



ANALYSIS OF THE ROLE OF RUGEMUK MANDIRI VILLAGE-OWNED ENTERPRISES (BUMDES) IN THE PROVISION OF CLEAN WATER IN RUGEMUK VILLAGE, LABU BEACH, DELI SERDANG

Putri Safira^{*}, Meutia Nanda, Elvina, Salsabilla, Riri Anggraini

Fakultas Kesehatan Masyarakat, Universitas Islam Negeri Sumatera Utara

Jl. Lap. Golf No.120, Kp. Tengah, Kec. Pancur Batu, Kabupaten Deli Serdang, Sumatera Utara 20353,
Indonesia

Email: putrisafira3666@gmail.com

Abstract

The provision of clean water in Indonesia's coastal areas is a serious challenge considering the limited water resources that are vulnerable to seawater pollution and intrusion. Rugemuk Village, on Labu Beach, Deli Serdang, is one of the coastal areas that faces the problem of access to clean water. In this context, Rugemuk Mandiri Village-Owned Enterprises (BUMDes) was established in 2017 to manage the supply of clean water effectively and sustainably. The purpose of this research is to analyze the role of Rugemuk Mandiri Village-Owned Enterprises (BUMDes) in providing clean water in Rugemuk Village, Labu Beach, Deli Serdang. This study uses a qualitative descriptive approach with interview techniques for the four main groups of respondents, namely the director of BUMDes, village heads, hamlet heads, and the community of Rugemuk Village with a total of 6 respondents. This study shows that BUMDes Rugemuk Mandiri has succeeded in providing clean water for the people of Rugemuk Village. BUMDes manages the distribution of clean water through a piping system by utilizing four drilled wells spread across four hamlets, affordable tariff management, and a meter-based payment system. There are still challenges related to clean water supply services from some communities, as well as the need to expand the reach of clean water services to housing that has not been connected to the clean water supply program. It is hoped that BUMDes will further improve water quality monitoring and expand the reach of clean water services by developing infrastructure. To increase the role of BUMDes in the provision of clean water, it is necessary to increase in routine water quality monitoring, encourage active community participation and expand the reach of clean water services.

Keywords: BUMDes, clean water supply, water source limitations, community preferences

Introduction

Population growth, rapid urbanization, and rapidly growing industrial activity are further suppressing the availability of clean water in coastal areas. In addition, Indonesia's geographical condition as an archipelagic country also adds complexity in water resources management. Coastal areas are vulnerable to seawater intrusion and ecosystem damage, which can threaten the availability of clean water for local populations. Indonesia, with its abundant natural resources, is faced with serious challenges in providing adequate access to clean water for its people. Most of Indonesia's population, especially those living in coastal areas, depend on limited water resources and are vulnerable to pollution due to human activities and natural factors (Minsas et al., 2023).

Water is an essential substance in life. There is not a single living thing on this planet earth that does not need water. Clean water is one of the basic needs of living things, especially humans. Humans need clean water to survive. We can see how water is very inherent in human life by looking at the

main element in the human body itself is water. Not only that, water is also useful for supporting various human life activities, especially in an era like today where human activities have become increasingly complex (Akadun et al., 2020).

The provision of clean water in coastal areas is a crucial aspect in maintaining human welfare and the sustainability of coastal ecosystems. Clean water is not only a basic necessity for human life, but it also has a very significant impact on public health, local economies, and environmental sustainability. In coastal areas, where populations tend to be dense and human activities such as agriculture, fisheries, and tourism are growing rapidly, the demand for clean water is very high. The availability of sufficient and quality clean water plays an important role in preventing the spread of waterborne diseases, increasing the productivity of the agricultural and fisheries sectors, maintaining the sustainability of coastal ecosystems, and supporting local economic growth through a sustainable tourism industry. In addition, in the face of increasingly real challenges of climate change, the reliable provision of clean water is also the key to helping coastal communities adapt to environmental changes that occur (Fadila et al., 2023).

Prior to the existence of BUMDes, Rugemuk Village received assistance from the National Community Empowerment Program (PNPM) in 2015 to provide clean water. The assistance is in the form of the construction of a 10,000-liter water tank installed on top of the tower to provide clean water for the community in Hamlet I and Hamlet IV, Rugemuk Village. The project involved digging two borewells, but only one was fully functional. On April 17, 2015, a 10,000-liter water tank in Hamlet I failed, so only one tank in Hamlet IV could be used.

The water distribution system is not equipped with a piping system which causes people to have to wait in long lines to get water using jerrycans. However, over time, there is an irregularity in the discharge of water that is distributed, so that people cannot meet their clean water needs. In Rugemuk Village, a big challenge arises because the available water source is brackish water. This raises an urgent need for solutions that can meet the need for clean water that is suitable for daily consumption.

In this context, the village government responded by forming Rugemuk Mandiri Village-Owned Enterprises (BUMDes) in 2017. BUMDes Rugemuk Mandiri is expected to be a solution in managing the supply of clean water in Rugemuk Village effectively and sustainably. Therefore, this study aims to analyze the role of Rugemuk Mandiri Village-Owned Enterprises (BUMDes) in the provision of clean water in Rugemuk Village, Labu Beach, Deli Serdang.

Method

This study uses a qualitative descriptive approach with in-depth interview techniques with four main groups of respondents: BUMDes management directors, village heads, hamlet heads, and the people of Rugemuk Village. The total number of respondents was 6 people, selected based on their social position and active participation in clean water supply activities. The interview process is carried out with structured questions, as well as an open atmosphere. The interview recordings were made with the permission of the respondents using a voice recorder, then transcribed in detail for data analysis. Data analysis by identifying patterns, themes, and relationships related to the role of BUMDes in providing clean water and its impact on the community of Rugemuk Village, Labu Beach, Deli Serdang.

Results and Discussion

Rugemuk Village is one of nineteen villages in Pantai Labu District which is located on the coast with an area of 300 hectares and has 865 families. The number of residents in Rugemuk Village in 2019 was 2660 people, consisting of 1368 male residents and 1292 female residents (Labu Beach Health Center, 2019). In 2022, the population increased to 2960 people, consisting of 1549 male residents and 1411 female residents (Pantai Labu Dalam Angka District, 2023). With the increase in the number of people every year, the need for clean water will certainly increase.

1. The Role and Management of BUMDes in the Supply of Clean Water

Village-Owned Enterprises (BUMDes) are legal entities established by village governments or village community groups to manage various economic enterprises at the village level (Iskandar et al., 2021). BUMDes aims to improve the village economy, empower the community, and optimize the use of local resources for common welfare. In Rugemuk Village, BUMDes Rugemuk Mandiri was established in 2017 with the main focus on managing the supply of clean water.

Rugemuk Village, which faces limited water sources due to the available water in the form of brackish water, relies on BUMDes to manage the distribution of clean water from four drilled wells, each located in four hamlets. This drilled well was built by the government in 2017 to meet the community's clean water needs. This system serves around 800 of the 933 families in Rugemuk Village through the water meter system, while the rest use private water sources such as wells in Dusun II which are located far from the coast. The water distribution system is carried out through piping, and the water quality has been tested in the laboratory, showing results that meet good quality standards. Water from this borehole is pumped using an electric pump to large tanks with a capacity of 5,000 liters, with two additional tanks in Hamlet IV to overcome the water shortage in the morning, bringing the total capacity to 10,000 liters in the hamlet. After that, water is distributed to the community through a piping system.

2. Piping, and Water Distribution Systems

The BUMDes pipeline project in Rugemuk Village started from four drilled wells spread across four points, representing four hamlets. The quality of the water produced meets good standards for the needs of the village community, as laboratory tests have shown.

Once the water is pumped from the borewell, the next step is to move it to five large water tanks located above the ground (large blongs). Two of the five tanks measuring 5000 liters each, are located in Hamlet 4, with a total capacity of 10,000 liters. This is done to overcome the water shortage that occurs, especially when there are complaints from the community. Thus, in the morning, when the demand for water is higher, the water needs for the community can be met smoothly.

The process of filling the tanks is carried out by drawing water from the borewells using electricity and special tools designed to channel it to the new tanks through pipes that have been combined into a single system.

The construction of the tower to support the water tank is completely done by the village community. This shows that the project not only focuses on providing clean water, but also involves the active participation of the community in the development of sustainable infrastructure. Thus, the BUMDes piping system in Rugemuk Village not only creates better access to clean water, but also strengthens community independence and involvement in local resource management.

3. Tariff Management and Payment System

Through efficient management, BUMDes has succeeded in providing access to clean water to homes through a controlled piping system. The water payment system is carried out based on meters recorded every month at a rate of IDR 1,500 per cubic meter (2017-2021) and IDR 1,000 per cubic meter (2022-2024). Recording is carried out every 25th, then the officer collects payments to the community. Although the water tariff is set as low as possible, which is only Rp1,000 per cubic meter, there are still obstacles in payment from some people. However, the village gave a grace period before cutting off the water supply as an effort to maintain justice, as stated by the Head of Rugemuk Village:

"The village appeals to its residents to try not to delay payments because it can cause arrears. In the event of a delay in payment, the consequence is the termination of service after three consecutive months, even though there has been a warning beforehand. The termination process is carried out in accordance with the agreed procedure, namely by giving notice in advance on a certain date and month before the termination is carried out. This is done to maintain discipline in payments and ensure that all parties comply with the agreed agreement."

4. Clean Water Quality Monitoring

The source of clean water used comes from drilled wells of good quality, and in a month, the average community uses about 20-30 m³ of clean water, depending on household needs. Clean water services from BUMDes cover all hamlets in Rugemuk Village, with a central system that ensures the water supply remains smooth.

Clean water available in mosques, schools, and in public cemeteries (TPU) is part of the village program that is free of charge. This program aims to ensure that public facilities and places of worship have access to adequate clean water. With this program, it is hoped that the need for clean water in these important places can be met without burdening the community. This initiative also reflects the village's commitment to improving the quality of life of its citizens through the provision of essential basic infrastructure for free.

Water quality is an important aspect in ensuring the availability of clean water that is safe for use by the community. In Rugemuk Village, the water quality is tested physically, chemically, and biologically in the laboratory to ensure that the water meets good standards. Overall, the results of physical, chemical, and biological testing of water in Rugemuk Village show that the water quality meets good standards, ensuring the availability of clean water that is safe for use by the community.

However, there are drawbacks in terms of the frequency of water examinations. It was only done once at the beginning of the construction of the borewell, and no periodic inspections have been carried out since then. This condition shows the need to improve the monitoring of water quality regularly to ensure that the water provided still meets the safety standards required for use by all villagers. By conducting periodic inspections, potential problems or changes that occur in water quality can be identified and appropriate corrective measures can be taken immediately to maintain the health and welfare of the community.

The piped water channel that is channeled to every hamlet in Rugemuk Village, is used for various purposes such as washing dishes and bathing. Although water tariffs are imposed on the community, their hope is that the water supply remains smooth and affordable. The Rugemuk Mandiri BUMDes strives to facilitate the community in payments, but also maintains discipline and order in the billing process to maintain operational sustainability. In addition to providing clean water, BUMDes also develops various other services and programs, including economic and social activities, and contributes to the development of the community as a whole.

5. Challenges and Next Steps

Although BUMDes has succeeded in providing access to clean water to houses in Rugemuk Village through efficient management, there are still obstacles in payment from some people. However, BUMDes remains committed to maintaining a clean water supply at affordable rates. The source of clean water comes from drilled wells of good quality, and clean water services cover all hamlets in the village. In addition, BUMDes also plays a role in developing various social and economic programs to improve community welfare.

In the context of providing clean water in Rugemuk Village, the role of Rugemuk Mandiri Village-Owned Enterprises (BUMDes) is very important. BUMDes have succeeded in maintaining a clean water supply for the community, even during the dry season. Although water tariffs vary according to household use, some people still express concerns about the tariffs imposed. However, the existence of BUMDes provides a significant alternative in overcoming the challenges of access to clean water in this village. However, there are still several housing units in the Rugemuk Village area that have not been connected to the clean water supply system managed by BUMDes. They rely more on private wells to meet their water needs. However, the water quality from these wells tends to be poor, with problems such as not being suitable for cooking and an unpleasant odor in summer.

This shows that there are differences in preferences and access to clean water services among various community groups in Rugemuk Village. Therefore, BUMDes need to continue to strive to increase the coverage of clean water services and improve existing infrastructure to ensure that all communities have equal access to quality clean water. However, based on these differences, the Head of Hamlet III of Rugemuk Village hopes that clean water services will be evenly distributed to various communities as has been revealed:

"I personally asked for the fishermen's housing to be distributed a clean water supply program by BUMDes. In addition, there are complaints from the public regarding high tariffs, so it is hoped that the tariffs can be reduced. This BUMDes program should be oriented towards community services, because the sources and benefits come from the community itself."

The next step that can be taken is to expand the reach of BUMDes clean water services to housing that has not been connected to the system. However, it should be understood that some housing may have their own water system and be hesitant to join BUMDes. Therefore, it is important to involve the community in the decision-making process regarding the provision of clean water and consider their needs and preferences holistically. Thus, it can be hoped that there will be a more inclusive and sustainable solution in maintaining access to clean water for all people of Rugemuk Village.

Rugemuk Village adopts the approach of Village-Owned Enterprises (BUMDes) to manage the clean water system, with the administrator in charge of managing clean water payments. Clean water services already cover all hamlets in Rugemuk Village, although further efforts are expected to improve the clean water supply program with more adequate funding. However, the obstacle that may arise is the limitation of village funds. However, increasing the availability of clean water remains a top priority for village communities.

Thus, the role of BUMDes in providing clean water in Rugemuk Village is not only as a service provider, but also as a catalyst for economic development. Aspects such as efficient management, affordable tariff approaches, metering-based payments, equitable services, social and economic development, as well as the challenges faced and the next steps that need to be taken, all show how important the role of BUMDes is in advancing community welfare at the village level.

This study found that Village-Owned Enterprises (BUMDes) have an important role in providing clean water for village communities. This finding is in line with research conducted by Hermawan (2019), which shows that BUMDes are able to increase public access to clean water through more effective resource management and appropriate infrastructure development. This study

emphasizes the importance of community participation in the success of the BUMDes program, which is consistent with the findings of this study that community involvement in clean water management by BUMDes improves the quality and sustainability of services.

Furthermore, research by Rahmawati (2021) also revealed that well-managed BUMDes can reduce the village's dependence on external assistance for the provision of clean water. This supports our finding that the existence of BUMDes strengthens village independence in managing water resources, which in turn can improve the sustainability and efficiency of clean water supply.

Conclusion

The results of the study confirm that BUMDes Rugemuk Mandiri has succeeded in providing a source of clean water for the people of Rugemuk Village. BUMDes manages the distribution of clean water through a piping system by utilizing four drilled wells spread across four hamlets, affordable tariff management, and a meter-based payment system. However, there are still challenges related to water quality monitoring, payments from some communities, and the need to expand the reach of clean water services to housing that is not yet connected to the clean water supply program.

Suggestion

To ensure the sustainability and quality of clean water services by BUMDes Rugemuk Mandiri, the following steps are needed. First, increase regular water quality monitoring to meet safety standards for all villagers. Second, encourage active community participation in the management of clean water resources to strengthen the sustainability of the clean water supply program. Third, expand the reach of BUMDes clean water services to housing that is not yet connected to the system, by taking into account the needs and preferences of the community as a whole.

References

- [1] Akadun, Hidayat, A., & Kusnadi. (2020). Keberlanjutan Pelayanan Air Bersih Di Perumda Air Minum Tirta Medal Kabupaten Sumedang. *Journal of Regional Public Administration (JRPA)*, 5, 68–78.
- [2] Anggraeni, M. R. R. S. (2016). Peranan Badan Usaha Milik Desa (BUMDes) Pada Kesejahteraan Masyarakat Pedesaan Studi Pada BUMDes Di Gunung Kidul, Yogyakarta. *Modus*, 28(2), 155-168.
- [3] Fadila, W. A., Sudarli, & Yushardi. (2023). Pemasalahan Kualitas Air Permukaan Sebagai Sumber Kehidupan Dalam Menjaga Kelestarian Lingkungan. *OPTIKA: Jurnal Pendidikan Fisika*, 7(2), 419–427.
- [4] Faqih, N. (2023). Strategi Pengembangan Unit Usaha PIPANISASI BUMDes Dalam Penyediaan Air Bersih Bagi Masyarakat Desa Serimbu Kecamatan Air Besar Kabupaten Landak (Doctoral Dissertation, Institut Pemerintahan Dalam Negeri).
- [5] Hartati, P., Amirulloh, M., & Munandar, E. (2023). Peran Badan Usaha Milik Desa (BUMDes) Kompromi Dalam Pemberdayaan Ekonomi Masyarakat Di Desa Bojongkondang Kecamatan Langkaplancar Kabupaten Pangandaran. *Mufakat: Jurnal Ekonomi, Manajemen dan Akuntansi*, 2(4), 630-640.
- [6] Ifah, F. N. (2022). Analisis Implementasi Kebijakan Badan Usaha Milik Desa (BUMDes) Dalam Meningkatkan Perekonomian Masyarakat Desa Ditinjau Dalam Perspektif Ekonomi Islam.
- [7] Ihsan, A. N., & Setiyono, B. (2018). Analisis pengelolaan badan usaha milik desa (BUMDes) gerbang lentera sebagai penggerak desa wisata lerep. *Journal of Politic and Government Studies*, 7(04), 221-230.
- [8] Iskandar, J., Engkus, Fadjar Tri Sakti, Azzahra, N., & Nabila, N. (2021). STRATEGI PENGEMBANGAN BADAN USAHA MILIK DESA (BUMDes) DALAM MENINGKATKAN KESEJAHTERAAN MASYARAKAT DESA. *Jurnal Dialektika: Jurnal Ilmu Sosial*, 19(2), 1–11. <https://doi.org/10.54783/dialektika.v19i2.1>
- [9] Minsas, S., Irwan Nurdiansyah, S., Helena, S., Kurniadi Prodi Ilmu Kelautan, B., Matematika dan Ilmu Pengetahuan Alam, F., Tanjungpura, U., & Jendral Ahmad Yani, J. (2023). Analisis Faktor-faktor Penyebab Rendahnya Tingkat Kesejahteraan Masyarakat Nelayan Pesisir. *Empiricism Journal*, 4(2), 407–412.
- [10] Puskesmas Pantai Labu. (2019). Data Penduduk pada Wilayah Kerja Puskesmas Pantai Labu Kabupaten Deli Serdang Tahun 2019.
- [11] Ra'is, D. U. (2018). Kebijakan Pemberdayaan Masyarakat Dalam Perspektif Asas Rekognisi Dan Subsidiaritas Undang-Undangdesa Nomor 6 Tahun 2014. *Reformasi*, 7(1).
- [12] Rahmawati, D., Soedjono, E. S., Moerad, S. K., Nisa, K., Harmadi, S. H. B., Handayeni, K. D. M. E., ... & Satiawan, P. R. (2024). Penguatan Kapasitas Masyarakat: SASIH (Hilirisasi air bersih) Hilirisasi Pengadaan Infrastruktur Air Bersih Dalam Rangka Pengentasan Daerah Rawan Air di Kabupaten Pacitan. *Sewagati*, 8(1), 1229-1243.