Analysis of the Impact of Fuel Price Increase on the Highest Retail Price of 3 Kilogram Liquefied Petroleum Gas (LPG) in Bengkalis Regency

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Abstract. The Liquified Petroleum Gas (LPG) currently circulating in society includes variants like the 3 Kg, 12 Kg, and 50 Kg LPG cylinders. The 3 Kg LPG variant itself is subsidized by the Government through Pertamina as part of the initiative to convert kerosene into LPG gas. In 2015, the Bengkalis Regency Government issued a Decree of Regent No. 232/KPTS/V/2015 concerning the highest retail price (HRP) of 3 Kg LPG. The HRP was deemed not suitable for the current conditions, especially considering that the price of fuel (BBM), which is one of the determining factors for the distribution cost of 3 Kg LPG, has increased since 2022. This study employs descriptive data analysis based on the collected responses from field surveys involving the two main parties involved, namely Distributor Agents and Selling Stations. The goal is to determine the extent of the influence of BBM price increases on the HRP of 3 Kg LPG in Bengkalis Regency. The analysis results reveal a distribution cost increase ranging from 5.27% to 29.5%, and the ideal HRP for 3 Kg LPG in Bengkalis Regency is between Rp 5,800 and Rp 7,300.

Keywords: HRP (highest retail price), Liquified Petroleum Gas, Government subsidy

1 Introduction

Fuels derived from natural gas include Liquefied Natural Gas (LNG) and Liquified Petroleum Gas (LPG). One of the well-known and widely used types of LPG is the 3 Kg variant, along with 12 Kg and 50 Kg. The presence of 3 Kg LPG is a solution provided by the Government through Pertamina as part of the program to convert kerosene into LPG.

Since this conversion, household cooking has shifted to using 3 Kg LPG, reducing the use of kerosene, which is now mainly available to eligible subsidy recipients. The government has prioritized LPG as a fuel for household and micro-enterprise needs. According to [1], primary cooks with higher education, and smaller, wealthier, and urban households are more likely to use LPG due to its advantages.
The subsidized retail price of a 3 kg LPG cylinder is set at Rp. 4,250 per kg or Rp. 12,750 per cylinder, as stipulated in [2,3]. However, in certain areas, there is still a scarcity of supply, leading to significant price increases, sometimes exceeding 100% of the Highest Retail Price (HRP) set by local governments. High consumer demand has led to increased demand and

ABEC 2023, September 21, Bengkalis, Indonesia

DOI 10.4108/eai.21-9-2023.2343011

limited supply in several sub-districts in Bengkalis Regency, especially for subsidized 3 kg LPG.

The Bengkalis Regency Government issued Decree No. 232/KPTS/V/2015 in 2015, setting the Highest Retail Price (HRP) for 3 Kilogram (Kg) LPG at Rp 21,500. However, there's a notable difference between the central government-set price and the price set by the Bengkalis Regency local government. Despite the established retail price for Bengkalis Regency being Rp. 21,500, LPG selling points often sell above this HRP.

On another note, since September 3, 2022, there has been an increase in the selling price of certain types of fuel (BBM). This has led to increased distribution costs for 3 Kg LPG, considering the considerable distance from Filling Station to each sales point in eleven sub-districts in Bengkalis Regency. Thus, according to several distributor agents, the HRP set by the Bengkalis Regency Government through Decree No. 232/KPTS/V/2015 is no longer relevant.

Based on these problem statements, a study is conducted to examine the impact of the BBM selling price increase on the Highest Retail Price (HRP) of 3 Kilogram Liquefied Petroleum Gas in Bengkalis Regency. This study aims to provide a clear overview of the effects of the BBM price increase on the price of 3 Kg LPG and to determine the ideal HRP for 3 Kg LPG in the current conditions.

2 Research Methods

2.1 Data Collection Methods

The data utilized in this research consists of both primary and secondary data. The primary data has been gathered through in-depth interviews and insights from the parties involved in the distribution process of 3 kg LPG, specifically the distributor agents. The collected primary data includes information regarding:

1. The purchasing prices of 3 kg LPG from Pertamina, Distributors/Agents, and Sub-distributors/Depots.
2. The profit margins obtained from each 3 kg LPG cylinder by Distributors/Agents and Sub-distributors/Depots.
3. The transportation costs (freight costs) associated with transporting 3 kg LPG incurred by Distributors/Agents and Sub-distributors/Depots.
4. The operational costs incurred by Distributors/Agents and Sub-distributors/Depots.
5. The selling prices of 3 kg LPG are set by Distributors/Agents and Sub-distributors/Depots.
6. The criteria used for determining pricing set by Distributors/Agents and Sub-distributors/Depots.

Additionally, secondary data used in this study includes information obtained from Sub-distributors/Depots and the basic pricing data for 3 kg LPG provided by Pertamina.

2.2 Sampling Techniques

The sampling technique for this research involves conducting interviews with 3 kg LPG distributor agents located in eleven sub-districts within Bengkalis Regency.

2.3 Types of Research

This study utilizes descriptive data analysis based on the gathered responses from the research. The received data is detailed to delve into various research variables, aiming to present an overview of the variables employed in the study. Qualitative analysis is also applied, which is a method of reasoning that involves interpreting data by providing explanations rooted in expert opinions, pertinent theories, literature, and the researcher's own arguments.

2.4 Measurement and Observation Parameters

In this research, the primary parameter measured or observed is the factors influencing the distribution of 3 kg LPG and the amount paid by the community to purchase 3 kg LPG under the current conditions. Several other parameters observed during the study are as follows:

1. Criteria or factors determining the HRP (Government's Fixed Retail Price) of 3 kg LPG at Distributor agents or Depots.
2. The magnitude of the costs associated with each of these criteria.
3. The current selling price of LPG by Depots.
4. The current purchasing price of LPG by the public.

3 Result and Discussion

The determination of the selling price of 3 kg LPG can be influenced by several factors, including the pricing mechanism, the details in the price determination, and even the distance between the Filling Station and each depot. To delve into further detail, the following explanation will be provided.

3.1 Pricing Mechanism of 3 Kg LPG

According to [4], the method of pricing determination refers to the approach a company uses to set the price of a product or service. Almost all businesses, whether large or small, base their product and service prices on factors like production costs, labor, and advertising expenses. They then add a certain percentage to ensure the company earns a profit.

The pricing mechanism for subsidized LPG or 3 kg LPG with government subsidies for households and micro-businesses is determined by Presidential Decree [2] in the Republic of Indonesia, which addresses the Provision, Distribution, and Pricing of the 3 kg LPG canister. For households, this subsidy is provided to families in the lower economic class within the distribution areas of 3 kg LPG. Micro-businesses are allowed to use kerosene as a raw material, obtain local village business permits, and operate within the distribution area.

The government, through the Ministry of Energy and Mineral Resources (ESDM), has established specific regulations to oversee LPG distribution, particularly the 3 kg LPG canister. Regulation [5] outlines the trade regulations for LPG. Sales of LPG can only be conducted by companies holding licenses for LPG trading, as stipulated by government regulations.
In general, the distribution mechanism of 3 kg LPG involves intermediaries between Pertamina and end-users. The distribution process starts with Pertamina, then moves to LPG distributors, and finally reaches authorized depots. This process, including the associated costs for

distributing 3 kg LPG, is taken into consideration in determining its price, particularly in areas like Kabupaten Bengkalis.

From the four Filling Stations (Supply Points for Bulk LPG) located in the Province of Riau, which serve as the initial distribution points for 3 kg LPG, the gas is then distributed to depots where it is sold to the general public or consumers. According to local regulation No. 232/kpts/v/2015 concerning the Fixed Retail Price (HRP) of 3 kg LPG, the distribution mechanism for 3 kg LPG can be easily explained, as depicted in Figure 1.

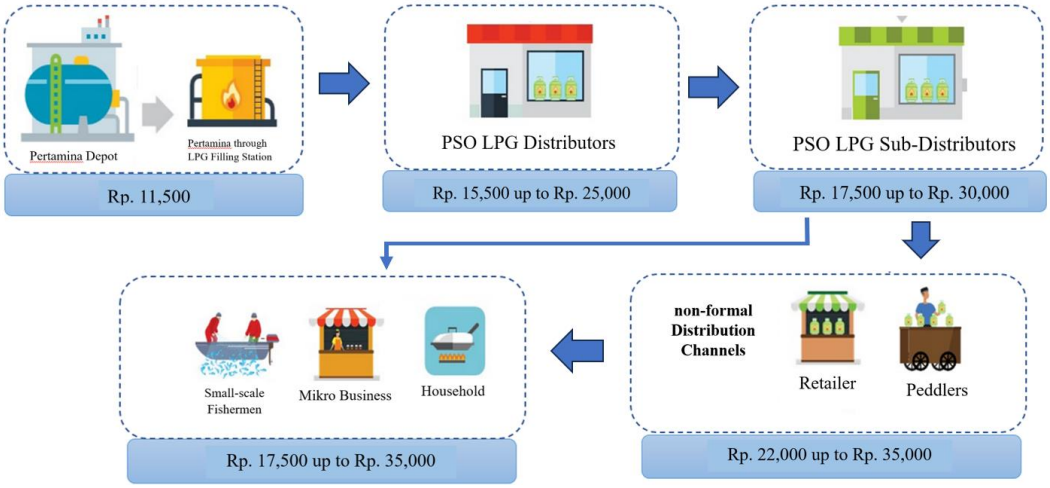

Fig.1. Distribution flow and HRP of 3 Kg LPG in Bengkalis Regency.

3.2 Factors that determine the HRP of 3 Kg LPG

From the mechanism of determining the Fixed Retail Price (HRP), several factors can influence the HRP of 3 kg LPG, including:

1. Distance from the Filling Station to the Depot.

As known, in the Riau Province, there are four Filling Stations. The position of these Filling Stations affects the varying distances from them to the Depots located in Kabupaten Bengkalis. Table 1 outlines the travel distances for the distribution of 3 kg LPG from these four Filling Stations to all the Depots in the sub-districts within Kabupaten Bengkalis. The distances from the four Filling Stations are then averaged to determine the average travel distance.

Table 1. Mileage from Filling Station to each district

Subdistrict	Distance (Kilometers)				
	Cahaya Riau	RMJ Perkasa	Riau Belia Karya Mandiri	Mas Artha Sarana	Average
Mandau	13	46	106	138	75.75
Pinggir	30.6	67.5	98.3	129	81.35
Bathin Solapan	1.6	56.7	137	168	90.825
Talang Muandau	68.1	105	78,9	119	92.75
Bukit Batu	164	107	151	161	145.75
Siak Kecil	179	121	134	146	145
Bandar Laksamana	129	64.6	184	196	143.4

Rupat	65.2	31.4	131.2	198.2	106.5
Rupat Utara	139	105.2	205	272	180.3
Bengkalis	179	128	164	177	162
Bantan	193	136	179	191	174.75

In Table 1, it's observed that the lowest average travel distance from Filling Station to the Depots within each sub-district is in the Mandau sub-district. On the other hand, the North Rupat sub-district has the highest average travel distance, reaching 180 km. For determining travel distances on both Bengkalis Island and Rupat Island, the average distances between sub-districts on each island are considered. For instance, the travel distance to the Rupat sub-district, which is 106.5 km, would be averaged with the travel distance to the North Rupat sub-district, which is 180.3 km, resulting in an average of 140 km. This value is then used for economic analysis in determining the HRP for the 3 kg LPG canister.

As discussed earlier, the Bengkalis regency is spread across three different islands: the mainland of Sumatra, Bengkalis Island, and Rupat Island. All four Filling Stations are located on the mainland of Sumatra. Consequently, the trucks transporting 3 kg LPG not only need to travel overland but also require a ferry crossing using a Roro ship. This situation leads to an increase in transportation costs for the distribution of 3 kg LPG

2. Increase in fuel prices (BBM)

Since September 3, 2022, the government, through Minister of Energy and Mineral Resources Decision [6], has implemented an increase in the retail prices of specific types of fuel, including certain types of gasoline. Among the fuels affected by this change is Diesel, which saw a price increase of around 32% from the previous retail price. Previously, Diesel was sold at Rp 5,150 per liter and increased to Rp 6,800 per liter. This increase in fuel prices also impacts the prices of ferry tickets for the Roro ships. Consequently, this has led to an increase in transportation costs for the distribution of 3 kg LPG.

Based on the results of interviews with several distributors of 3 Kilogram LPG in regency Bengkalis, detailed travel costs have been obtained that increased due to the rise in fuel prices. Furthermore, the increase in fuel prices also affects the increase in ferry ticket prices for crossings between Sumatera, Bengkalis, and Rupat Island. This is in line with the statement by [7] that the prices of crude oil and natural gas in the market are highly dependent on transportation costs. Table 2 provides an overview of the changes in travel costs due to the increase in fuel prices, categorized into three parts: Mainland of Sumatera with a travel distance of 60 KM, Bengkalis Island with a travel distance of 110 KM, and Rupat Island with a travel distance of 140 KM.

Based on Table 2, it's evident that the increase in prices of diesel fuel has led to an increase in travel costs or distribution costs for 3 Kilogram LPG in Bengkalis regency, especially in the districts on Bengkalis and Rupat Island. This price increase is highly influenced by the delivery location. For the Mainland of Sumatera, there is an increase of 5.27%, for Bengkalis Island there is an increase of 18.13%, and for locations on Rupat Island, there is an increase of 29.5%.

Table 2. Analysis of the cost of distribution trips for LPG 3 Kg

Output description	Using diesel fuel			
	Before the increase in fuel prices.	After the increase in fuel prices		
	Mainland of Sumatra	Mainland of Sumatra	Bengkalis Island	Rupat Island
Service Capacity of Transport Services				
Capacity Cold Diesel (Cylinder)	560	560	560	560
Distance (Kilometers)	60	60	110	140
Average Monthly Fleet Turnover (Trips)	25	25	25	25
Fuel prices (Rp.)	Rp. 5,150	Rp. 6,800	Rp. 6,800	Rp. 6,800
Fuel consumption/trip (liter)	50	50	77	98
Travel Expenses				
Vehicle Fuel Costs (Fuel Price x 50 liters x 25 trips	Rp. 6,437,500	Rp. 8,500,000	Rp. 13,090,000	Rp. 16,660,000
RORO ship ticket			Rp. 448,000	Rp. 1,330,000
Monthly Maintenance & Repair includes				
Monthly Maintenance & Repair includes oil and spare part	Rp. 4,250,000	Rp. 4,250,000	Rp. 4,250,000	Rp. 4,250,000
Tire Replacement (6 Tires x 2 times a year x Rp.2,050,000,- divided by 12 months)	Rp. 2,050,000	Rp. 2,050,000	Rp. 2,050,000	Rp. 2,050,000
Travel Expenses for Driver & Helper (meal allowance + accommodation Rp. 175,000,- per day	Rp. 26,425,000	Rp. 26,425,000	Rp. 26,425,000	Rp. 26,425,000
Total Travel Expenses	Rp. 39,162,500	Rp. 41,225,000	Rp. 46,263,000	Rp. 50,715,000

3.3 Determination of 3 KG LPG HRP

Based on the economic analysis for determining the Reference Price for 3 Kg LPG in Bengkalis Regency, calculations were conducted for four conditions as follows:

1. Districts located on the mainland of Sumatra with travel distances up to 60 kilometers.
2. Districts located on the mainland of Sumatra with travel distances between 60 to 110 kilometers.
3. Districts located on Bengkalis Island with a set travel distance of 160 kilometers.
4. Districts located on Rupat Island with a set travel distance of 140 kilometers.

From these four conditions, an analysis was conducted on the ideal transportation costs using three types of commonly used BBM (fuel) variations for Cold Diesel trucks: Diesel, Dexlite,

and a mixture of Diesel and Dexlite. The results of the analysis on transportation costs for 3 Kilogram LPG can be seen in Table 3 below.

Based on Table 3, shows the average cost difference of transporting 3 Kilogram LPG per cylinder under the four conditions. There is a significant price difference: for districts on Daratan Sumatera (mainland) with a distance of less than 110 KM, it is 10.34% more expensive compared to districts on Daratan Sumatera with a distance of less than 60 KM. Similarly, for Pulau Bengkalis and Pulau Rupat, it is 25.86% and 20.69% more expensive, respectively. This indicates that as the transportation distance increases, the transportation costs also increase. This is justified by [8] and [9], where the distance of LPG distribution can affect the total expenditure of transportation costs so that it can affect operational costs. This data will be used to determine the HRP for 3 Kilogram LPG based on these four conditions.

Table 3. LPG transportation costs 3 Kilograms

Description	Biaya Angkut Rata-Rata(Rp. /tabung)				Rounded up
	Using diesel	Using Dexlite	Using diesel mix with dexlite	Average	
Districts located on the mainland of Sumatra within a distance of less than 60km.	Rp 5,169	Rp 6,098	Rp 5,881	Rp 5,716	Rp 5,800
Districts located on the mainland of Sumatra with travel distances between 60 to 110km.	Rp 5,508	Rp 6,939	Rp 6,604	Rp 6,350	Rp 6,400
Districts located on Bengkalis Island with a set travel distance of 160km	Rp 5,981	Rp 8,062	Rp 7,575	Rp 7,206	Rp 7,300
Districts located on Rupat Island with a set travel distance of 140km	Rp 5,871	Rp 7,691	Rp 7,265	Rp 6,942	Rp 7,000

4 Conclusion

From the analysis results, several conclusions can be drawn:

1. The increase in fuel prices has led to an increase in travel or distribution costs for 3 Kilogram LPG by 5.27% to 29.5% in Bengkalis Regency, especially in the districts located on Bengkalis and Rupat Island.
2. The ideal HRP for 3 Kilogram LPG in Bengkalis Regency due to the rise in fuel prices ranges from Rp 5,800 to Rp 7,300, depending on the location of each district.

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