most important factor as aligning in the process of production, distribution and consumption. Institutional factors are recognized as the most important factor in driving economic growth, beyond technological factors and the abundance of resources because there is no means abundance and sophistication of institutional resources without reliable. Institutional development (institutional capacity building) and organizational behavior (organizational behavior) must be supported by a social consciousness (social consciousness) through replanting values (values replanting). That is, the institutional development along with the contract and the organization is an important factor in development policy. Institutional development needs to be aligned with local values through role-based development paradigm change as well.

The existence of Farmers Group (poktan), Farmers Group (Gapoktan), Village Unit Cooperatives (KUD) and Owned village (BUMDES) is an institution that is essential for the strengthening of farmers both in the organization of farmers in various things ranging from coffee cultivation, procurement of inputs, until the sale of the production. Weakness farmers are generally less able to cultivate and harness the power of institutional organization Poktan, Gapoktan and KUD as a pathway to memajukan bargaining position of farmers in product sales, so when farmers faced with a market that tends oligopsonistic, they are helpless. As a result, the price of coffee products farmers will be pressured by traders (middlemen), and only a few farmers to make a profit. Farmer institutions such as cooperatives or BUMDES, can be used as a container farmers by strengthening the agency had coffee processing industry that is owned by all the farmers, so that the value-added coffee products will be enjoyed by farmers.

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### **Coffee Plantation Financial Feasibility**

Land financing and operation of the coffee plantations are generally obtained from a source own capital financing, and land for the cultivation of coffee is also available, so the cost of the purchase or lease of land is not taken into account. Coffee plants if cultivated and maintained properly takes 3 years to be able to harvest. Therefore, the development of coffee plantations require long-term investment with a grace period of 3 years. Coffee plantation investment cost components such as other plantation crops consists of pre-operating costs, land clearing, planting and maintenance of immature plantations.

Annual operating costs are calculated to facilitate the proponents and interested third parties to assess the financial outlook for coffee plantations in the future. In calculating annual operating costs assumptions were used: (1) the prices of raw and auxiliary materials essentially will not change significantly; (2) The same thing applies to direct wages, salaries, and overhead costs; (3) the selling price of processed coffee will not change significantly; and (4) inflation in the country will affect the selling price and direct costs commensurately.

Maintenance of immature plantations starting in 0 s / d year to 2 and maintenance of generating plants starting from year 3 onwards s / d year to 20 (age productive coffee plants). The amount of the investment cost per hectare for 3 years starting from the year-to-0 is Rp.32,698,512, From Table 2 can be explained that the investment costs to be incurred for the coffee plantation industry started the year to 0 up to 2 years (before production) is Rp. 32,698,512, - per hectare. The costs incurred for the purchase of inputs, from seeds and fertilizers to pesticides, coupled with the cost of the payment of wages of workers, and farming equipment purchases necessary. The next investment costs before the coffee plants produce presented in Table 2.



**Table 2. Agro-Industry Opportunities for Coffee Products  
in Muara Enim Regency in 2010-2016**

No	Components	Value	Characteristics
1	NPV (df 15%)	Rp 41,005,288	Feasible
2	IRR	35.58%	Feasible
3	Gross B/C	2.20	Feasible
4	Net B/C	1.20	Feasible 3 <sup>th</sup>

**Table 3. Analysis of Financial Feasibility per hectare Coffee Plantation Investment Period year 0 to year 10<sup>th</sup>**

No.	Costs And Benefits Components	Years																			
		0	1	2	3	4	5	6	7	8	9	10									
<b>I.</b>	<b>Investment cost</b>																				
	A. Plantation	26,510,440	2,315,500	2,315,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1. Wages and Salaries	15,640,000	1,320,000	1,320,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2. Basic Materials	6,755,000	785,000	785,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3. Tools	1,705,400	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4. Contingency	2,410,040	210,500	210,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Investment cost	<b>26,510,440</b>	<b>2,315,500</b>	<b>2,315,500</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B. Management Fee (5%)	1,325,522	115,775	115,775	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>II.</b>	<b>Net Investment</b>	27,835,962	2,431,275	2,431,275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>III.</b>	<b>Operational Cost</b>	0	0	0	2,770,000	2,050,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000
	1. Wages and Salaries	0	0	0	1,920,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
	2. Basic Materials	0	0	0	850,000	850,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000
	4. Management fee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>IV.</b>	<b>Total Cost (II+III)</b>	<b>27,835,962</b>	<b>2,431,275</b>	<b>2,431,275</b>	<b>2,770,000</b>	<b>2,050,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>
<b>V.</b>	<b>Revenue</b>	0	0	0	19,600,000	22,400,000	30,800,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000	33,600,000
	Quantity (kg)	0	0	0	700	800	900	900	900	900	900	900	900	900	900	900	900	900	900	900	900
	Price /kg	0	0	0	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000
<b>VI.</b>	<b>Profit (V-IV)</b>	-	2,431,275	2,431,275	16,830,000	20,350,000	23,100,000	28,700,000	31,500,000	34,300,000	34,300,000	34,300,000	34,300,000	34,300,000	34,300,000	34,300,000	34,300,000	34,300,000	34,300,000	34,300,000	34,300,000
	df = 15%	1	0.8696	0.7561	0.6575	0.5718	0.4972	0.4323	0.3759	0.3269	0.2843	0.2472	0.2101	0.1731	0.1361	0.0991	0.0621	0.0251	0.0000	0.0000	0.0000
	PVB	27,835,962	2,114,152	1,838,393	11,065,998	11,635,179	11,484,783	12,407,802	11,842,017	11,212,731	10,583,445	9,954,159	9,324,873	8,695,587	8,066,301	7,437,015	6,807,729	6,178,443	5,549,157	4,919,871	4,290,585
	PVC	27,835,962	2,114,152	1,838,393	1,821,320	1,172,094	1,044,071	907,888	789,468	686,494	596,951	519,088	441,225	364,362	287,500	210,637	133,775	56,912	0	0	0
	PVR	0	0	0	12,887,318.16	12,807,272.70	12,528,853.73	13,315,689.95	12,631,484.54	11,899,224.57	11,167,000.00	10,434,715.03	9,702,430.06	8,970,145.09	8,237,860.12	7,505,575.15	6,773,290.18	6,041,005.21	5,308,720.24	4,576,435.27	3,844,150.30

**Table 3. Analysis of Financial Feasibility per hectare Coffee Plantation Investment Period year 11 to year 20<sup>th</sup>**

No.	Costs And Benefits Components	Years																		
		11	12	13	14	15	16	17	18	19	20									
<b>I.</b>	<b>Investment cost</b>																			
	A. Plantation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1. Wages and Salaries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2. Basic Materials	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3. Tools	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4. Basic Materials	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Investment cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B. Management Fee (5%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>II.</b>	<b>Net Investment</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>III.</b>	<b>Operational Cost</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>
	1. Wages salary	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
	2. Materials	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000
	4. Management fee / (5%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>IV.</b>	<b>Total Cost (II+III)</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>	<b>2,100,000</b>
<b>V.</b>	<b>Revenue</b>	<b>30,800,000</b>	<b>28,000,000</b>	<b>28,000,000</b>	<b>25,200,000</b>	<b>25,200,000</b>	<b>28,000,000</b>	<b>28,000,000</b>	<b>28,000,000</b>	<b>25,200,000</b>	<b>22,400,000</b>	<b>22,400,000</b>	<b>22,400,000</b>	<b>22,400,000</b>	<b>19,600,000</b>	<b>19,600,000</b>	<b>19,600,000</b>	<b>19,600,000</b>	<b>19,600,000</b>	<b>19,600,000</b>
	Quantity (kg)	1,100	1,000	1,000	900	900	1,000	1,000	1,000	900	800	800	800	800	700	700	700	700	700	700
	Price (Rp/kg)	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000
<b>VI.</b>	<b>Profit (V-IV)</b>	<b>28,700,000</b>	<b>25,900,000</b>	<b>25,900,000</b>	<b>23,100,000</b>	<b>23,100,000</b>	<b>25,900,000</b>	<b>25,900,000</b>	<b>23,100,000</b>	<b>20,300,000</b>	<b>20,300,000</b>	<b>20,300,000</b>	<b>20,300,000</b>	<b>20,300,000</b>	<b>17,500,000</b>	<b>17,500,000</b>	<b>17,500,000</b>	<b>17,500,000</b>	<b>17,500,000</b>	<b>17,500,000</b>
	df = 15%	0,2149	0,1869	0,1625	0,1413	0,1229	0,1069	0,0929	0,0808	0,0703	0,0611	0,0529	0,0457	0,0394	0,0342	0,0298	0,0261	0,0231	0,0205	0,0182
	PVB	6,168,870	4,840,895	4,209,474	3,264,692	2,838,863	2,169,355	1,886,396	1,640,344	1,429,643	1,229,643	1,069,255	928,863	808,396	703,643	611,255	529,643	457,255	394,643	342,255
	PVC	451,381	392,505	341,309	296,790	258,078	224,416	195,144	169,691	147,557	128,311	109,255	92,863	79,396	68,643	59,255	51,643	44,255	37,643	31,255
	PVR	6,620,251.26	5,233,400.21	4,550,782.79	3,561,482.18	3,096,941.03	2,393,770.84	2,081,539.86	1,810,034.66	1,577,200.29	1,377,200.29	1,197,565.47	1,047,200.29	908,396	788,643	688,255	598,643	518,255	447,643	382,255

### Coffee Downstream Opportunities

Coffee production area in 2016 covering an area of 22 275 hectares with a total production of 25 212 tonnes of coffee beans. Leading commodity coffee has a line of industrial tree called coffee agro-industry and potentially cultivated in this region. Four districts main producer of coffee in Muara Enim, namely Sub Semende Inland Sea, Semende Central Army, Army Semende Ulu and Tanjung Agung. Assumptions consumption amounted to 0,407 ounces of ground coffee per capita, hence the need for coffee powder as much as 338 tons per year. If per kg of coffee beans ground into powder coffee 80 percent, then the potential for as many as 21 178 ton. Dengan coffee powder thus surplus coffee grounds as much as 20 882 tonnes.

Investment opportunities of coffee beans, among others, can be processed into roasted coffee, ground coffee, instant coffee, coffee mix (coffee with milk), and coffee bags. While the skin can be made of ironwood and acetic acid. A mixture of skin and flesh can be processed into ethanol and vinegar eat.

**Table 4 Agro-Industry Opportunities for Coffee Products in Muara Enim Regency in 2010-2016**

Years	Area (Ha)	coffee beans (Ton)	Domestic Consumption (Ton)	Surpluscoffee beans (Ton)	Potential Powder Coffee (Ton)	Powder Coffee (Ton)	Surplus Powder Coffee (Ton)	Agro-Industry Opportunities for Coffee Products
2010	22,404	25,126	417	24,709	21,106	350	20,756	1. roasted coffee
2011	22,501	25,132	425	24,707	21,111	357	20,754	2. ground coffee
2012	23,501	25,139	332	24,807	21,117	279	20,837	instant coffee,
2013	22,444	25,213	338	24,875	21,179	284	20,895	3. coffee mix
2014	22,450	25,147	343	24,804	21,123	289	20,835	(coffee with milk)
2015	23,449	25,147	337	24,810	21,123	286	20,837	4. coffee bags
								5. flavored coffee
2016	24,275	25,212	338	24,874	21,178	296	20,882	

Sourced : by Statistics Plantation and various sources, 2016 (processed)

## SUMMARY AND RECOMMENDATION

Based on the research results can be explained coffee plantation investment feasibility of geographical aspects, production, markets, farmer institutional and financial feasibility. Geographically cultivated farmers in Muara Enim regency located in areas that did have the geographical factors that correspond to ideal growing condition of the coffee plant. Coffee center area in Muara Enim in Sub Semende Inland Sea (44.10%), Tanjung Agung (31.01%), Semende Army Ulu (11.19%), and Central Army Semende (10.98%). Based on the level of production, all these four districts also occupy the highest production. The production rate 3 districts in Semende reached 66.02 percent and District Court headland reached 30.90 percent of the total coffee production Muara Enim regency as many as 25 213 tonnes in 2016. For the production of the eight other districts are relatively insignificant because it is not a major crop in addition does not suitable for growing coffee. In terms of productivity, the coffee plantations in Muara Enim average productivity based on the study was 1.06 tonnes per ha. Compared with the national productivity of 700 kg per ha, the productivity is relatively still slightly higher than the national productivity. However, when compared internationally, for example, state that in fact Vietnamese newcomer in the coffee trade, productivity can reach 1.54 tonnes per ha, over traditional coffee producing countries such as Brazil; 1 ton per hectare and Columbia; 1.22 tonnes per ha. Coffee products are marketed through a marketing channel that starts from farmers as producers, the majority sold to a collector, which then passed into the hands of wholesalers and exporters, to get into the hands of consumers.

Overview coffee industry cluster in Muara Enim in harmony with the existing marketing channels in the region, where the dry coffee beans at random as the raw material of coffee powder produced by coffee plantations. The coffee beans are then purchased by collectors of coffee, which is then processed by manufacturers of coffee, to produce ground coffee. Production of ground coffee is then distributed to local markets, national markets and there are already entering the export market. From the measurement of financial feasibility of coffee farming by using four eligibility criteria shows that farming is feasible to be developed with the B / C 1.20 (> 1) meaningful, any costs incurred by Rp.1 will generate profits of Rp.1.2. In addition, this business can continue to survive on the interest rate up to 35.58%. Coffee production area in 2016 covering an area of 22 275 hectares with a total production of 25 212 tonnes of coffee beans. Leading commodity coffee has a line of industrial tree called coffee agro-industry and potentially cultivated in

this region. Four districts main producer of coffee in Muara Enim, namely Sub Semende Inland Sea, Semende Central Army, Army Semende Ulu and Tanjung Agung. Assumptions consumption amounted to 0,407 ounces of ground coffee per capita, hence the need for coffee powder as much as 338 tons per year. If per kg of coffee beans ground into powder coffee 80 percent, then the potential for as many as 21 178 ton. Dengan coffee powder thus surplus coffee grounds as much as 20 882 tonnes. Investment opportunities of coffee beans, among others, can be processed into roasted coffee, ground coffee, instant coffee, coffee mix (coffee with milk), and coffee bags. While the skin can be made of ironwood and acetic acid. A mixture of skin and flesh can be processed into ethanol and vinegar eat

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