

Analysis Expenditure Household For Comercial Energy In Palembang

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Abstract

This research is aimed to analyze the compotition of household expenditure for comersial energy (oil, LPG, and natural resources, (2) economic aspect of conversion LPG to Natural Gas. The result of this analayis is hoped to help the govenment in policy making especially about stock and energy distribution for household sector in Palembang. The result is that the willingness to pay of household sector for energy (fluid natural gas) in Palembang is between Rp 1.000.000 up to Rp 1.500.000 for installment cost and Rp 50.000 up to Rp 100.000 for monthly payment.

Keywords:

Energy consumpstion, Household Sector, Energy conversy, Willingness to pay

I. INTRODUCTION

Conceptually, household expenditure for consumption can be divided into food consumption expenditure and non-food consumption expenditure, also can be divided into basic needs expenditure and support needs expenditure. Energy needs nowadays relatively not be able to become support needs only, because some human activities will lose without energy. It can be imagined how household can work without energy (firewood, gas, and LPG) for cooking some foods in example, or to energize the electricity. So, the needs of energy have already become basic needs, nonetheless a household has to try hard to fulfill it in order to get a better and normal life.

Since the needs of energy have become something worth and important, then energy existence itself with any kinds should be guaranteed, on the other hand price

to get it is suitable with people's purchasing power, so then accessibility to the energy source can be exist. In case for people to be able to access energy, its availability and distribution also price should get an extra attention from government, in example government look after the availability and price of other basic need like rice.

By the time of population become larger and also economy activity, so it is an unsophisticated condition if growth happen pretty substantial for final energy demand (including biomass) in Indonesia within 1990-2005, that is consumption averagely grew for 4.08% per year (Nurhayati, 2007)

So far, government has tried the best for people (especially poor people) to be able to have an access to energy source. Some of the efforts are giving subsidy to certain kinds of energy so then it wishes they can enjoy the energy with their power of purchasing capability. Even though the subsidy policy has been given by the government, there is still a lack for people access to energy source between income categories (rich and poor) and also between regions as an impact of inequality of income distribution.

This research tries to reveal problems of differences of household capability in accessing/consuming energy with household pattern approach in energy consumption (kerosene, LPG, and natural gas). Moreover, there will an economic accession reveal (positively and negatively) about conversion program from LPG to natural gas in Kelurahan Lorok Pakjo Kecamatan Ilir Barat I.

Research about expenditure for household energy consumption in the City of Palembang purposed to identify issues such as:

- Composition of household expenditure for commercial energy (kerosene, LPG, natural gas) based on household income categories.
- Economic analysis of LPG to natural gas conversion.

Knowing the pattern of household expenditure composition for energy consumption (kerosene, LPG, and natural gas), and energy needs pattern on household sector, so it is hope can simplify those who taken and dealt with energy

handling policies especially in the City of Palembang in order to derive the policy of provision and energy distribution for household sector.

- It also hopes that this research can give a result of household power of purchasing to energy, so it can become information in case of making policy of energy subsidy.

II. LITERATURE REVIEW

Consumers demand for something can be divided into personal demand and market demand. Personal demand for something can be defined as total of goods which consumer wants and wills to buy it for many things, and assume other factors that influence the demand is constant (Tomek and Robinson, 1981; 26 in Taufiq, 2001).

Function of demand can derive from function of utility and function of expenditure. Function of demand which derive from function of utility called as Marshallian function of demand or also called as *money income held constants demand function*. Function of demand which derive from function of expenditure called as Hichsian function of demand or also called as *income compensated demand function*. Marshallian function of demand can be obtained by the process of utility maximization with burden function of consumers'. Ordinal approach about Marshallian function of demand commonly called as Marshallian function of demand stated if goods quantity which about to be bought is a function of goods price and income (Henderson and Quant, 1986: 18, and Jogianto, 1999: 125-126, in Taufiq, 2001). Consumers usually faced with certain possibility of goods and services combination which going to be consumed. Each of combination gives different total of satisfaction. Since consumers think rationally, so then goods and services combination which been chosen absolutely will give the highest satisfaction based on income and its price level. Marshall Function of demands follows consumer rational

behavior and can be downgraded from maximum satisfaction analysis with budget burden.

Amount of consumers' demand to certain commodity generally depends on its price, other commodities price, level of income and its distribution, total of household, and age arrangement. Changing in related goods price can cause changing in total of quantity demanded (shifting in demand curve), otherwise changing in other variable besides price will can cause shifting in demand (shifting from demand curve to another curve).

Household expenditure for energy consumption is highly depending on household income. Group of household which has lower earning will tend to consume non commercial energy (like firewood) especially in countryside area because of stock availability. Also, economic price almost not available in order to get firewood in countryside also has an interest itself, while group of household in high income level tend to dominated in consuming commercial energy (Nuryanti, 2007)

III. RESEARCH METHODOLOGY

3.1 Research Scope

Research scope for this study emphasis on identifying household expenditure pattern for energy consumption based on its type and economic conversion analysis between types of energy, like conversion from LPG to natural gas.

3.2 Data type and resource

Type of data that used in this study is primary data and secondary data. Primary data will be collected through field survey, while secondary data obtain from certain legal reports which published by related Department or Institution. In revealing energy consumption pattern phenomena and also revealing problem of LPG to natural gas converted, region which chosen is Kecamatan Ilir Barat I, since in this Kecamatan some of household in this Kelurahan has already been used natural gas.

3.3 Sampling Determination Procedure

The respondent is household in the City of Palembang. Since then, primary data which needed is data of household whom live in the City of Palembang. Sample voting done by Non-probability sampling, where in this sample taking done with Purposive Sampling which taking some sample group from population done based on certain consideration. From the calculation based on deviation value it is obtain as 60 number of sample, and hope this can represented the overall population. Sample voting also do based on time, cost, and force efficiency in order to get to the region which became the sample.

3.4 Data Collecting Procedure

Primary data collected by survey method and profound interview method with questioner. The using of both methods purposed to get an accurate data from respondents about energy with its relation in perception.

In collecting the primary data, it also done by field observation in order to get additional information from opinions of decision makers and executives who passed the competencies and as complementary information to support this research. While the secondary data collected through library research from certain publication from Central Bureau Statistic in Palembang and related institution.

IV. DISCUSSION

The respondent characteristics in this research are women in total of 42 people or 70 percent of the total population and for men only 18 people or around 30 percent.

In age stage, it is divided into 5 groups, there are 20-30 in frequency of 10 people (16.7 percent), age 30-40 is 10 people (16.7 percent), 40-50 is 14 people (23.3 percent), age 5-60 is 23 people (38.3 percent), and age more 60 is 3 people (5 percent). It is known that from 60 respondents, age 50-60 (38.3 percent) is the majority of respondents while age under 60 (5 percent) is the minority of respondents.

Respondent majority job is as PNS/BUMN/Police/Retired with number of percentage for 40 percent, while in each of 21.7 percent work as entrepreneur and employee, but only 9 percent as housewives.

Most of respondents already have their own house in frequency of 56 people (93 percent), while respondent who still stay in agency and rent house each takes 2 respondent only (3.3 percent).

Group of expenditure divide into 5 groups. For expense under Rp1.000.000 takes 6 respondents (10 percent); Rp 1.000.000- Rp 5.000.000 takes 39 respondents (65 percent); Rp 5.000.000-Rp 9.000.000 takes 10 respondents (16.7 percent); and Rp 9.000.000- Rp 13.000.000 takes 4 respondents (6.7 percent), while expense on more Rp 13.000.000 only takes 1 person only (1.7 percent).

Respondent majority job is as PNS/BUMN/Police/Retired with number of percentage for 40 percent, while in each of 21.7 percent work as entrepreneur and employee, but only 9 percent as housewives. Most of respondents already have their own house in frequency of 56 respondents (93 percent), while respondent who still stay in agency and rent house each takes 2 respondents only (3.3 percent).

Group of respondent expenditure divide into 7 groups. For expense from Rp 2.000.000 up to Rp 3.000.000 takes 43 respondents (71,7 percent), and the rest of respondents have variation between Rp 1.000.000 up to more Rp 15.000.000.

According to Indonesian Energy Outlook 2014, there is an increase in Indonesia's consumption of final energy (including biomass) from 764 million SMP in 2000 to 1.079 million in 2012, with average of 2.91% increased per year. In 2012, the biggest target market of final energy is industrial sector (34.8%) followed by household sector (30.7%), transportation sector (28.8%), commercial sector (3.3%) and others (2.4%).

Some of energy utilization in Indonesia is still subsidized by the government, such as, premium fuel, solar, biofuel for transportation, kerosene for limited consumers, LPG 3 kg

package and electricity for limited consumers. Due to high subsidy for fuel energy, therefore, conversion is conducted to supply household needs in terms of karoses to LPG and natural gas.

Table 4.1. Using Energy

	Frequency	Percent	Valid Percent	Cumulative Percent
LPGi 12 kg	16	26.7	26.7	26.7
LPG 3 kg	31	51.7	51.7	78.3
Valid Natural Gas	10	16.7	16.7	95.0
Combination 3 kg & 12 kg	3	5.0	5.0	100.0
Total	60	100.0	100.0	

Using LPG12 Kg takes 16 respondent (26.7 percent), LPG 3 kg takes 31 respondent (51.7 percent), natural Gas takes 10 respondent (16.7 percent) and for combine between LPG 3kg and 12 kg takes 3 respondent (5 percent). The number of respondents who use LPG 3 kg is relatively high because it can be accessed easily and purchased at stalls, small shops, mini market, and gas sales agent.

Table 4.2. Energy Cost

	Frequency	Percent	Valid Percent	Cumulative Percent
< Rp 60000	7	11.7	11.7	11.7
Rp 60000-Rp100000	27	50	50	56.7
Rp101.000-Rp150000	18	30	30	86.7
Rp150.000-Rp300000	8	13.4	13.4	100
Total	60	100.0	100.00	

According to expense for energy cost spends by each respondent per month consist of some frequencies of used cost. Cost that spend for energy used per month averagely Rp 100.000 and above or more than 50 respondents answer more than Rp 100.000 for energy cost that spend every month.

Table 4.3. Previous Using Energy

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LPG12 kg	57	95.0	95.0
	LPG 3 kg	2	3.3	98.3
	Carrosine	1	1.7	100.0
	Total	60	100.0	100.0

If we take a look at the energy used that purpose previously, can be seen if before used certain energy, respondent use another energy for daily life. It can be obtained from dominated using of energy that use by respondent before is 12 kg LPG as 57 respondent (95 percent). The low kerosene consumption is related to the scarce presence of kerosene increasingly high price of the product. Therefore, it can be seen that the use of LPG 12 kg is still dominating in energy utilization for the respondents.

It can be seen form the acceptance rate of respondents in households energy utilization that there are many households with income above Rp. 4.500.000 are still using LPG 3kg (25%).

Table 4.4. Crosstab Between Income and Using of Energy

	Income	Using Energy				Total
		LPG 12 kg	LPG3 kg	Natural Gas	Combination 3 kg & 12 kg	
	< Rp 1.500.000	0	4	0	0	4
	Rp 1.5001.000- Rp 2.500.000	0	2	3	0	5
	Rp 2.501.000 - Rp 4.500.000	0	7	1	0	8
	Rp 4.501.000 - Rp 7.500.000	4	8	5	2	19
	Rp 7.501.000 - Rp 10.000.000	2	2	1	1	6
	Rp 10.001.000 - Rp 15.000.000	8	3	2	0	13
	> Rp 15.000.000	2	2	1	0	5
	Total	16	28	13	3	60

The use of LPG 3kg is still dominating households with low, middle and high income because of its easy accessibility. Respondents can buy LPG 3 kg from small shops, minimarker as well as LPG agents.

This indicates that the energy expenditure of households, for example gas for high-income households is small with only a portion of total household expenditure. As for low-income households portions, it is considerably high compared to the total expenditure of the households. Monthly ratio of total expense to expense for energy is 3.53% with maximum and minimum ratio of 17.7% and 0.66% respectively.

Ratio between total expenditure that spend by respondents to expenditure for energy in each month from data processing result obtained average ratio as 3.53 percent with maximum ratio of 17.7 percent and minimum ratio 0.66 percent.

Tabel 4.5. Rasio Total Expenditure to Household Energy Expenditure Respondent

	Frequency	Percent	Valid Percent	Cumulative Percent
< 2 %	14	23,3	23,3	23,3
2,01 % - 4 %	26	43,3	43,3	66,7
4,01 % - 6 %	16	26,7	26,7	93,3
Valid 6,01 % - 8 %	2	3,3	3,3	96,7
> 8,01 %	2	3,3	3,3	100,0
Total	60	100,0	100,0	

From the table above, it can be seen that ratio between total household expenditure to energy consumption expenditure under 6 per cent as 50 respondent (93.3 percent).

In 2007, government creates a program related to the conversion of subsidized kerosene to LPG 3 kg and it is targeted that in 2011, people have moved to utilization in gas. In general, individual's knowledge could affect his/her decision in buying goods and services. Knowledge can be attained if one attends formal or informal education. Furthermore, people can gain information on energy especially LPG through accessible media such as printed media (newspaper, tabloid and magazine),

electronic media (television and radio), counseling, other people's preferences and personal experience.

If it viewed from 60 respondents that being researched, can be seen that 96.3 percent (59 respondents) answer they do know subsidy existence that been given by government for energy use, and the rest answer they do not know.

Table 4.6. Energy Service Demand

	Frequency	Percent	Valid Percent	Cumulative Percent
LPG	34	56.7	56.7	56.7
Valid Natural Gas	26	43.3	43.3	100.0
Total	60	100.0	100.0	

From total of 60 respondents, it can be seen that the energy service that demand by respondent is LPG energy service as 34 respondents (56.7 percent), and the rest natural gas energy service as 26 respondents (43.3 percent).

The existence of service for natural consumption requires respondents to meet the conditions given by PGN (State Gas Company) to be able to receive the installation facility. From the total Of 60 respondents, it can be seen that all respondents are willing to meet the conditions.

Palembang has installed and distributed natural gas to households through PGN since 2000. In its development, as of 2015, 5079 households have been installed this facility. In 2016, PGN targets to add 4000 new consumers. So far, the distribution of natural gas has only focused on Ilir Barat 1 district (Kelurahan Siring Agung and Lorok Pakjo).

Existence of service that been given to use the energy, then respondent has to fulfill the requirement given by PGN for energy use. From the total 60 respondents, it can be seen that all respondents wills to fulfilling the requirement given.

Table 4.7. Customer Propose

	Frequency	Percent	Valid Percent	Cumulative Percent
Ever	12	20.0	20.0	20.0
Never	40	66.7	66.7	86.7
Dont Know	8	13.3	13.3	100.0
Total	60	100.0	100.0	

Customer propose for natural gas installation from 60 respondents e can be seen from ever proposed or never proposed natural gas installation as well as the unknown about natural gas. From 60 respondents, 12 people or 20 percent answered ever proposed natural gas installation, 40 respondents (66.7 percent) answered never proposed natural gas installation, and the rest of 8 respondents (13.3 percent) answered the unknown of natural gas installation.

Table 4.8. Willingess To Pay Natural Resources Installation

	Frequency	Percent	Valid Percent	Cumulative Percent
> Rp 2.000.000	1	1.7	1.7	1.7
Rp 1.500.001-Rp 2.000.000	5	8.3	8.3	10.0
Rp 1.001.000-Rp 1.500.000	26	43.3	43.3	53.3
Rp 751.000-Rp 1.000.000	8	13.3	13.3	66.7
< Rp 750.000	20	33.3	33.3	100.0
Total	60	100.0	100.0	

The bid requirement available by PGN and natural gas installation that offer to respondents, in this subsection can be seen from total 60 respondents in payment capability for natural gas installation. Payment capability more than Rp 2.000.000 only 1 person (1.7 percent), Rp 1.500.001- Rp 2.000.000 as 5 respondents (8.3 percent), Rp 1.001.00-Rp 1.500.000 as 26 respondents (43.3 percent), Rp 751.000-Rp 1.000.000 as 8 respondents (13.3 percent), and the rest under Rp 750.000 as 20 respondents (33.3 percent). The price of gas installation is relatively high (above Rp. 3.000.000) which is unaffordable for people with low and middle income level.

Furthermore, the low socialisation of the program is also causing the preception of natural gas.

Table 4.9. Willingess To Pay Natural Gas every Month

	Frequency	Percent	Valid Percent	Cumulative Percent
> Rp 150.000	1	1.7	1.7	1.7
Rp 100.000-Rp 150.000	13	21.7	21.7	23.3
Valid Rp 51.000-Rp100.000	31	51.7	51.7	75.0
< Rp 50.000	15	25.0	25.0	100.0
Total	60	100.0	100.0	

the capability for paying natural gas, so then can be seen that the frequencies of payment more than Rp 150.000 as 1 respondent (1.7 percent), Rp 100.000-Rp 150.000 as 13 respondents (21.7 percent), Rp 51.000-Rp 100.000 as 31 respondents (31 percent), and the rest under Rp 50.000 as 15 respondents (25 percent). The perception of natural gas will affect attitude and acceptance of respondents. Respondent's perception is adequate since natural gas has products characteristics that respondents want.

If take look from the questioner collection which have been spread for 60 respondents, we can see some of benefit according to 60 respondents about natural gas utilization.

Table 4.10. Benefit of Natural Gas

	Frequency	Percent	Valid Percent	Cumulative Percent
practise/eficient	34	56.7	56.7	56.7
Cheap/safe	16	26.7	26.7	83.3
easy/good distribution	5	8.3	8.3	91.7
Valid Utilizing of natural resources	2	3.3	3.3	95.0
Suitable to needs	2	3.3	3.3	98.3
Dont know	1	1.7	1.7	100.0
Total	60	100.0	100.0	

Here is some natural gas utilization according to 60 respondents, 34 respondents (56.7 percent) answer more efficient/practical, 16 respondents (26.7 percent) answer cheap/save, 5 respondents (8.3 percent) answer easy to get/swift distribution, 2 respondents (3.3 percent) answer utilize natural gas and suitable to needs and the rest 1 respondent (1.7 percent) answer do not know.

V. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

- a. Energy utilization that used by the respondent is 3 kg LPG with 31 respondents (51.7 percent), natural gas utilization with 10 respondents (16.7 percent), and combination utilization between 3 kg and 12 kg LPG as 3 respondents (5 percent).
- b. 96.3 percent of respondents answer knows about the subsidy given by government for energy utilization.
- c. Energy service that being stake by respondent is LPG energy service as 56.7 percent, and the rest of natural gas energy service as 43.3 percent.
- d. The bid requirement available by PGN and natural gas installation that offer to respondents paid Rp 1.001.000-Rp 1.500.000 as 26 respondents (43.3 percent), Rp 751.000-Rp 1.000.000 as 8 respondents (13.3 percent), and the rest under Rp 750.000 as 20 respondents (33.3percent).
- e. The capability for paying natural gas, so then can be seen that the frequencies of payment for each month for natural gas, so then the frequencies Rp 100.000-Rp 150.000 as 13 respondents (21.7 percent), Rp 51.000-Rp 100.000 as 31 respondents (31 percent), and the rest under Rp 50.000 as 15 respondents (25 percent)

5.2. Recommendations

- a. It is need clear rules related to subsidy 3 kg LPG distribution, so then the utilization can reach the target to people in low income.

- b. It is need an expansion for natural gas pipe installation that capable and wills to pay, so then the people accessibility to cheap an efficient energy, and swift distribution increase.

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