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Analysis of dominants' factors of national renewable energy strategy

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Abstract

The objective of this research is to reduce the research variables to be dominant factors. The research variables are Raw Material Handling, Raw Material Machining and Purchase Processing, Finished Product Warehousing, Finished Product Distribution, Training Program Operator, Financial Report, Operator's Skills Development, Processing Technology, Raw Material Testing Laboratories, Selection of The Technology, Manufacturing Technology, Budgeting, Regulation Improvement, Concerning Ecology, and "Creating" the New Market Share. The respondents of this research are the regulators, the producers, the end-users, and farmers. The number of respondents is 113 people with 15 research variables and is reduced by using Factor Analysis. The finding of this research reveals, the more we use of environmentally friendly processing technologies or using green technology, "Creating" a new market and regulation, Financing by state budget, Distributing products, and Handling Material will increase the capacity of bio-energy production or wealth creation.

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1. Research background

The interesting phenomenon at present time in Indonesia is the average velocity (in some bigger cities) of the public transportation and private cars in toll road that is slow. The ratio between cars and total length of the road is high. Everybody can drive and go anywhere and many places easily, then just go out site and have no target or destination because the fuel price is cheaper. The headlights motor cycles should be lighted or went on night and day (safety riding program/regulation) while some one drives his/her motor cycle. Sometimes many housewives cook without preparation, so they cause a lot of energy losses. The result of these problems is the increasing of the fuel consumption or energy consumption. The problem solution is to substitute or shift a part of the fossil fuel or non-renewable energy to the non-fossil oil or alternative energy or renewable energy.

The background of this paper is the fuel or energy consumption that increases rapidly and decrease the fuel production (see Fig. 1), so the gap between the fuel or energy consumption and fuel production is wider, it means the government should import the fuel from other countries more than 150.000 bpd in 2014 and increasing the fuel subsidy. The decreasing of the deposit/stock of the fossil fuel the increasing price of the crude oil, the increasing need for the crude oil, the need for the alternative energy or renewable energy, creating new jobs for new workers in the agricultural and rural areas. And concerning with the pollution, the content of the exhaust gas or the emission of the exhaust gas from the public transportation and private cars, commercial buildings, industries, and the house holds tend to increase [8, 10, 11].

Table 1 shows us the potential energy and energy stock that have not been explored efficiently and effectively. The stock and production of bio-mass or bio-gas energy is relatively small about 49,81 GW, what is and has been already produced is about 0,3 GW. It means the government and a group of people or an individual should produce more energy using the bio-mass energy or bio-energy.

Table 2 shows us that the Indonesian macro-economic indicator has increased, there is an other problem in the increasing subsidy of the fuel from Rp. 245.61 T in the year of 2011 to Rp. 274.74 T in the year 2013 (see Table 3). And the Indonesian crude oil price (ICP) increased from \$93 to \$ 104.65 [8] per barrel. Indonesia's budget assumption for crude oil price is \$ 90 per barrel (1 barrel = 159,25 litre and \$ 1 = Rp. 12.000).

Table 1. Stock and energy production in Indonesia year 2007 (non fossil energy).

No.	Non fossil energy	Energy potential	Available capacity
1.	Hydro power	75,67 GW (e.q. 845 juta SBM)	4,2 GW
2.	Geothermal	27 GW (e.q. 219 juta SBM)	0,8 GW
3.	Mini/micro hydro	0,45 GW	0,084 GW
4.	Bio-mass	49,81 GW	0,3 GW
5.	Solar energy	4,8 kWh/m ² /day	0,008 GW
6.	Wind energy	9,29 GW	0,0005 GW
7.	Uranium *)	3 GW (e.q. 24,112 ton)	30 GW

Note: *) Only in Kalian – West Kalimantan.

Source: [16].

Table 2. Macro-economic indicators in the year 2013 (%).

No.	Indicator	2012	2013
1	Product Domestic Brutto	6,3	6,1-6,6
2	Household consumption	5,2	4,8-5,3
3	Fixed Investment Brutto	10,7	10,7-11,2
4	Manufacturing Products	5,8	5,6-6,3
5	Inflation	4,4	4,3-4,9
6	Bank of Indonesia Rate	5,8	5,5-5,75

Source: [5].

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