

STUDY ON CONVERSION OF SUBSIDIZED KEROSENE AS FUEL TO COAL AT TOBACCO DRYING INDUSTRY IN NUSA TENGGARA BARAT (NTB) PROVINCE

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ABSTRACT

In the last two years, a regulation on conversion of kerosene as subsidized fuel to alternative fuel for tobacco drying industry in NTB Province was issued. Coal as alternative fuel has a significant role in the conversion process. The process has been smoothly implemented due to advantageous condition like technical and economic aspects, supplier, port, and transporting structure and infrastructure. For 2007, 9,450 tons of coal has been consumed equal to conversion of 4,725 kilolitres (kl) of kerosene, making up the saved subsidy of IDR 16.112 billion. For 2011, coal consumption is predicted to reach 48,420 tons or convert 24,210 kl kerosene with the saved subsidy amount of IDR 82.556 billion. The amount can be doubled, if the conversion uses coal 100%. From the economic analysis, the efficiency of using coal as fuel is 28.4%, which equals to IDR 980 per kg. By using liquid petroleum gas (LPG), the cost for fuel will increase by 32.62% or equals to IDR 1,126 per kg.

Keywords: conversion, kerosene, coal, efficiency

INTRODUCTION

Energy policy is lately focused on the effort to eliminate subsidy for oil fuel due to its impact to the huge financial burden the country has to suffer, and that because public has so far not been aware of the importance of energy saving. The dependency on oil is so high, while the resource has become so limited. Accordingly, dependency on one kind of energy resource, such as on oil, has to be decreased by utilizing alternative energy.

Nationally, the conversion effort, especially from subsidized fuel like kerosene to LPG (3 kg) for small-scale industry, home industry and households has been piloted in Jakarta Province, then to other cities in Indonesia that show significant result.

However, before the implementation of conversion from subsidized kerosene to LPG, the local gov-

ernment and BPH Migas of NTB Province has issued a regulation of converting subsidized kerosene to alternative fuel in tobacco drying industry. The regulation is the spelling out of the National Energy Regulation (KEN) announced by the government through the Presidential Decree No 5/2006. This is due to the fact that the base of Indonesian tobacco drying industry is in Lombok Island, namely, in East Lombok, Central Lombok and West Lombok Districts. As Lombok is an island with the ocean separates it from others, the implementation of the conversion regulation has to be effectively monitored.

In relation to that, a study on conversion of subsidized kerosene to alternative fuel at tobacco drying industry in NTB was conducted. The study is aimed at assessing the conversion process or pattern, and prospect of coal to be used as alternative fuel.

METHODOLOGY

The study was conducted in NTB Province, namely in East and Central Lombok Regencies. These areas were perceived as representation of the whole Lombok area. The study used survey research methodology, directly conducted to the tobacco company and its local partners. To complete the primary data, secondary data were gathered from related institutions, like Plantation Office (*Dinas Perkebunan*) and Mining and Energy Office (*Dinas Pertambangan dan Energy*) of NTB Province. Data collection method used a sampling technique towards the research object as pilot through interview. The research instrument was interview guide, and the model of analysis processing and technique used statistic approach, like descriptive statistic and estimation model.

TOBACCO DRYING INDUSTRY AND FUEL REGULATION

Tobacco Drying Industry

The plantation program of Virginia tobacco in Lombok Island started in 1968 is the government program called Virginia Tobacco Intensification Program (*Dinas Perkebunan Propinsi NTB*, 2007). In this program, active stakeholders are tobacco farmers, partnering company and the government, supported by other related institutions like banks, producers/suppliers and distributors of farm production equipment, *Pertamina*, *Hiswana-Migas*, Universities, Research and Development Institutions, insurance company etc. The business relation pattern among the main and supporting stakeholders is formulated into the Business Partnership Pattern. The basic principle in business partnership is inter-dependent, inter-empowering, equality, clear rights-responsibility formulation, openness, problem solving agreement and mutual benefit. In partnership, farmers who own land will be provided loan for production facilities, like manure, medicines and fuel. The loan facility is given by tobacco/cigarette company with contractual agreement that the farmers oblige to pay the loan and sell the drying product to the company upon mutually-agreed price after cropping. Besides the partnership system, there is also self-sufficient system implemented by approximately 20% of the farmers by using their own resource, so that they are free to sell their product to other company/buyer.

Up to now, the province produces approximately 80-85% Virginia tobacco with the best quality in Indonesia and Asia; also the most popular in the international trade (export market). The tobacco drying business has given benefit to farmers and their company partners, also has significantly contributed to the country's revenue and local government's income.

According to the Plantation Offices of NTB Province, there are 13 tobacco/cigarette companies developing tobacco plantation in Lombok Island, especially in East and Central Lombok Regencies, as well as at some part of West Lombok Regency. The companies are:

1. BAT Indonesia
2. PT. Sadana Arif Nusa
3. PT. Dua Djarum
4. KUD Tunggal Kayan
5. CV. Trisno Adi
6. PT. Gelora Jaya
7. UD. Nyoto Permadi
8. PT. Indonesia Indah Tobeco
9. PT. Indonesia Dwi Sembilan
10. UD. Cakrawala
11. UD. Karya Putra Makmur
12. UD. Keluarga Sakti
13. Satuhuning Memitra Lestari

The number of families involved in this business who own the oven (drying oven) in 2006 is 8,346 families covering the land of approximately 16,125 hectares with 13,509 tobacco drying oven. In 2006, the production of dried tobacco was approximately 27,242 tons (Table 1).

Regulation on conversion of subsidized kerosene to alternative fuel for tobacco drying industry

The Virginia tobacco production in Lombok is conducted as family plantation. All this time, farmers use subsidized kerosene to dry the tobacco as the crop result by using oven built in their house area or on farming land. However, from the government point of view, the tobacco drying industry is not categorized as small-scale industry, in consideration to the fuel consumption. The consumption is assumed to be of large amount and because the farmers are in partnership with big companies. Thus, the large consumption of subsidized fuel gives huge burden to the national budget. In 2007 APBN-P (the national budgeting plan for de-

Table 1. Recapitulation of area, production and farmers of Virginia tobacco plantation in NTB Province (2001-2006)

NO	REGENCY	AREA (HA)	PRODUCTION (TON)	NUMBER OF FARMERS (FAMILY)
1	WEST LOMBOK	275.10	550.20	277.00
2	CENTRAL LOMBOK	4,721.00	7,360.00	14,163.00
3	EAST LOMBOK	11,129.00	19,331.66	12,457.00
4	SUMBAWA	-	-	-
5	DOMPU	-	-	-
6	BIMA	-	-	-
7	MATARAM CITY	-	-	-
8	BIMA CITY	-	-	-
9	WEST SUMBAWA	-	-	-
NUMBER IN 2006		16,125.10	27,241.86	26,897.00
NUMBER IN 2005		18,113.05	31,471.65	53,791.00
NUMBER IN 2004		18,115.68	31,442.63	53,654.00
NUMBER IN 2003		16,765.90	28,370.58	50,293.00
NUMBER IN 2002		12,966.94	18,732.17	38,899.00
NUMBER IN 2001		18,015.92	27,435.06	54,048.00

Source: Plantation Office of NTB Province (2007, processed)

velopment), the subsidy for fuel amounted to IDR 55.604 trillion ([Http://www.antara.co.id](http://www.antara.co.id), 2007). Out of the subsidy amount, approximately 9.6 million kl of kerosene as fuel (equals to IDR 29.6 trillion subsidy) is consumed mostly by households and small-scale industry. The subsidy amount is expected to drastically increase to IDR 91 trillion due to the global increase of the world's oil price, approaching the psychological figure of US\$100 per barrel some time ago.

In relation to that, the regional government and BPH Migas of NTB Province implement a regulation on conversion of subsidized kerosene to alternative fuel for tobacco drying industry before the issuance of national regulation on conversion of subsidized kerosene to LPG for small-scale industry, home industry and households.

The regulation to convert subsidized kerosene with alternative fuel is conducted by gradually decrease the used of subsidized kerosene for tobacco drying industry, namely as the followings ([Http://www.Lomboknews.com](http://www.Lomboknews.com), 2007):

- 2006 : 45,000 kl
- 2007 : 36,000 kl
- 2008 : 27,000 kl
- 2009 : 18,000 kl
- 2010 : 9,000 kl
- 2011 : 0 kl

For 2006, the kerosene quota for households and

drying oven in NTB Province amounted to 155,524 kl; 45,000 kl out of which are for tobacco drying oven (Plantation Office of NTB Province, 2007).

The types of alternative fuel for the conversion of subsidized kerosene are among others:

- Coal
- LPG
- Castor oil - *Jatrofa* (Biofuel)
- Agriculture materials (husk, coconut fibre, candlenut shell, tobacco stem etc.)

Several aspects should be considered in selecting alternative fuel are:

- Technical/operational (fuel supply, tobacco drying practice);
- Economic (price, cost, investment); and
- Health and environment (work health and safety).

CONVERSION OF KEROSENE TO COAL

Conversion Process

The process of conversion of subsidized kerosene in tobacco drying industry in NTB Province has been well implemented due to positive response and support from various stakeholders.

PT. BAT Indonesia, one of the biggest tobacco companies, responds the policy by conducting

experiment, research and study on coal as alternative fuel, including the design of oven and drying technique. *PT. Permata Alam Abadi* functions as the coal supplier/distributor. The *Serba Usaha Bintang Selaparang* cooperatives provide loan and conducts research and experiment on LPG as alternative fuel, as well as on the design of burner. The cooperatives also volunteers in becoming the sole supplier of LPG (50 kg capacity) for tobacco drying industry (*Koperasi Serba Usaha Bintang Selaparang*, 2007). The Plantation Office of NTB Province has been providing plantation area since 2006 that has become castor plantation covering 2,482 ha. It is expected that after 4 years, the plantation will produce 12,500 tons of castor seed or equals to 2.5 million litres of oil (biofuel). To support the production process of castor oil, 6 units of processing machine have been prepared, also a cooperation scheme with BioTek Serpong to be built at Puyung, Central Lombok (<http://Lomboknews.com>, 2007). Hiswana Migas has a role to ensure that this government plan can be realized and that the interest of all stakeholders can be protected. BPH Migas conducts monitoring on the conversion process to run as expected, and to ensure that the tobacco drying industry will not use subsidized kerosene for households.

From all experiment and research conducted on the use of alternative fuel in tobacco drying industry, there are 2 perceptions obtained. The first perception recommends coal as alternative fuel due to justification that the drying operational technique and burner design model can already be

standardized, resulting in maximal quality and efficient fuel cost compared to the use of LPG or subsidized kerosene. There is only additional staff needed as burner operator. Other justification is that coal supplier is available. Second perception recommends LPG as alternative fuel, due to justification of practicality, environment friendly and healthy, also the availability of special oven design for tobacco drying. However, the constraint of using 50 kg LPG is that it has not been allocated for conversion. Pertamina (the state-owned oil company) targets the conversion to LPG is applied during 2007-2012.

Prospect of coal utilization for fuel

PT. BAT Indonesia is the biggest tobacco company in NTB Province that is in partnership with approximately 2,500 local farmers, covers 30% tobacco plantation, and is supported by approximately 4,500 units of drying oven. In the last 2 years, this company has been supporting the fuel conversion that 700 ovens utilize coal, and the rest of 3,800 still used subsidized kerosene (Figures 1 and 2). The conversion price that is approximately IDR 4,500,000 per oven is paid by the farmers on instalment system. For coal supply, farmers can get it from the company that buys coal from a distributor/supplier, namely *PT. Permata Alam Abadi* whose stock pile is located at Lembar Port-Mataram. For East Lombok Regency, the coal price including delivery amounts to IDR 750 per kg, packed in a bag. The price is definitely cheaper for West Lombok area, less by approximately IDR 100 per kg.



Figure 1. Tobacco drying oven using coal as fuel at Rarang Selatan village, Terara District, East Lombok Regency



Figure 2. Tobacco drying oven using kerosene as fuel at Rarang Selatan village, Terara District, East Lombok Regency

From direct observation, information obtained is that one oven with capacity of 4-5 tons of wet tobacco consumes approximately 900-1,200 kg of coal to produce 300-400 kg of dried tobacco (with water content of 12-14%). For each drying process, 1,050 kg of coal is needed, and 1 oven can conduct 9 turns of drying process.

In relation to that, in 2007 crop season, there were 700 ovens using coal as fuel (18% of the number of ovens used by farmers as partners of PT. BAT Indonesia). The consumed coal will be 6,615 tons or equals to 3,307.5 kl of subsidized kerosene (9.19% of targeted conversion of kerosene for NTB Province).

If the moderate target is to convert 50% of oven using kerosene to use coal in NTB Province, the consumption of coal for drying industry in 2007 amounted to 11,025 tons, converted 5,512.5 kl of kerosene. Based on data from Pertamina, the difference of price of kerosene for industry and of subsidized kerosene was IDR 3,410 ([Http://www.pertamina.com](http://www.pertamina.com), 2007), saving the subsidy budget of IDR 18.798 billion.

It is estimated that in 2011 the coal demand will be approximately 48,420 tons to convert 24,210 kl of kerosene, giving the saved amount of subsidy of IDR 82.556 billion. Potentially, it will be doubled if 100% of oven converts to coal for fuel. The coal utilization will increase even more if the plantation of Virginia tobacco is developed to 50,000 ha (currently, it is only 18,000 ha).

Economic Analysis

Based on the field observation, some information is obtained that to produce 1 kg of dried tobacco, it needs 3 kg of coal of IDR 750 per kg or equals to 1.5 litres of subsidized kerosene of IDR 2,300 per litre or 0.85 kg of LPG of IDR 5,300 per kg. The data show the efficiency level of coal and LPG as alternative fuels to converse subsidized kerosene. To produce 1 kg of dried tobacco, fuel that can be saved by conversing kerosene to coal is approximately IDR 980 or 28.41%, including the cost for 1 additional staff as oven operator. For using LPG, there will be extra cost of IDR 1,126 or 32.62% of the cost of using kerosene.

However, the calculation on the profit shows that to produce 1 kg of dried tobacco, the farmers will obtain profit of approximately IDR 2,136 by using subsidized kerosene. By using alternative fuels of coal or LPG, respectively they will give benefit of approximately IDR 3,116 and IDR 1,010 (Table 2).

CONCLUSION

The policy of subsidized kerosene conversion to alternative fuel in tobacco drying in NTB Province is successfully implemented. The local government program, which links to the national policy, has been well responded by the farmers/farmer groups, managing companies, research & development centre/institution, supplier of alternative fuel, and other related institutions. In the last 2 years, coal

Table 2. Comparison of economic value of using kerosene, LPG and coal for tobacco drying in Lombok

No.	Description	Type of Fuel		
		Kerosene	Coal	LPG
1	Supply of fuel	Easy to get	Easy to get (supplier is available)	No supplier available
2	Dried tobacco selling price	1 kg = IDR 14,500	= IDR 14,500	= IDR 14,500
3	Cost of fuel	1.5 ltr x IDR 2.300/ltr = IDR 3,450	3 kg x IDR 750 = IDR 2,250	0.85 kg x IDR 5,383 = IDR 4,576
4	Extra cost of staff	0	1 staff = IDR 220	= IDR 0
5	Fuel cost efficient		28.41%	-32.62%
6	Production cost	= IDR 12,364	= IDR 11,384	= IDR 13,490
7	Profit	= IDR 2,136	= IDR 3,116	= IDR 1,010

Source : - Survey result, 2007
- Plantation Office of West Nusa Tenggara Province, 2007, Dried Virginia Tobacco Industry of Lombok

as alternative fuel has been playing significant role in the process of subsidized kerosene conversion. However, to develop the 50 kg LPG for alternative fuel, there is constraint that it has not been planned yet. Also, the development of biofuel is still waiting for the success of the plantation and processing technology of castor oil.

For other areas, the conversion plan can be replicated to develop and adjusted to a more complicated situation and condition than Lombok Island.

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