

## **Best Practice Policy: The Effectiveness of Natural Gas Line Program in Lontong Neighborhood Surabaya**

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### **ABSTRACT**

The goal of this study is to describe how the natural gas line program was put into place in micro, small, and medium enterprises (MSMEs) in the Lontong neighbourhood of Surabaya, where craftsmen use LPG a lot. The theory used to make sense of the phenomenon is called policy effectiveness, and it consists of the following components: 1) availability; 2) breadth; 3) depth; 4) bias; 5) responsibility; and 6) appropriateness. In addition, both qualitative and descriptive types of research were used. Ten lontong artisans, three PGN members, and two subdistrict officials are among the informants. Since 2016, residents of the lontong neighbourhood have been using natural gas lines in their factories, according to the results. Socialization of the retail space spreads the word to locals about the program. Information about the program is readily available to each subdistrict thanks to a sales area representative and a call centre open around the clock. Monthly program usage can range from 200m<sup>3</sup> to 1,500m<sup>3</sup>, and the program is available to both single-family homes and small and medium-sized businesses. However, many people are still unaware of the benefits of using natural gas, so the natural gas line program needs to be socialized.

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### **INTRODUCTION**

Indonesia's oil reserves are depleting and the country's annual output has been falling. Since a long time ago, the government has been trying to reduce fuel consumption by switching to alternative energy sources. With its current oil reserves of 3.77 billion barrels, Indonesia has enough fuel to last until 2028 at the earliest (Valdés-López et al., 2023). The oil and gas industry was once a major source of income for the country. The Reforminer Institute study cited by Kompas found that the oil and gas industry accounted for 62.88 per cent of Indonesia's state revenue between 1970 and 1990. As of around 2004, Indonesia's oil fields had matured enough to begin supplying the country with oil. The ultimate objective is to provide for U.S. energy demands. This must be done to lessen reliance on kerosene subsidies (Merzi & Daryanto, 2018), improve fuel supply security, and achieve energy mix balance.

Farizky, (2018) predicts that beginning in 2025, Indonesia's oil and gas production efficiency will increase steadily until reaching a peak in 2050. The government of Indonesia has set a goal that by 2025, oil will account for about 20%, natural gas for 30%, and renewable energy for 17%. The Indonesian government is implementing several initiatives to lessen the country's reliance on foreign oil. These initiatives include switching from kerosene to LPG and encouraging the use of natural gas in homes and businesses. The government should devise a unique plan to entice oil and gas companies operating in Indonesia to actively explore undiscovered oil and gas reserves.

Oil shortages of 1.39 million BPH and gas shortages of 2,837 MMCFD are predicted for the year 2025 by the Geological Engineering Alumni Association (IAGL) of the Bandung Institute of Technology (ITB). ITB Vice Chair Nanang Abdul Manaf says the government can boost output and reduce the deficit by taking a few specific actions. Among these measures is incentivizing exploration with an eye toward the future (Pratomo & TK, 2022).

One of Indonesia's national priorities is converting kerosene to Liquefied Petroleum Gas (LPG), which will speed up the country's efforts to reduce its reliance on foreign oil. Another national priority is developing a gas distribution line for households. In 2009, the population finally began to benefit from the country's gas distribution network. Nearly 57,000 families have benefited from this program since that time, with the majority living in Palembang (3,311), Surabaya (2,900), Sidoarjo (8,647 house connections), Depok (4,000), Tarakan (3,666), Bekasi (4,628), Bontang (3,960), Sengkang (4,172), Jabodetabek flats (5,234 house connections), and Prabumulih (4,650 house connections). The community can expect cleaner, safer, and cheaper fuel as a result of this program. Natural gas exploitation in oil and natural gas downstream business activities is addressed in Regulation No. 4 of 2018 issued by the Minister of Energy and Mineral Resources (ESDM) (Yusrina & Anggoro, 2022).

Energy security and community well-being can be achieved through the government's obligation to build a natural gas distribution network for homes. To supply natural gas to homes and small businesses, a distribution pipeline is constructed and maintained (Kusuma, 2021). A natural gas line, as described by Andriawan et al., (2020), is typically constructed in a region that is geographically close to the gas source or gas pipeline infrastructure, where the necessary gas specifications can be met, where there is a potential market for users of natural gas line, where there is the commitment of local governments, and where safety and engineering rules can be met.

Households in areas with a natural gas transmission network and cities with access to natural gas sources are the focus of this construction program for a natural gas distribution network (Sadiyah et al., 2021). When acting as Sub Holding Gas, PT Perusahaan Gas Negara (Persero) Tbk (PGN) is fully behind the government's plan to connect up to 4.7 million homes to the natural gas grid by 2025. By allocating funds from the State Budget (APBN) and an internal PGN program, the government aims to provide competitive energy and subsidies to support programs that ensure the public has access to affordable domestic gas (Suparni, 2021).

Sasmita (2019) says that building a gas distribution network for homes is one of the national priority programs for energy diversification, subsidy reduction, the provision of clean and cheap energy, and additional programs for the conversion of kerosene to LPG to speed up the reduction of petroleum use. The size of the subsidy is directly related to the rate at which natural gas is

used to displace petroleum. Since private companies see no financial incentive to construct a Natural Gas distribution network serving residential areas, the government is taking the lead in this endeavour (Refkito, 2021). To become a gas city in the future, local governments will need to take part and see the big picture.

According to a report by PT. Perusahaan Gas Negara (Persero) Tbk, residential consumers account for the bulk of natural gas usage, and this share is growing every year.

Year	Consumer		
	Household	Industrial	Commercial
2013	88,613	1,260	1,717
2014	90,394	1,365	1,729
2015	107,690	1,529	1,857

Table 1: Natural Gas Consumers Report  
(Syifaurohmah & Riyanto, 2020) [source]

In 2013, there were 88,613 residential users, 1,260 industrial users, and 1,717 business users, according to the data. In 2014, the number of consumers was 90,394 for homes, 1,365 for businesses, and 1,729 for other industrial uses. In 2015, there were 107,690 home consumers, 1,529 industrial consumers, and 1,857 business consumers (Syifaurohmah & Riyanto, 2020).

The National Gas Company (PGN) and the Ministry of Energy and Mineral Resources (ESDM) collaborated in 2016 to bring gas to 24,000 homes in Surabaya. Surabaya's residential gas needs are met by PT. Pertamina Hulu Energi West Madura Offshore has a 0.6 million standard cubic feet per day (MMSCFD) capacity. More than 196 kilometres of pipeline were constructed to supply natural gas to 24,000 homes in Surabaya (Darajah et al., 2022).

In addition to its focus on MSMEs, PGN also caters to residential customers. Kupang Krajan, Surabaya's Lontong District, has been a lontong (a dish from Southeast Asia made of compressed rice cake) manufacturing hub since 1983. Since 2016, the natural gas line has served approximately 1,783 lontong producers. The natural gas line has been financially beneficial to lontong artisans. When they were using a fuel source other than natural gas, steaming 550 rice cakes required at least 3 LPG cylinders of 3 kg per day, for Rp. 61,000 per day. After connecting to the natural gas line, lontong artisans can reduce their daily costs to Rp 36,000, a savings of Rp 25,000. This cost reduction is evidence that the gas conservation initiative has been successful. Buchari argues that policy success can be measured by whether or not its goals have been met (Buchari et al., 2017). The extent to which an organization's output, policies, and procedures contribute to the achievement of its objectives is a measure of its effectiveness (APSARI, 2019). So, it's important to take a closer look at how well the household natural gas line program in the lontong area has been working. Therefore, the primary goal of this research is to demonstrate how well the rollout of a program to install a natural gas line has helped MSMEs in the lontong area.

## METHODS

For this research, a descriptive-qualitative method was used. Creswell (2015) says that qualitative research focuses more on trying to figure out the meaning behind reality, which is revealed by the

data that is collected. Some examples of descriptive research are giving a detailed and very accurate picture, finding new data that conflicts with old data, making a series of indicators or classifying types, explaining a series of stages or steps, documenting a process or mechanism of cause and effect, and reporting on the background or context of a situation (Neuman, 2016). There are as many as ten people from the Lontong Craftsmen's Association, three people from the PGN, and two people from the sub-district office who are giving information. Some of the ways that data were collected were through in-depth interviews, looking at secondary data sources, and field observations. To look at the data, the authors use an interactive analysis. Miles et al., (2014) say that an analysis is made up of four activity lines: collecting data, condensing data, presenting data, and drawing a conclusion. The authors look at the data through the lens of interactive analysis. Then, the triangulation method was used to figure out if the data could be trusted. Triangulation is a way to check or compare data without using the data themselves. Some of the things that are looked at are the informants, when the information was given, the conditions the person was in, and so on.

## RESULTS AND DISCUSSION

PT Perusahaan Gas Negara Tbk (PGN) has an important role in ensuring national energy security through efforts to strengthen supply and expand natural gas infrastructure development. PGN as a Gas Subholding, also has a role in Indonesia's energy transition to Net Zero Emission (NZE) in 2060. Natural gas, which has cleaner combustion properties than other energy, can reduce emissions by up to 40% and will be one of the solutions to achieve Indonesia's emission reduction target of up to 377 tons of CO<sub>2</sub> by 2035. To support these efforts, during 2022 PGN continues to make business breakthroughs, develop infrastructure and increase natural gas utilization towards a company that provides energy solutions for the Indonesian people, especially for the commercial, industrial, electricity, transportation, and household sectors (PT Perusahaan Gas Negara, 2022).

When viewed from the perspective of the specifications, the various types of LPG include mixed LPG; LPG propane; and butane LPG. In the meantime, according to the Decree of the Director General of Oil and Gas Number: 25K/36/DDJM/1990, the type of mixed fuel that is currently being circulated in the community today is a type of LPG (Daryanto et al., 2020). Throughout 2022, PGN continued to provide support for the following Government's strategic programs: including the construction of a gas network for households to reduce LPG imports the Government.

*“LPG (liquid Petroleum Gas) is liquefied petroleum gas. LPG is also commonly used as fuel for buses, tractors, trucks, and other vehicles.”*

(Interview with first informant from PT Perusahaan Gas Negara (Persero) Tbk, May 2nd, 2023, at 9 a.m)

Throughout 2022, PGN distributed natural gas to households, small-scale customers, gas fuel filling stations, as well as commercial and industrial customers, serving a total of 838,953 customers, an increase compared to 2021 of 664,044 customers. The household customer segment currently dominates the number of PGN customers, which accounts for 99% of PGN's total natural gas customers. The number of PGN customers has been consistently growing significantly over

the last five years, in line with the growth in the development of the gas network (PT Perusahaan Gas Negara, 2022).

PGN is the largest natural gas distribution Company through pipelines across the country and has supplied gas to more than 800,000 household customers in 73 Cities/Regencies across Indonesia. Regarding the expansion of household services, PGN will expand the use of natural gas to the household segment with a target of 4 million customers by 2024. In support of the Government's efforts to reduce imports of Liquefied Petroleum Gas (LPG), the Gaskita Pintar program is carried out. The number of PGN customers is currently dominated by the household customers segment, amounting to 99.42% (or 834,161 customers) of a total of 838,953 customers (PT Perusahaan Gas Negara, 2022).

According to Sadiyah et al., (2021), the majority of the LPG that is used in the community is for cooking. Although it can also be used for vehicles, the amount that is used for vehicles is still relatively low. The current policy from the government, which has begun to revoke subsidies on 3 kg LPG tubes, is making it increasingly difficult to obtain LPG for use, particularly in quantities of 3 kg. This is making it increasingly difficult to use LPG. People who are accustomed to using 3 kg of LPG for daily needs will undoubtedly feel the effects of this change, as it will force them to make the transition to a different form of alternative energy. People who live in areas that are close to mines or areas that produce petroleum and where there is already a natural gas pipeline have the option of using natural gas as an alternative fuel for their daily cooking needs.

*"Natural gas is an alternative energy to replace LPG as a household fuel. Natural gas has a tasteless and odourless nature. Before it is distributed to its end users (consumers), it goes into a particular process and is smelled in the form of thiol; so that it will be easily detected if a gas leak occurs".*

(Interview with the second informant from PT Perusahaan Gas Negara (Persero) Tbk, May 2nd, 2023, at 10 a.m)

Among other benefits Triyatno (2018), a higher combustion efficiency is associated with the natural gas excess. When compared to other fuels, the amount of gas emissions that result from combustion with this fuel is significantly lower; as a result, it is better for the environment. Additionally, the fact that it is less expensive, has a plentiful supply, and weighs less than air, which causes it to be volatile, all contribute to its effectiveness. Because the piping system already functions as a gas storage and has a lower pressure, it does not need to have any additional storage (Astuti et al., 2019).

*"Natural gas line program is a type of gas line program that uses pipes to transport gas directly from oil and gas wells to homes of residents. Savings on consumer payments and subsidies are the goal. (May 2, 2023, 11 a.m. interview with the third informant from PT Perusahaan Gas Negara (Persero) Tbk)*

*The Presidential Regulation (Perpres) No. 6 of 2019 regarding the Provision and Distribution of Natural Gas for Households and Small Customers was finally released by President Joko Widodo in January 2019. This public policy is an instrument of regulation*

*used as the foundation for government actions to protect and serve the public in a variety of areas of daily life.”*

(Interview with the first informant from officers from the sub-district office, May 3rd, 2023, at 9 a.m)

To support making the most of the benefits of natural gas for communities, PGN has developed household gas networks through the PGN Loves Mothers (PGN Sayang Ibu) Program using the company's budget, targeting 400,000 new customers in all PGN operational areas. Additionally, the government's gas network assignment program, as stated in the MEMR Decree Number 85K/16/MEM/2020 dated April 8, 2020, on Assignments to PT Perusahaan Gas Negara Tbk to carry out the supply and distribution of natural gas through natural gas transmission and/or distribution networks for households and small-scale customers (PT Perusahaan Gas Negara, 2022).

Also, the policy can be seen as a set of actions that are meant to reach a set of goals (Nugroho, 2021). Ripley, R. B., & Franklin (1986) say that three main things contribute to how well a policy is put into place. These factors are: 1) how well the rules are followed; 2) how well routine tasks work and whether there are any problems; and 3) the intended implementation and direct impact (Widodo, 2021).

In addition, the measurement of the program's effectiveness can be used to provide evidence that the program's goals have been met, which can be drawn from the evidence. According to Dunn's explanation, the efficiency of the policy is determined by determining whether or not an alternative achieved the desired results (results) or whether or not the action's objectives were met (Henriyani, 2019). The efficiency with which a policy is put into action is directly proportional to the degree to which the actual implementation achieves the objectives that were set for the policy. According to Ripley's (1986) explanation, the efficiency of the policy can be evaluated according to the following criteria: (1) access; (2) coverage; (3) frequency; (4) bias; (5) accountability; and (6) suitability (Widodo, 2021). In this particular instance, the performance of the program is to install natural gas lines for households in the Lontong neighbourhood of Surabaya.

*“A MSMEs that sells rice cakes is located in Surabaya's Lontong district. For generations, rice cakes have been the primary source of income for the people of Kupang Krajan Gang Lor.”*

(May 4, 2023, 8 a.m. interview with 1st Lontong craftsmen)

*“The entire city places orders with at least fifty rice cake artisans. Since 2016, the lontong craftsmen in Kupang Krajan Gang Lor have switched from using natural gas to LPG cylinders. A gas pipeline was proposed to the residents of Kupang, Krajan Gang Lor, in 2013 by a gas line officer from the PGN sales area.”*

(May 4, 2023, 9 a.m. interview with 2nd Lontong craftsmen)

*“A total of 100 people were allowed to register by paying a Rp. 300,000 installation fee, while residents could purchase the pipe as needed.”*

(Interview with third lontong artisans scheduled for May 4, 2023, at 10 a.m.)

*"During the second wave in 2016, residents registered their homes to have gas lines installed through RT (the neighbourhood chief). As a result, the entire population of Kupang Krajan village has been using the domestic natural gas line"*

(Interview with 4th lontong craftsmen, May 4, 2023, at 11 a.m)

Every gas meter is connected to a 24-hour call centre, so if there are any problems with the gas line, locals can get in touch with someone immediately. Even if a small fire starts while midnight rice cake is steaming, residents can call the call centre at 1500645, and police will be dispatched to the scene immediately. Therefore, the natural gas line program is within the financial means of lontong artisans.



Figure 1: Natural gas line and pamphlet of attention researcher documentation (2019) [source]

This natural gas line primarily serves residential areas, but it could also be used by lontong MSMEs and other small manufacturers. (Ripley, R. B., & Franklin (1986) argues that the purpose of coverage is to identify the intended audience. Thus, in Kupang Krajan gang lor, the coverage is exemplified by everyone from lontong villager to common householder who uses the natural gas line.

*"This program has been carried out annually by the expansion of the natural gas line."*  
(Interview with 5th lontong craftsmen, May 4, 2023, at 10.30 a.m)

Ripley (1986) argues that increased service frequency correlates with more successful policy or program rollout (Prasetijowati & Nurany, 2022). Residents report that lontong craftsmen use their natural gas lines at a rate of 200 m<sup>3</sup> to 1,500 m<sup>3</sup> per month, while the average household only uses 20 m<sup>3</sup>. The price per cubic meter is 2,995 Rp. Natural gas line costs only 200m<sup>3</sup> (equivalent to Rp 600,000 to Rp 700,000 per month) if lontong artisans only produce 500 rice cakes per day. Thus, the fuel cost is reduced in comparison to the use of a 3 kg gas cylinder. The cost of gas cylinders in a month for 500 rice cakes is Rp. 900,000, so if the craftsmen use 3kg cylinders, they must keep 3-4 cylinders in stock per day. In addition, if the artisans make a thousand rice cakes

every day, they will use 1,500 cubic meters of natural gas per day, for Rp. 1,500,000. When working with LPG cylinders, this is a much more effective method.

People in the area say that PGN officers found strange things, which suggested that the second wave of pipes may not be put in as well as the first. Also, PGN officials did not sufficiently explain the costs of the maintenance. This may lead to a lot of complaints about those costs in 2018. The amount in question was the cost of maintenance that had to be done every five years and was guaranteed.

However, the natural gas line in the Kupang Krajan area is still the responsibility of PGN employees. The officers check the gas pipeline and the meters used by the lontong artisans every month. PGN also reports regularly to central PGN and the Ministry of Energy and Mineral Resources on the progress of the natural gas line. Regular use of banks and minimarkets for bill payment is also common among locals (Bawono & Kusrini, 2017).

Previous research has shown that if the three elements of program implementation are compatible, the program will be successfully implemented (Prasetijowati & Nurany, 2022). First, there is the question of program suitability, or whether the needs of the intended recipients (beneficiaries) are met by the services provided by the program. Second, the organization that will be implementing the program and its ability to carry out the tasks necessary to do so successfully have been determined to be compatible with one another. Third, the compatibility of the target populations and the implementing agency. It evaluates whether or not the program's intended audience is capable of meeting the organizational requirements for achieving the desired results. Lontong neighbourhood members say that the availability of a natural gas line is great for micro, small, and medium-sized enterprises. Because not only will you save money, but the danger is also low. Without worrying about a gas leak, locals can confidently steam rice cakes. Residents of the lontong neighbourhood have reported monthly savings of Rp 100,000 to Rp 300,000 since the installation of the natural gas line.

Effectiveness Criteria		Findings
Suitability between the program and the beneficiaries	Access	The Surabaya PGN sales area is actively involved in community outreach to spread the word about the program. Citizens can get program information and register complaints about their natural gas line by calling the PGN 1500645 call centre, which is listed for each natural gas line.
	Coverage	The focus of the natural gas line initiative is on small and medium-sized enterprises (MSME).
Compatibility between the program and the implementing organization.	Frequency	Each year, the program is implemented by putting in a longer natural gas line. About 1,783 people live on the Kupang Krajan lontong natural gas line. Monthly natural gas consumption can range from 200m <sup>3</sup> to 1500m <sup>3</sup> , with associated costs of Rp 600,000 to Rp 1,500,000.
	Bias	Differences in quality between the first and second pipes were discovered, as well as a lack of specificity in police justification for residents' high utility costs.

Suitability between the beneficiary groups and the implementing organization.	Accountability	Officers routinely inspect gas lines and record usage data from meters every month, making this program extremely transparent. In addition, PGN continuously reports to PGN headquarters and the Ministry of Energy and Mineral Resources.
	Conformity to needs	The lontong artisans feel that the natural gas line program is a good fit for them. The reason is, the natural gas line program allows them to cut down on production costs for rice cakes while also decreasing the likelihood of gas leaks.

Table 2: Effectiveness of Natural Gas Line Programs in Lontong Surabaya  
 Research Results, 2019 [source]

The above table indicates that residents of the Surabaya PGN sales area are socially educated about the program. This demonstrates that participants have adequate access to and coverage under the program. In addition, the PGN 1500645 call centre lists all natural gas lines that residents can use to lodge complaints and gain access to program details. In addition, the natural gas line program is limited to serving MSME and residential customers. The program is then implemented annually through the extension of the natural gas line, with the frequency and skewness being determined by criteria for compatibility between the program and the organization that implements it. About 1,783 residents of the Kupang Krajan lontong area have access to the natural gas line. From Rp 600,000 to Rp 1,500,000 per month, between 200 and 1,500 m<sup>3</sup> of natural gas is consumed. In addition, there is a discrepancy between the officers' accounts of the quality of the first and second pipes and the amount that residents pay in bills. Officers routinely check gas pipes and record the number of meters used by residents every month, so the program scores well on the third criterion (suitability between beneficiary groups and the implementing organization with accountability and conformity to needs variables). There is constant communication between the PGN and the central PGN, as well as the Service of Energy and Mineral Assets. In addition, the lontong artisans insist that the natural gas line project is up to par with their expectations. since they can cut costs on making rice cakes and reduce the possibility of gas leaks with the help of the natural gas line program.

Sales and Service Territory for Perusahaan Gas Negara (Persero) Tbk's SBU Distribution Region II Surabaya-Households, small customers, service and commercial businesses, and industrial facilities all receive natural gas energy from Gresik through the company's natural gas transmission and distribution pipeline infrastructure (Anang, 2018).

Research shows that the household natural gas line program in lontong has been successful. Campaigning for the domestic natural gas line program is still necessary because many people are unaware of the advantages of natural gas and the costs associated with switching to it.

## CONCLUSION

Through its distribution region ii sales and services area Surabaya-Gresik, Perusahaan Gas Negara (persero) TBK SBU distributes natural gas energy to customers, such as households, small customers, service and commercial industries, and manufacturing industries. The installation of natural gas lines to homes in the lontong neighbourhood has been deemed a success. However,

socializing and uniformly disseminating the line program is necessary to reach more customers and educate the general public.

## REFERENCES

- Anang, G. K. (2018). Supply Chain Management Lpg 3kg In Indonesia. *Journal of International Conference Proceedings*, 3. <http://ejournal.aibpm.org/index.php/JICP/article/view/143>
- Andriawan, Budiman, R., & Febriansyah, D. (2020). Pemanfaatan Pengembangan Jaringan Gas Bumi Sebagai Pengganti Lpg Rumah Tangga Di Kabupaten Bojonegoro, Jawa Timur. *Jurnal ASIIMETRIK: Jurnal Ilmiah Rekayasa & Inovasi*, 2(1), 1–7. <https://doi.org/10.35814/asiimetrik.v2i1.1030>
- Astuti, S. P., Day, R., & Emery, S. B. (2019). A successful fuel transition? Regulatory instruments, markets, and social acceptance in the adoption of modern LPG cooking devices in Indonesia. *Energy Research and Social Science*, 58. <https://doi.org/10.1016/j.erss.2019.101248>
- Bawono, A. A., & Kusriani, E. (2017). The impacts of financing investment scenarios on piped-natural gas prices (GPs) for households in Indonesia. *International Journal of Technology*, 8(8), 1402–1413. <https://doi.org/10.14716/ijtech.v8i8.982>
- Creswell, J. W. (2015). *Penelitian Kualitatif dan Desain Riset (memilih di antara lima pendekatan)*. (Saifuddin Zuhri Qudsy (ed.). Pustaka Pelajar.
- Daryanto, W. M., Nugroho, D. R., & Zanaria, M. (2020). Measuring Financial Performance of PT. Perusahaan Gas Negara (Persero) Tbk During Covid-19 Crisis In Indonesia. *Seajbel.Com*, 23(1), 260–274. <http://seajbel.com/wp-content/uploads/2020/12/SEAJBEL23-244.pdf>
- Farizky, M. R. (2018). Implementasi kebijakan jaringan gas bumi di kota prabumulih. 17(November). <https://repository.unsri.ac.id/15304/>
- Henriyani, E. (2019). Problematika Dalam Implementasi Kebijakan Publik. *MODERAT: Jurnal Ilmiah Ilmu Pemerintahan*, 1(4), 657–666. <https://jurnal.unigal.ac.id/index.php/moderat/article/view/2852>
- Kusuma, R. W. and H. A. (2021). Implementasi Kebijakan Jaringan Gas Bumi Untuk Rumah Tangga Di Kecamatan Limapuluh Kota Pekanbaru. *Public Administration Journal of Research*, 3(3). <http://paj.upnjatim.ac.id/index.php/paj/article/view/154>
- Merzi, A. M., & Daryanto, W. M. (2018). Financial Feasibility Studies for Perusahaan Gas Negara (Pgn) Project: a Case Study of City Gas Project in Indonesia for the Period of 2018-2038. *South East Asia Journal of Contemporary Business, Economics and Law*, 17,(2), 1–8. <https://oilprice.com/oil-price-charts>
- Miles, M. B., Michael Huberman, A., & Saldaña, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook*. Sage Publications.
- Neuman W. Laurence. (2016). *Metodologi Penelitian Sosial: Pendekatan Kualitatif dan Kuantitatif*. PT. Indeks.
- Nugroho, R. (2021). Kebijakan Publik: Implementasi dan Pengendalian Kebijakan. [google.co.id/books/edition/Kebijakan\\_Publik\\_Implementasi\\_dan\\_Pengen/b28qEAAAQBAJ?hl=id&gbpv=0](https://books.google.co.id/books/edition/Kebijakan_Publik_Implementasi_dan_Pengen/b28qEAAAQBAJ?hl=id&gbpv=0)
- Prasetijowati, T., & Nurany, F. (2022). *Pokok-Pokok Kebijakan Publik*. Alpha. <http://eprints.ubhara.ac.id/1285/>
- Pratomo, L. B., & TK, B. F. (2022). Tinjauan Singkat Optimalisasi Penggunaan Gas Bumi Pada Sektor Rumah Tangga. *Eksergi*, 18(1), 1. <https://doi.org/10.32497/eksergi.v18i1.2657>
- PT Perusahaan Gas Negara. (2022). *Laporan Tahunan Annual Report 2022*.
- Refkito, K. (2021). *Permintaan Rumah Tangga untuk Bahan Bakar Gas di Kota Bekasi (Studi Penggunaan Jaringan Pipa Gas)* [Universitas Jendral Soedirman]. <http://repository.unsoed.ac.id/8943/>
- Ripley, R. B., & Franklin, G. A. (1986). *Policy implementation and bureaucracy*. Brooks/Cole. [https://scholar.google.com/scholar?hl=id&as\\_sdt=0%2C5&q=ripley+and+franklin+1986&btnG=](https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=ripley+and+franklin+1986&btnG=)
- Sadiyah, H., Iswandi, E., Thamrin, S., Sasongko, N. A., & Kuntjoro, D. D. (2021). Challenges and prospects of developing city gas to reduce imported LPG in Indonesia. *IOP Conference Series: Earth and Environmental Science*, 753(1). <https://doi.org/10.1088/1755-1315/753/1/012027>
- Sasmita, A. (2019). *Evaluasi Kebijakan Pemerintah Terkait Peralihan Gas Lpg 3 Kg Ke Gas Bumi Untuk Memenuhi Kebutuhan Rumah Tangga* (Studi Kasus di ... [Universitas Panca Marga Probolinggo]. <http://repository.upm.ac.id/id/eprint/403>

- Suparni, S. (2021). Kualitas Produk dan Harga Mempengaruhi Konsumen Dalam Memasang Jaringan Gas Rumah Tangga Di Kelurahan Wonosari Kecamatan Prabumulih Utara Kota .... *Management Studies and Entrepreneurship Journal* ..., 2(2), 133–141. <https://www.yrpiiku.com/journal/index.php/msej/article/view/208>  
%0A<https://www.yrpiiku.com/journal/index.php/msej/article/download/208/151>
- Syifaurohmah, A., & Riyanto, S. (2020). Strategic Directions in Marketing and Planning of Natural Gas Sales at PT Perusahaan Gas Negara ( PGN ) Abstract : *International Journal of Scientific Research and Engineering Development*, 3(3), 592–601. [https://www.researchgate.net/profile/Setyo-Riyanto/publication/343390613\\_Strategic\\_Directions\\_in\\_Marketing\\_and\\_Planning\\_of\\_Natural\\_Gas\\_Sales\\_at\\_PT\\_Perusahaan\\_Gas\\_Negara\\_PGN/links/5f27927c458515b729fe429e/Strategic-Directions-in-Marketing-and-Planning-of-N](https://www.researchgate.net/profile/Setyo-Riyanto/publication/343390613_Strategic_Directions_in_Marketing_and_Planning_of_Natural_Gas_Sales_at_PT_Perusahaan_Gas_Negara_PGN/links/5f27927c458515b729fe429e/Strategic-Directions-in-Marketing-and-Planning-of-N)
- Triyatno, J. (2018). Perbandingan Penggunaan Gas Alam Terhadap LPG Dalam Memenuhi Kebutuhan Rumah Tangga Di Bontang. *Al Ulum Jurnal Sains Dan Teknologi*, 4(1), 14–20.
- Valdés-López, V. F., Castanheira, L., Hinds, G., Bacquart, T., Cho, J. I. S., Mason, T., Shearing, P. R., & Brett, D. J. L. (2023). Evolution and distribution of the anode overpotential and its oscillations in a polymer electrolyte membrane fuel cell exposed to carbon monoxide. *International Journal of Hydrogen Energy*, 48(3), 1146–1159. <https://doi.org/10.1016/j.ijhydene.2022.10.007>
- Widodo, J. (2021). *Analisis Kebijakan Publik: Konsep, dan Aplikasi Proses Kebijakan Publik*. In Bayu Media. [https://books.google.com/books?hl=id&lr=&id=1zQXEAAAQBAJ&oi=fnd&pg=PP1&dq=ripley+kebijakan+publik&ots=NjN\\_We-9tG&sig=Kled4q\\_uORF645zcDsCx4vgrrI](https://books.google.com/books?hl=id&lr=&id=1zQXEAAAQBAJ&oi=fnd&pg=PP1&dq=ripley+kebijakan+publik&ots=NjN_We-9tG&sig=Kled4q_uORF645zcDsCx4vgrrI)
- Yusrina, R. A., & Anggoro, Y. (2022). Gas Pipeline (Jargas) And Internet Connectivity Development With Bundling Product (Case Study: Pt. Perusahaan Gas Negara .... *International Journal of Business, Economics and Law*, 26(1). [https://www.ijbel.com/wp-content/uploads/2022/05/IJBEL26.ISU1\\_294.pdf](https://www.ijbel.com/wp-content/uploads/2022/05/IJBEL26.ISU1_294.pdf)