

## City Gas Network Uses And Benefits Socialization For Community In Tanjung Gedong Area Of West Jakarta

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### Abstract.

*City gas network socialization is a community service that aims to make community understand the development of the city gas distribution sector in Indonesia and provide information to the community about liquified petroleum gas (LPG) substitute. A gas network for households means distributing gas through pipes to households. The limited availability of household gas in DKI Jakarta made this socialization theme raised. The location chosen is the Tanjung Gedong area, Tomang-sub district, Grogol Petamburan district, West Jakarta, which in this case, the area is a densely populated area, especially family settlements. The participants who took part in this community service were housewives. The method used is to provide socialization about the city gas network developed by the government for household gas purposes, the socialization is carried out online with the zoom facility and some others offline in the community while still using the existing health protocol. The result of this community service activity is that the community can recognize and understand the existence of a gas network whose infrastructure development is being developed by the government through PT Perusahaan Gas Negara (PGN) Tbk. This community service makes the community aware of the flow of the city gas network development program.*

**Keywords:** Energy, City Gas, Liquified Petroleum Gas, and Gas Network, West Jakarta.

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## I. INTRODUCTION

In the 1960s, the use of natural gas began in Indonesia. Natural gas production at that time was sent via gas pipeline to the Pusri IA fertilizer plant, owned by PT Pupuk Sriwidjaja in Palembang-South Sumatra, where production came from the natural gas field of PT. Stanvac Indonesia, at the Hall, South Sumatra. In 1974, the development of the utilization of Indonesian natural gas increased rapidly in Indonesia (Hutagalung et.al., 2019). Natural gas sent via gas pipeline originating from the natural gas field in Prabumulih - South Sumatra, to the Pusri II, III, and IV fertilizer plants in Palembang, is supplied by PT. Pertamina (Persero). In other regions in Indonesia, the use of natural gas has also begun to spread (Direktorat Jenderal Minyak dan Gas Bumi, 2013). The National Energy Policy stipulates the development of renewable energy in Indonesia and also strengthens targets for the national energy mix (Zulaihah et.al., 2018). One of the prioritized alternatives is exploiting natural gas as a primary and environmentally friendly energy resource. In Indonesia, the projected use of natural gas for export is still enormous, partly in the form of liquefied natural gas (LNG) and in the form of piped gas networks in a small percentage. For gas utilization, which is also distributed to consumers, PT. PGN for domestic needs, including raw materials for fertilizer factories, steel factories for power plants, and petrochemical plants (Kurniaty et.al., 2016). Gas, also known as green energy, is projected to contribute significantly at least 22% of total energy to increase economic growth. It is projected that approximately 10 million city gas connections are needed by 2025, to achieve the set goals (Sa'diyah dkk., 2021). Natural gas production in 2018 amounted to 2.9 million MMSCF (Million Standard Cubic Feet), which is utilized to meet domestic use in various sectors, such as the industrial sector and/or city gas power generation energy, especially in the household and commercial sectors and a gas lift of 1.7 million MMSCF.

Natural gas in the form of LNG and pipeline gas totaling 1.2 million MMSCF is used as an export commodity. In 2018 there was a decline in exports from 50% in 2009 to 40% in natural gas production, both

through pipelines and LNG. Gas supply will reach 167.4 MTOE (Million Ton Oil Equivalent) by 2050, based on the projection results. Gas reserves in the country indicate a decrease, marked by new gas reserves that have not been discovered, similar to oil. As a result of this, it has affected the decline in gas production in 2018 by 75.4 MTOE down to 66.3 MTOE in 2050. After all export contracts expire, the government will stop gas exports, to optimize gas utilization to meet domestic needs. country, so Indonesia will no longer be a gas exporter in 2040. Increases in gas demand will continue to be experienced, especially in the power generation and industrial sectors (Sekretariat Jenderal Dewan Energi Nasional, 2019). Meeting the demand for LPG originating from imports and production of LPG is also covered by primary energy from natural gas. LPG utilization of 7.5 million tons sourced from domestic LPG production of 2 million tons (26%), and imports of 5.5 million tons (74%) in 2018. LPG utilization continues to increase, inversely proportional to the availability of LPG from local LPG and oil refineries that are still inadequate and is the result of the kerosene to LPG conversion program. Given the large number of uses of 3 kg LPG that are not on target, the increase in consumption of 3 kg LPG which is still subsidized needs to be anticipated by the government. Currently, the government is planning to replace LPG with dimethyl ether (DME) from coal, as well as substitute LPG with induction electric stoves (Liang et.al., 2012).

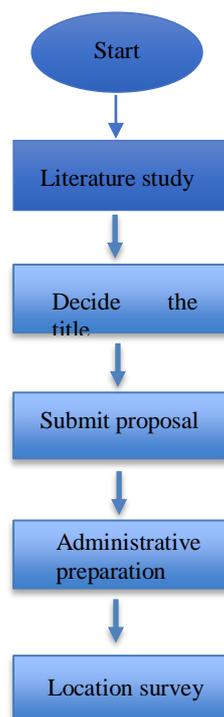
The right type of natural gas requires several separate criteria for the city gas network. Quality that can be used for residential or industrial consumption, as well as meeting the specifications of a piping transmission company or distribution company is a must-have criterion, for example, lean gas (Direktorat Jenderal Minyak dan Gas Bumi, 2013). In 2020, the first target proposed in Indonesia's National Energy Policy is to develop 266,070 gas connections. After the Covid-19 pandemic broke out, this project was then adjusted to 127,864 gas connections. The interesting to note is this realization exceeded the new regulation by more than 6% or around 135,286. This information reinforces the fact that construction towards a minimum of 10 million city gas pipeline connections by 2025 is continuing (Andriawan, et.al. 2020). Supportive and adequate infrastructure in the development of gas infrastructure facilities for household needs or city gas has been developed by the government (Guchany, 2022). Gas network for households, namely the flow of gas through installed pipe networks so that it can be distributed to households. Cities or areas that are close to natural gas sources and have natural gas transmission networks are places that have been built for programs to build natural gas distribution networks for households. Specifically, the location for community service implementation is carried out in the RT 06 RW 06 Tanjung Gedong area, Tomang sub-district, Grogol Petamburan sub-district, West Jakarta. This neighborhood is a densely populated area with the majority of family settlements, rental housing (boarding or rented) for students, employees, etc., as well as small traders. The main activities in this environment cannot be separated from household activities, which include cooking. This can be linked to the construction of a gas network for households. The main target in this community service is housewives, the majority of whom have an important role in household activities.

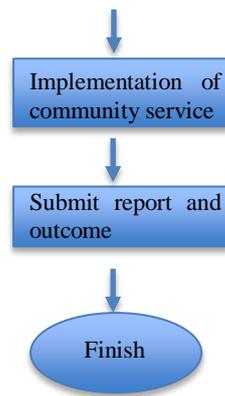
This community service originates from the scope of previous research entitled "Development of a Natural Gas Network (City Gas) as Affordable Energy Solution as Environmentally Friendly Substitute for Imported LPG for Households and the Business World in the Kota Tua Area in 2021", where the people of the Kota Tua have been surveyed regarding urban gas network that will be built in the area so that it can provide an overview of the LPG needs which are routinely consumed by the people of Kota Tua. This need is then projected as the volume of city gas that will substitute for the LPG, from this, community service is made to the people of Tanjung Gedong, West Jakarta so that they can have a real picture of the use of natural gas for household needs. Given the declining economic conditions and the Large-Scale Social Restrictions (well-known as PSBB) policy, it can be predicted that a decrease in energy demand will occur. The declining aspect of energy demand in the main economic driving sectors, namely in several aspects such as transportation, industry, commerce, and others are the impact of the Covid-19 pandemic. In contrast to all the aspects that have been mentioned, where the increase in energy demand occurs in the household sector (Ristawati et al., 2023). The majority of LPG use is utilized in the household sector and the remainder is utilized in the industrial and commercial sectors. The need for LPG for cooking will increase, along with increased activities in the house. The need for LPG will still experience a slight increase, although this will

not be in line with activities in the commercial and industrial sectors. Overall, LPG consumption is dominated by the household sector which is directly proportional to the launching of the Kerosene Substitution Program with LPG for Cooking in Households and Small Businesses in 1997 (Sa'diyah et al., 2021) LPG imports in 2020 are expected to increase by a maximum of 3% or the equivalent of 170 thousand tons of LPG, this is a result of the Work from Home (WFH) policy set by the government to stop the spread of Covid-19. This condition is inversely proportional to the condition of fuel or other energy which has decreased due to the WFH policy which requires people to work and do activities at home, whereas cooking activities at home have increased (Badan Pengkajian dan Penerapan Teknologi, 2020). Based on the only thing that has experienced an increase in share as a result of the pandemic is LPG, and on the other hand, other types of energy have not experienced significant changes (Ristawati et al., 2023).

## II. METHODS

City gas network socialization was held during the Covid-19 pandemic, so it was carried out offline and online with Zoom facilities. The activity was carried out on March 6, 2022. The target was the community of RT 06 RW 06 Tanjung Gedong, West Jakarta. The limited availability of city gas network household in Jakarta is what prompted the theme of this socialization. The number of participants is approximately 30 participants. The socialization was carried out in the form of material counseling on gas networks regarding the theory of natural gas, the benefits of city gas network, and its advantages in household-scale use. This community service activity is integrated from previous research, namely the Development of a Natural Gas (City Gas) Network as Affordable Energy Solution for Environmentally Friendly Substitutes for Imported LPG for Households and the Business World in the Kota Tua Area. It is also an application of the reservoir fluid characteristics and exploitation engineering and natural gas courses, in the curriculum at the Faculty Earth Technology and Energy, Petroleum Engineering Department, Universitas Trisakti. Some of the things that were done before the activity was carried out were starting with a literature study based on previous research related to city gas networks, as described in the previous chapter. After conducting the study, the community service team determines the title, makes proposals, prepares related administration, and does not forget that the community service team conducts a location survey and collects data in the form of a questionnaire survey to residents regarding the introduction and use of the city gas network. The lack of information about the city gas network is one of the motivations for raising the theme of city gas network socialization. The following is a flowchart of this community service activity.



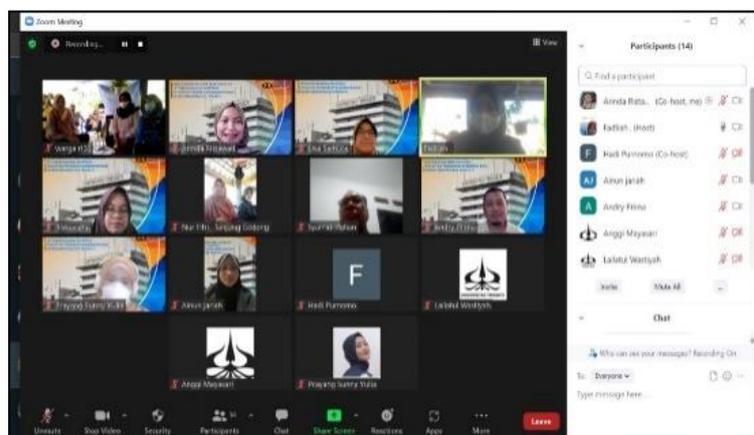


**Fig 1.** Flowchart

### III. RESULT AND DISCUSSION

This community service activity is expected to be able to know the needs of each gas, then projected the amount of volume of city gas that will substitute the LPG. Therefore, the community of Tanjung Gedong have a real picture of the use of natural gas for household purposes. After conducting the socialization, it is expected that public knowledge about the development of the city gas network that is being promoted by the government through PT. PGN Tbk. can increase thoroughly. Especially regarding the usefulness and benefits that will be obtained if it will be realized. The community gives a positive and enthusiastic response to this activity, especially in the question-and-answer session where participants play an active role in finding important information if later in the end will join as part of the city gas network user. On the other hand, the implementation of socialization of community service is certainly inseparable from the evaluation based on the obstacles that have been faced.

The obstacles faced include because the situation is less conducive due to the Covid-19 pandemic, the community service is done in 2 (two) ways, namely offline and online. Constraints occur on online networks, both those in the community location, and one of the even some team members. But all did not dampen the enthusiasm of the teams and also the community to carry out this community service activity. In addition, there is still a lack of public trust in safety or safety, the price and advantages of the city gas network compared to the LPG tube which will later be a companion to the use of LPG or can replace, and information about how to get city gas network facilities is still minimal to know the public. According to this, in the future, the community service team will also be willing to help coordinate providing contact and stakeholders that can be contacted for the continuation of the use of City Gas Network facilities, especially for the people of Tanjung Gedong, West Jakarta. The following is Figure 2 which displays the participants of the socialization activity and also the instructors who deliver socialization material.



**Fig 2.** Participants in the City Gas Network Socialization (Ristawati et al., 2023)

This community service provides an understanding of why the use of city gas networks for households is very good to use. The benefits of city gas network nationally if used can increase employment, support economic growth, reduce LPG imports, save in household budget, reduce fuel consumption, reduce pollution, support environmentally friendly programs, and create jobs. All of these aspects are a form of fuel savings and subsidies so that the state budget that can be used for pro-community programs can be used more and on target. All are summarized in the title listed in Figure 3 as follows.



**Fig 3.** The Title of City Gas Network Socialization in Indonesian Language (Ristawati et al., 2023)

One of the national priority programs that have the goal of providing net and affordable energy, energy diversification, complementary programs for the conversion of kerosene to LPG, and reducing subsidies is the construction of a gas distribution network for households. People can get cleaner, safer, and cheaper fuel is the hope of the implementation of this program. This program is expected to bring the community closer to the realization of affordable energy. In the socialization activity, participants were given an understanding of the advantages of the city gas network project distributed by the government, namely the distribution of gas for households was distributed through a pipeline. This makes practical options from various sides, namely more accurate measurements and billing through postpaid, gas supply will always be there to minimize the risk of running out of gas, having more guaranteed security. In addition, a comparison picture is also obtained with the use of LPG tubes and gas through the pipeline. Through this activity, it is hoped that there will be benefits obtained for the residents of the Tanjung Gedong region regarding alternative energy sources for LPG, where there is gas for household needs that are flowed through a gas pipeline. The public can also understand the natural gas theory, the advantage of using the city gas network, and contact information on the installation of the city gas network. Awareness of the presence of uneven city gas networks and unclear information about city gas networks, so that with the information in this community service, the community is increasingly enthusiastic to move from the LPG tube to the city gas network, which has advantages that are very feasible to be in use independently.

#### IV. CONCLUSION

Based on the results of community service activities that have been carried out by the community service team, it can be concluded that the program as a whole run 100% which means that from the initial stage of the partnership, activities have been carried out properly until the end of the event. Furthermore, there is an increase in the importance of public awareness to find out the alternative energy source for LPG tubes, namely the city gas network through pipes, as well as the desire of the community to be able to select their household needs such as more efficient, economical, and safe gas. The community desires to find out contact related to the availability of city gas networks; therefore, it can be enjoyed the benefits and advantages. Socialization about the city gas network is very beneficial for participants, which makes participants understand and start thinking to use gas on a household scale through the city gas network and want to find out more. Another impact is that the participants of the community service also stated that they were interested and willing to move if in the future those who play a role in providing city gas network facilities enter the Tanjung Gedong area, therefore the city gas network can be used by the community more broadly and the target can be achieved government and dissemination of city gas networks on a large scale.

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