

## A DEVELOPMENT DESIGN OF PALM OIL PROCESSING INDUSTRY THROUGH OPTIMIZATION AND INTEGRATION OF GOVERNMENT, PRIVATE AND INTELLECTUAL ROLES IN NORTH ACEH DISTRICT

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### ABSTRACT

*The research aims to create a model for palm oil processing industrial development through encouraging integration and optimization of the role of stakeholders in developing palm oil industry, designing a palm oil processing industry in North Aceh District. The data used are both primary and secondary data. The research employs descriptive method. The results obtained a Model of Integration and Optimization of the role of Stakeholders and an industrial design of palm oil processing North Aceh district*

**Keywords:** Model of Integration, Optimization of Stakeholders role, Industrial Design of Palm oil processing

### INTRODUCTION

Aceh is one of the provinces in Indonesia with 140.478 hectares of palm oil area, with smallholder production was reaching 587.186 tons in 2014 and large farms produced up to 402,216 tons per year [2]. The potential of palm oil in Aceh is still not consider developed as the main commodity for economic development. It is because the multiplayer effects of the economic in increasing value added commodity of palm oil was not satisfactorily create jobs and prosperity. The problem is lack of business partners; budget allocation for agricultural sector development; and lack of integration and optimization between stakeholders: governments, private sector and intellectuals in developing palm oil commodity. A research on *colouring economic model* (CEM) in Aceh [1] found that Aceh has an extensive potential of palm oil commodity, but it is still not optimally processed. It is still limited at the first level production process that produced Crude Palm Oil (CPO) and Palm Kernel Oil (PKO), though optimizing the utilization of palm oil products can create jobs, with more advanced level of palm oil processing, not limited to the first production level only.

North Aceh is a district as the third largest palm oil producer in Aceh with total plantation area around 29,187 hectares and the production of 399,193 tons [3]. The farmers, however, complain the selling price of palm oil is unstable and tends to decline. This is detrimental to the farmers as the production cannot just to cover the production cost. This condition is claimed as a result of a lack of role of stakeholders in the development of palm oil production in North Aceh. Therefore, it is necessary to design the development of palm oil processing industry that involve, integrate, and optimize the role of government, private sector and intellectual in the development of palm oil industry in North Aceh.

### RESEARCH PROBLEM

The productions of palm oil in North Aceh district are not entirely processed in the producing region, but are sent out and sold to North Sumatra in the form of raw materials because a sufficient processing plant is not available in North Aceh district which has sufficient

capacity to create value added of palm oil commodity. As a result, it affects the income of palm oil farmers which in turns affect the level their welfare. In addition, the role of the government is still limited in supporting the provision of palm oil processing industry which currently contributing to lower district income, economic growth, and people welfare. Therefore, current study aims to investigate following problem: (1) how the model of integration and optimization of the role of stakeholders in the development of palm oil processing industry in North Aceh district, (2) how the design of palm oil processing industry in North Aceh District.

## **RESEARCH PURPOSES**

The purpose of this research is: (1) to create a development model for palm oil processing industry with increasing optimization and integration of role of stakeholders in palm oil industry in North Aceh district (2) to design palm oil processing industry in North Aceh District.

## **THEORETICAL BACKGROUND**

### **Scope of Downstream Palm Oil Industry**

Minister of Industry Regulation No. 13 / M-IND / PER / 1/2010 stipulated that palm oil commodity is one of the main agricultural commodities in Indonesia which is growing significantly and has a strategic role in the national economic growth. The product processed from palm oil is crude oil, in the form of Crude Palm Oil (CPO) and Palm Kernel Oil (PKO). Furthermore, the Ministerial Decree No. 13 / M-IND / PER / 1/2010 also suggested that the utilization of the crude palm oil as raw material for the industry can provide multiple effects include: a) economic sub-sector growth, b) development of industrial areas, c) technology transfer process, d) expansion of job opportunity, e) national income, f) Increased tax revenue. Presently there are about 23 kinds of products made of downstream palm oil in Indonesia. Therefore, the roadmap of downstream palm oil industry should be drawn up.

### **Clusters of Downstream Palm Oil Industry**

Group of Upstream Industries: Minister of Industry Regulation No. 13 / M-IND / PER / 1/2010, stated that palm oil plantation to produce palm fruit / fresh fruit bunches (upstream), and then processed into crude palm oil (downstream for plantations and the upstream for crude palm oil industry-based). In addition to producing palm oil, fresh fruit bunches (FFB) processing may also produce PKO. PKO production will increase as the production of CPO increases about 10% of the CPO. Intermediate Industrial Group of CPO and PKO can be produced various types of intermediate products used as raw materials for downstream industries either food or non-food categories.

Among the industry groups including industry of olein, stearin, basic oleo chemicals (fatty acid, fatty alcohol, fatty amines, methyl ester, glycerol). Group of Downstream Industries: Type of downstream palm oil has broader spectrum, up to 100 downstream products that can be produced on an industrial scale. However, only about 23 kinds of downstream products (food and non food) had been produced commercially in Indonesia. Some of downstream products from CPO and PKO had also been produced such as food categories: cooking oil, salad oil, shortening, margarine, Cocoa Butter Substitute (CBS), vanaspati, vegetable ghee, food emulsifier, fat powder, and ice cream. Non-food category includes product such as surfactants, biodiesel and oleo chemicals.

## METHODOLOGY

The study was conducted in North Aceh district of Aceh province, the research objects are palm oil products. Both field and literature studies are used as the data collection technique. The technique of data processing is a descriptive technique.

## RESEARCH FINDINGS

### Institutional Capacity Building Model of Palm Plantation

The existence of institutions and farmer groups will establish a close interest and a common goal to increase production and revenue from the plantation. At least, at the initial stage, the existence of an organized institution will promote cooperation and unity among the farmers in products marketing. The pattern of products marketing eliminated the involvement of the third party because the farmers already have direct access to the company receiving their production through the institutions. The existence of the farmer institution would also be government partners to provide various suggestion and input for government to design policies on farm issues, including marketing system. Of course, the existence and organized institution of farmers is not only limited to palm oil industry. Pattern of institutional capacity building is shown in Figure 1.

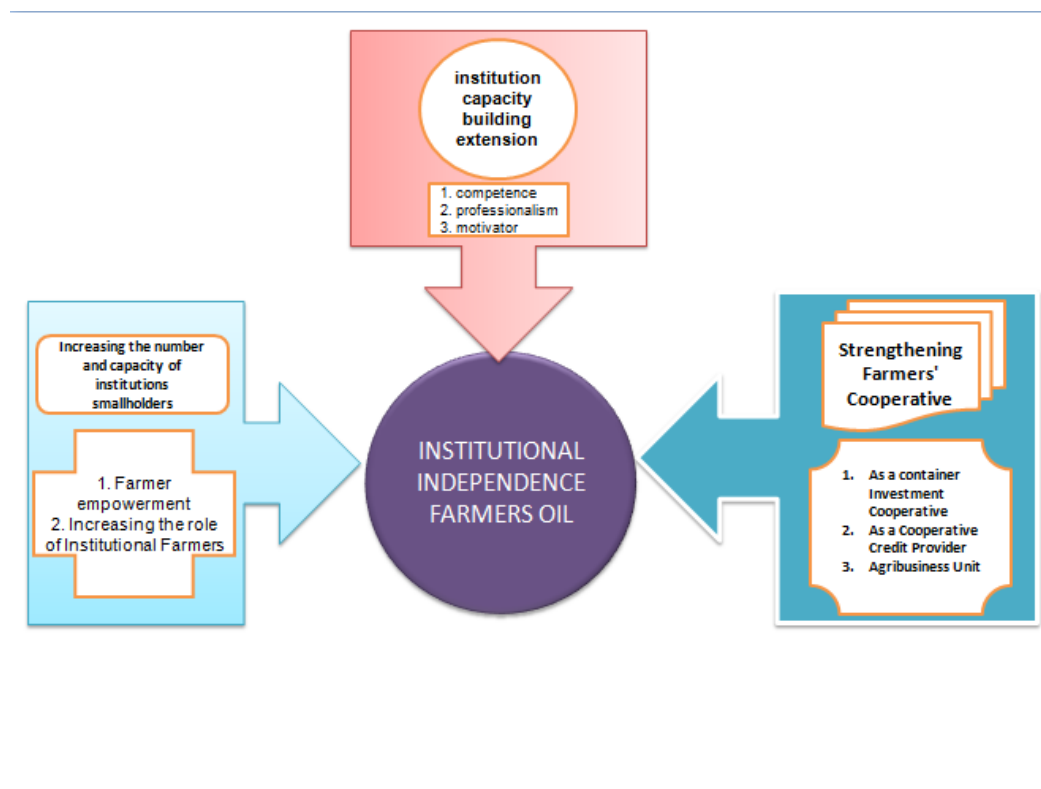


Figure 1. Pattern of Institutional Capacity Building of Palm Oil Smallholders

To create the institutional independence of smallholders, some of requirements needed are (1) Increasing the number and capacity of smallholders institutions through the empowerment of farmers, and increase the institutional role of farmers. (2) Increasing the institutional capacity building extension, through extension activities to increase competence, professionalism and capacity extension educator motivator. (3) The strengthening of farmer cooperatives, include efforts to make the cooperative as a container investment, making the cooperative as a provider of credit and make the cooperative as a business unit.

### Integration and Optimization of Stakeholders Roles

Integration program requires the support of substantial funds. Therefore, it must be implemented in coordination and synergy between central and local governments and also involving local business /private sector, state-owned food agency, and community. In line with the characteristics of palm oil plantation ownership, the combination of capital is more rational. The government is responsible for empowering smallholders, while the private sector is expected to more actively support government programs.

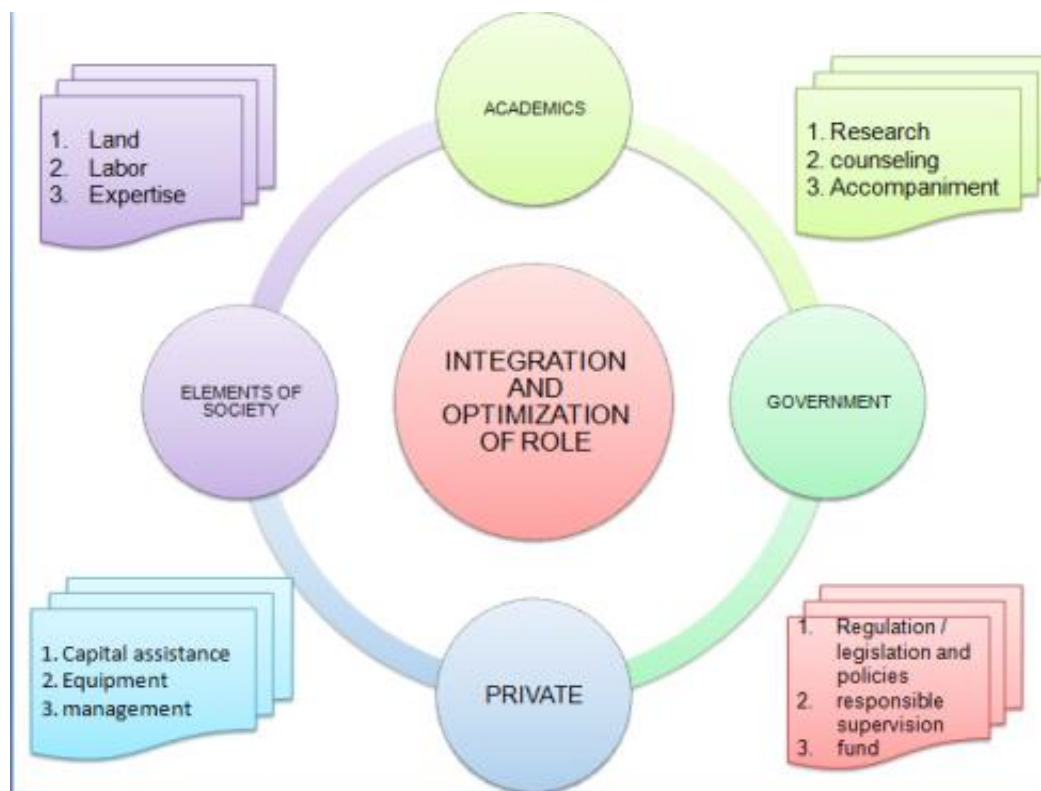


Figure 2. Model of Integration and Optimization of Stakeholders Roles

For the success of integration and optimization efforts of four stakeholders' roles from government, private sector, intellectual and community, all elements should be synergy and carry out their respective roles optimally. The government plays a role in making regulations, rules and policies as well as responsible for empowerment, supervision and funding. Private sectors fulfil their role in providing working capital, equipment and management. Society, in addition, perform its role as the owner of the land, labour supply and skills provision. Intellectuals carry out its role as researchers to provide counselling and mentoring.

### Palm Oil Processing Industry Design

Classification of palm oil processing industry group in North Aceh district can be developed as follows: from upstream industry such as CPO products. Then, the CPO processing industry in from downstream industry includes food and non food industry such as olein and oleochemical base. Furthermore, processing derivatives industry includes food categories for example cooking oil, and margarine industry. The downstream industries that can be developed in North Aceh district are:

**Table 1. Development of the Downstream Industry in North Aceh from Upstream CPO Industry**

<i>Core Industries</i>	<i>Supporting Industries</i>	<i>Related Industries</i>
Olein Industry	Packed cooking oil, salad oil, shortening, ester methyl, and livestock food industry	Packaging Industry, dye salt, phosphate acids and potassium sorbet industry
PKA	Cocoa butter substitute and Pharmaceutical industry	Packaging industries, machinery and equipment industry
Biodiesel Industry	Transportation services, electrical power plant and gliserol industries	Methanol industry, machinery and equipment industry and methylate industry
Stearin	Margarine industry, Cosmetics Industry and Vegetable Ghee industries	Coloring materials industry, salts, packaging and dye industries
Long term objectives: (A) expand the types of downstream palm oil products (B) occupying domestic and international markets (C) strengthening the environmental industry Sector: diversification of downstream palm oil industry products to the domestic industry, the increased export of crude oil and an increase in promotions and campaigns of sustainable palm oil. Technology: development of downstream palm oil industries Incentives: fiscal and non-fiscal incentives rather than palm oil		

Source: Research Design, 2015, by Permenindag No. 13 / M-IND / PER / 1/2010

The development of downstream crude palm oil (CPO) industries can create the effect of economic multiplayer because the dependency of oil processing industry in North Aceh with the suppliers (downstream industries) as shown in the figure below:

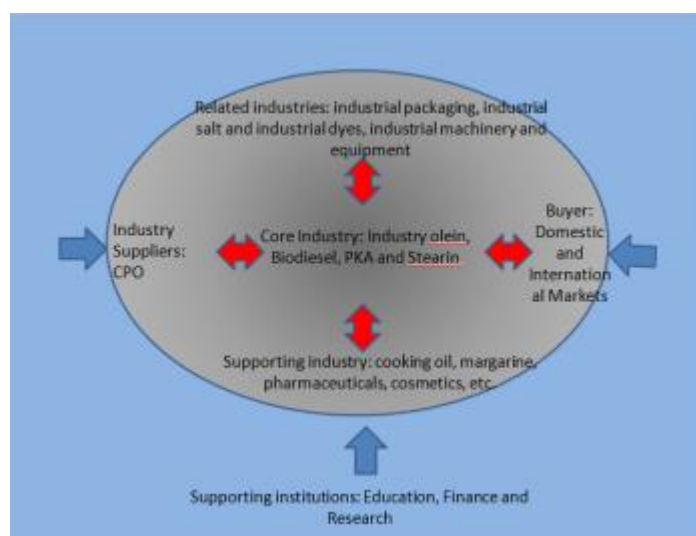


Figure 3. Framework of Linkage Palm Oil Processing Industry (CPO) in North Aceh District, by Permenindag No. 13/M-IND/PER/1/2010

The development of palm oil processing industry in North Aceh for crude palm oil (CPO) can grow a variety of derivatives industries, ranging from core industries (downstream), supporting industries and related industries. Core industries of raw material products CPO in North Aceh district are: Olein industry, which can be developed into other derivatives industries (as supporting industries), cooking oil industry, salad oil, shortening, methyl ester and livestock food industry. In addition, Olein industrial development can create supporting industries and related industries as well such as packaging, dyes, salt, phosphoric acid, and potassium forbet industries.

The development of industries which based on raw materials of CPO in North Aceh will also create the core industries (downstream) in the form of PKA industry by developing supporting industries for instance cocoa butter substitute industry and pharmaceutical industry, while the related industry of downstream PKA and supporting industries can grow packaging industry, machinery and equipment industries.

Furthermore, with the raw materials of CPO in North Aceh can be developed downstream industries (core) such as biodiesel industry that will grow the derivatives industries as supporting industries like transportation services, power generation, and glycerol industry and from the core and supporting industries will require another supporting industry like methanol industry, machinery and equipment and methylate industries as well.

CPO-based industries development in North Aceh district can generate downstream industries (core) such as Stearin industry, which can develop Margarine, Cosmetic, Ghee Vegetable and Soap industries. Supporting industries development of fabric Stearin industry will require the growth of supporting industries such as colouring materials industry, salt, packaging and dye industries.

The core product of palm oil (PKO) in North Aceh is still not developed, however this study suggested to the stakeholders and investors who are interested to set up PKO factories in the district, since it has great potential of raw materials resource of TBS in North Aceh reaching 399,139 tons [3]. PKO derivatives industries can also be developed in North Aceh such as food products and non-food products industries which then can generate multiple effects which in turns can develop economic growth.

The development plan of downstream industries in North Aceh from kernel oil product development PKO in the form of food product and non-food products industries are:

**Table 2. Downstream Industry Development Plan in North Aceh District from PKO Upstream Industry**

<i>Core Industries</i>	<i>Supporting Industries</i>	<i>Related Industries</i>
Fat Acids (food)	Ice cream industry, food emulsifier, fat provider and vanaspati industry	Packaging industry, salt and dye industry
Fat Acids (non-food)	soap chip industry, fat amines, ester fat acids, gilsero industry, food emulsifier, fat alcohol and fat acids industry	Packaging industry, machinery and equipment industry.

- Long term objectives: (A) expand the types of downstream palm oil products  
 (B) occupying domestic and international markets  
 (C) strengthening the environmental industry

Sector: diversification of downstream palm oil industry products to the domestic industry, the increased export of crude oil and an increase in promotions and campaigns of sustainable palm oil.

Technology: development of downstream palm oil industries

Incentives: fiscal and non-fiscal incentives rather than palm oil

Source: Research Design, 2015, by Permenindag No. 13 / M-IND / PER / 1/2010

The development of downstream palm oil industry (PKO) can create the effect of economic multiplayer because its dependency to the oil processing industry in the district can be explained in Figure 4 below:

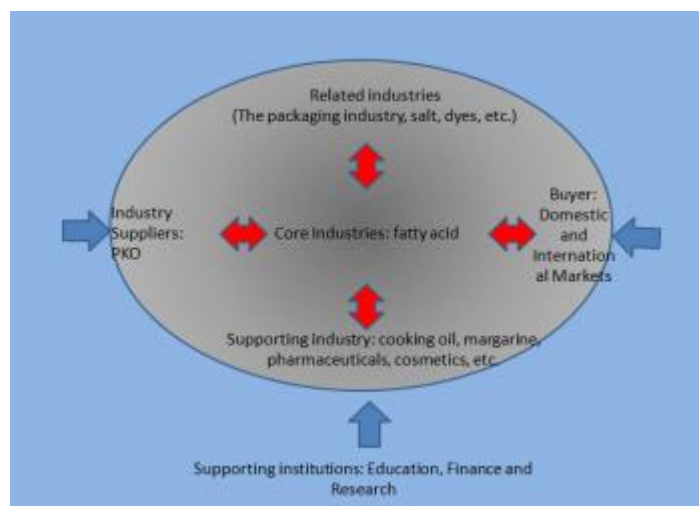


Figure 4. Framework for Palm Oil Processing Related Industries (PKO) in North Aceh District Based on Permenindag No. 13 / M-IND / PER / 1/2010

The development of palm oil processing industry in North Aceh district from palm kernel oil (PKO) which is growing derivatives industries, ranging from core industries (downstream), supporting industries and related industries. The core industries of raw materials of PKO products in North Aceh are: fatty acid industry (food), which will be developed into a supporting industry such as ice cream industry, food emulsifier, fat and vanaspat provider industries. Development of fatty acid industry (food) will grow supporting industries and also can develop related industries like packaging industry, salt and dye industries.

The development of PKO based industries in North Aceh district can generate downstream industries (core) for instance fatty acids industry (non-food), so it can develop supporting industries such as soap chips industry, fatty amines, fatty acid esters, glisero industries, food emulsifier, fatty alcohol and fatty acid industries and non-food fatty acids industries (PKO) in North Aceh district will give generate related industries such as packaging, machinery and equipment industries.

## CONCLUSION AND RECOMMENDATIONS

In order to build a palm oil processing industry in North Aceh district requires strong commitment and willingness from local government through strategic planning, budget allocation and the role of moral responsibility and sustainable monitoring. In order for the successful of palm oil processing industry development, it is required to optimize and synergize the role of each institutions, government, private, and community as well as intellectuals.

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