Study on the Preparation of Regional Policy and Strategy for Drinking Water Supply System (JAKSTRADA SPAM) Batu Bara Regency

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Abstract
This study aims to develop regional strategies and policies in the Drinking Water Supply System (JAKSTRADA SPAM) in Batu Bara Regency. Provision of clean drinking water is one of the essential basic needs for the community, but Batu Bara Regency faces various challenges in meeting these needs, including issues of quality, accessibility, and management of water resources. This study analyzes existing conditions, potential water resources, and the level of community participation in the policy-making process. By using a participatory approach, this study emphasizes the importance of community involvement in drinking water planning and management. The results of the study indicate that an approach based on collaboration between the government, community, and private sector is needed to improve access and quality of drinking water services. Recommended strategies include strengthening institutions, developing community capacity, and integrating environmental aspects in water management. It is hoped that the resulting policies can guarantee the availability of sustainable clean water and improve the welfare of the people of Batu Bara Regency.

Keywords: Policy Strategy, JAKSTRADA SPAM, Batu Bara Regency

Introduction

The coastal area of Batu Bara Regency, with an area of 904.96 km² and a growing population, faces significant challenges in providing clean drinking water. In 2020, the population reached 410,678 people, with a density of 454 people per km². By mid-2023, this population will increase to 453,887 people, increasing the density to around 500 people per km². This increase poses additional challenges in providing public facilities, including clean drinking water for the community. As a coastal area, Batu Bara Regency faces obstacles in managing clean water resources because groundwater in coastal areas is often vulnerable to seawater intrusion which can reduce water quality. The increasing need for clean and safe drinking water requires a special strategy in water management, such as the construction of water treatment plants or desalination technology that is appropriate for coastal areas. Through the preparation of effective Regional Policies and Strategies (JAKSTRADA SPAM), the local government can ensure that the increase in drinking water infrastructure capacity is in line with population growth, so that every coastal resident can access clean water. Clean and healthy living behavior is a key factor in realizing public health, especially in developing areas such as Batu Bara Regency. Public awareness of the importance of healthy living still needs to be improved, and limited facilities that support clean and healthy living behavior are a challenge in themselves.

In the midst of the Regional Autonomy era, local governments are expected to improve public services in all development sectors, especially in the provision of drinking water and sanitation which are closely related to public health. Here is a map image:

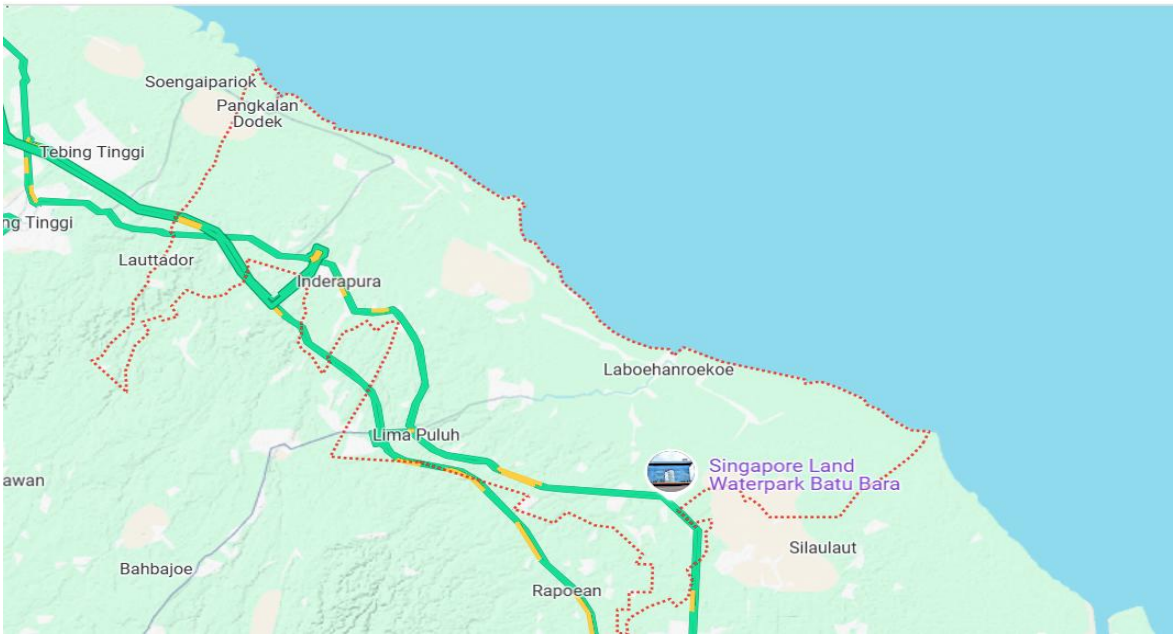

Figure 1. Batu Bara Regency

The Indonesian government has committed to achieving the target of universal access to clean water and sanitation by 2019, supported by the Community-Based Drinking Water and Sanitation Provision (PAMSIMAS) program. This program is designed to improve community access to clean water and sanitation facilities, especially for residents in rural areas. However, the implementation of this program in the field shows that there are still many sub-districts that have not fully met the need for clean water, especially in Batu Bara Regency which has geographical and economic challenges. The preparation of Regional Policies and Strategies for Drinking Water Supply Systems (JAKSTRADA SPAM) is part of the regional government's efforts to regulate and develop a quality and sustainable drinking water supply system in its region. Based on Government Regulation (PP) Number 122 of 2015 concerning the Drinking Water Supply System, the central government requires regional governments to formulate clear policies and strategies to support the development of drinking water supply systems.

The Ministry of Public Works (PU) has followed up on this mandate through several regulations, such as PU Regulation Number 20/PRT/M/2006 and PU Regulation Number 13/PRT/M/2013. These two regulations provide guidelines for local governments in planning and implementing SPAM development for the next five years. The goal is to ensure that each region has an adequate strategic plan to increase access to drinking water for the entire community in an equitable and sustainable manner. In its implementation, JAKSTRADA SPAM is a reference for local governments, including Batu Bara Regency, to formulate policy

directions and concrete steps in providing quality drinking water. With careful planning, it is hoped that the distribution of drinking water will be more equitable, and the quality of infrastructure and environmental management can continue to improve. The growing need for drinking water must be accompanied by an increase in the quality of policies and implementation, so that this policy can become a strong foundation for the development of a drinking water supply system in the future. This policy aims to provide direction and guidelines for local governments in increasing access to quality drinking water for the community.

The following is a table that describes the number of clean water customers according to consumer type and sub-district in Batu Bara Regency in 2018:

Subdistrict	Household	Hotel	Social Agency and Hospital	Place of Worship/Public	Commerce	Industry	Government agencies	Number of Customers
Sei Balai	-	-	-	-	-	-	-	-
Cape Tiram	2,431	-	21	5	10	1	23	2,491
Talawi	1,006	-	10	-	-	-	16	1,032
Fifty	313	-	2	2	-	-	13	328
Water	465	-	2	-	10	-	15	492
I Like It	-	-	-	-	-	-	-	-
Heavy Rain	656	-	6	2	-	-	15	682
Coal	4,871	-	41	9	20	1	82	5,025
Total number	9,442	-	80	18	40	2	151	9,731

Source: Kisaran Water Company.

Based on the data provided, the total number of customers in Batu Bara District reached 9,731, with Batu Bara District having the highest number of customers (5,025) followed by Tanjung Tiram District (2,491) and Talawi (1,032). Other districts, such as Sei Balai and Sei Suka, do not have any registered customers.

The largest number of customers came from the household category, with a total of 9,442, while other categories such as hotels, social institutions and hospitals, places of worship, commerce, industry, and government agencies contributed lower numbers. This shows the dominance of the household sector in the total number of customers in the region. This data can be a reference for the development of services and infrastructure in each sub-district, especially to improve services to less developed categories.

With this background, the preparation of Jakstrada Spam in Batu Bara Regency is a strategic step to ensure the availability of clean drinking water for the community, especially in coastal areas that have their own challenges. The preparation of the right policy will help overcome geographical constraints, improve the quality of drinking water services, and ensure that the community's need for drinking water can be met fairly and sustainably.

Formulation of the problem

1) What are the challenges faced by Batu Bara Regency in providing clean drinking water for the community?
2) What are the current policies and strategies in managing the drinking water supply system (JAKSTRADA SPAM) in Batu Bara Regency?
3) What resources and potentials can be utilized to improve the drinking water supply system in Batu Bara Regency?
4) How is community participation in the formulation of policies and strategies for providing clean drinking water?

Research purposes

1) Analyzing the challenges faced by Batu Bara Regency in providing clean drinking water for the community.
2) Assessing existing policies and strategies in the management of drinking water supply systems (JAKSTRADA SPAM) in Batu Bara Regency.
3) Identifying resources and potential that can be utilized for the development of drinking water supply systems in the area.
4) Analyzing the level of community participation in formulating policies and strategies for providing clean drinking water.

Literature Review

1. Drinking Water Supply System

The availability of clean and safe drinking water is an important aspect in achieving community welfare (World Health Organization, 2020). In Batu Bara Regency, the formulation of effective policies in the drinking water supply system, known as JAKSTRADA SPAM, is crucial to ensure accessibility and sustainability of drinking water for the entire population (Ministry of Public Works and Public Housing, 2019). This study aims to identify factors that influence the development of drinking water facilities and formulate appropriate strategies in policy formulation.

Drinking water supply systems must meet quality, quantity and accessibility standards. This concept includes:

a. Water Quality: Ensuring that the water provided meets health standards (Mardiah et al., 2018).
b. Water Quantity: Availability of sufficient water to meet community needs (Sari & Indrayani, 2020).
c. Accessibility: Communities must be able to easily access water sources (Syahputra, 2021).

JAKSTRADA SPAM is a strategic planning document that directs the development of drinking water supply systems at the regional level. It includes an analysis of current conditions, future needs, and the steps needed to achieve drinking water supply goals (Ministry of Home Affairs, 2020).

2. Factors Influencing the Development of Drinking Water Facilities

a. Government Policy Clear and firm policies from local governments are the foundation for developing drinking water facilities. These policies must include regulations, budget allocations, and monitoring mechanisms (Pranata et al., 2019).

b. Community Involvement Community participation in program planning and implementation is very important. This involvement can increase the community's sense of ownership and responsibility for the sustainability of the water supply system (Rahmawati, 2021).
c. Infrastructure and Technology The use of appropriate technology and adequate infrastructure are determining factors in the success of a water supply system. The selection of technology that is appropriate to the characteristics of the area and the needs of the community will increase the effectiveness of the system (Sukarma & Rahayu, 2020).
d. Natural Resources The availability of sustainable water resources is crucial. Wise management of water resources will ensure long-term water availability (Hidayah, 2022).

3. Policy Formulation Strategy
   a. Strengthening Local Government Capacity Local governments need to improve their capacity in water resource planning and management. Training and skills development for related staff should be a priority (Yusuf & Rahmawati, 2019).
   b. Collaboration with Stakeholders Building partnerships with various parties, such as NGOs, communities, and the private sector, to increase the effectiveness and sustainability of water supply programs (Gunawan et al., 2021).
   c. Community-Based Approach Adopting a community-based approach in planning and managing drinking water facilities, so that the resulting policies are more relevant and in accordance with local needs (Setiawan, 2020).
   d. Monitoring and Evaluation Implement a good monitoring and evaluation system to assess program effectiveness and make policy adjustments if necessary (Arief & Sari, 2021).

The formulation of regional policies and strategies in the drinking water supply system in Batu Bara Regency must consider various factors that influence the development of water facilities. Community involvement, government support, and sustainable resource management are the keys to creating an effective and sustainable drinking water supply system. Through JAKSTRADA SPAM, it is hoped that the policies formulated can have a positive impact on the community and the environment.

Research Method

The approach in this study uses a qualitative descriptive methodology. The selection of a qualitative approach is in accordance with the research theme which is descriptive in nature. The data collection procedure involves four basic types, namely observation, interviews, documents, and visual images (Creswell, 2013). The qualitative descriptive method is used to obtain secondary data through library methods or document and literature studies. Secondary data are collected from various sources, including books, theses, journals, legislation, the internet, lecture materials, and mass media. Meanwhile, primary data is obtained through in-depth interviews with sources who are experts or related officials who have competence in the field that is the focus of the research, namely the role of the government in handling slum areas towards improving the quality of life of the Batu Bara Regency community.

Data analysis was carried out descriptively with a thematic approach which includes data reduction, data presentation, and drawing conclusions.

Results and Discussion

1. Challenges faced by Batu Bara Regency in providing clean drinking water for the community.

Batu Bara Regency faces various challenges in providing clean drinking water for the community. One of the main challenges is the limited availability of water resources, both in terms of quantity and quality. Unpredictable rainfall patterns and suboptimal management of water sources contribute to the difficulty in providing clean water. In addition, inadequate drinking water supply infrastructure, such as underdeveloped pipe networks and limited water treatment facilities, hamper the distribution of water to the community.

Rapid population growth and urbanization are also important factors, increasing the demand for clean water. Without adequate infrastructure development, this will put additional pressure on the water supply system. Low public awareness of the importance of water conservation and sustainable water resource management is a challenge, leading to waste and pollution of water sources.

On the other hand, climate change causing extreme weather patterns such as floods and droughts can negatively impact the availability of clean water, while poor sanitation and lack of health facilities increase the risk of waterborne diseases. Fragmented water resource management, where various institutions and stakeholders do not coordinate, adds to the complexity of the problem. Limited financing for investment in water treatment infrastructure and technology also hampers efforts to improve access and quality of drinking water supply.

Finally, existing regulations and policies may be inadequate or ineffectively implemented, and therefore unable to address the challenges inherent in clean water provision. Addressing these challenges requires a comprehensive and collaborative approach between government, communities, and the private sector to create a sustainable water supply system that is responsive to community needs.

2. Drinking Water Management Strategy and Policy for Batu Bara Regency

This study aims to formulate policies and strategies in the management of the Drinking Water Supply System (SPAM) in Batu Bara Regency, with a focus on improving access and quality of clean water services. The following discussion covers key points covered in the proposed strategies and policies.

a. Recognition of Water as a Social and Economic Good. Understanding water as a resource that is not only essential for life but also has economic value is an important first step. This policy aims to change the public's perception, which often considers water as a free good. Through public campaigns and socialization, the public is expected to realize the importance of sustainable water management.

b. Responsive Approach to Community Needs. Communities need to be involved in decision-making regarding the system to be built. With this approach, it is hoped that the resulting policies can be more targeted and in accordance with the real needs of the community, thereby increasing the effectiveness of water management.

c. Environmentally Conscious Development. Development policies that take environmental aspects into account are essential for the sustainability of water resources. This includes protecting water sources and minimizing the negative impacts

of development. This policy will help ensure the availability of water for future generations.

d. Public Education and Awareness. Education on clean and healthy living behavior must be an integral part of SPAM development. The community needs to understand the importance of maintaining water cleanliness and good usage behavior to ensure health and well-being.

e. Support for the Poor. SPAM policies must ensure equitable access to clean water for all levels of society, especially for disadvantaged groups. Involving them in the decision-making process is an important step to ensure their needs are met.

f. Accountability of Development Process. Placing the community as the subject of development increases accountability and responsibility. Policies that encourage active participation from the community in every stage of water management will strengthen the sense of ownership and better management of the system.

g. The Role of Government as a Facilitator. The government must act as a facilitator that supports the community in planning and managing SPAM. Technical and non-technical guidance from the government can increase the capacity of the community in managing water resources.

h. Community Involvement. Community involvement in every stage of development ensures a more transparent and responsive system. It also encourages community trust in the existing management system.

i. Optimizing Services. SPAM policies must be designed to provide optimal services, taking into account the needs and capabilities of the community. Good services must be accessible to all levels of society regardless of economic status.

j. Monitoring and Evaluation. A comprehensive monitoring and evaluation system is essential to ensure the success of the policy. Evaluation should be conducted at multiple levels to adapt the policy to the evolving needs of the community.

JAKSTRADA SPAM Batu Bara Regency establishes a comprehensive policy and strategy framework to ensure sustainable access to clean water. With a focus on community participation, support for vulnerable groups, and integration of environmental aspects, this policy is expected to create a better drinking water supply system. The success of policy implementation and effective monitoring will be key to meeting the clean water needs of the community in Batu Bara Regency.

3. Drinking Water Management Policy of Batu Bara Regency

The drinking water management policy in Batu Bara Regency adopts an approach similar to that described by Yudo (2005), namely three types of management: institution-based (Type A), a combination of institutions and communities (Type B), and community-based (Type C).
Institution-Based Management (Type A) In Type A, decision-making in drinking water management is entirely in the hands of the institution. This institution is responsible for the formulation of plans, operations, maintenance, and management of services. The community has a commercial relationship with the institution, where customers pay connection fees and

service fees periodically. In Batu Bara Regency, this type can be applied especially in urban areas through management by the Regional Drinking Water Company (PDAM).

Joint Management of Institutions and Communities (Type B) Type B creates cooperation between institutions and communities in managing drinking water. In Batu Bara Regency, this approach is relevant to overcome overlapping in regional management. In this management, some elements are managed by institutions, while other elements are managed by the community. Agreement and cooperation between the two parties are key, while still considering commercial aspects and community needs.

Community-Based Management (Type C) Type C places the highest authority in decision-making in the hands of the community. The community is involved from the stage of identifying needs, planning, to implementation and operational management. Although they can receive information and technical assistance from external parties, the final decision remains with the community. The government functions as a supervisor in this management, ensuring that all activities remain in accordance with applicable regulations.

Drinking Water Management Policy in Batu Bara Regency Based on the institutional concept and regulations for drinking water management, the policy in Batu Bara Regency will involve the local government, the community, and the private sector. All elements will act in accordance with their respective main tasks and functions (tupoksi). Management is divided into two zones: the urban zone, managed by the Public Works and Spatial Planning Agency, and the rural zone, managed by the Housing and Settlement Agency. Cooperation with the community and local institutions will be a priority in providing drinking water. This policy refers to regulations such as Government Regulation No. 16 of 2015 and Ministerial Regulation No. 27 of 2016, which emphasize that drinking water management is handed over to the local government with support from BUMN, BUMD, and other institutions. The local government is responsible for conducting field supervision and reporting progress periodically.

4. Resources and potential of drinking water supply systems in Batu Bara Regency

To improve the drinking water supply system in Batu Bara Regency, there are several resources and potentials that can be utilized. First, surface water sources such as rivers, lakes, and reservoirs in this area can be optimized. Development of infrastructure to capture, store, and process water from these sources can increase the availability of clean water. In addition, groundwater sources are also an important potential that can be explored through drilling wells that are well managed, by paying attention to the principle of sustainability so that there is no decrease in the groundwater level.

Second, environmentally friendly and efficient water treatment technologies, such as filtration and disinfection systems using natural materials or the latest technology, can be applied to improve water quality. Implementation of wastewater treatment technology into clean water can also be a solution in maximizing the use of existing resources.

Third, community participation in water resource management is a potential that needs to be empowered. Educational and outreach programs on the importance of maintaining the cleanliness of water sources and conservation can increase public awareness in maintaining water resources. The development of cooperatives or community groups for clean water management can also be an effective model.

Fourth, cooperation with local governments, private institutions, and non-governmental organizations can also help in the development of water supply systems. Funding and technical support from these parties can accelerate the development of necessary infrastructure.

Fifth, research and development on the potential of water resources and water management technology are also important to find the right and innovative solutions in facing the challenges of providing drinking water in Batu Bara Regency. By utilizing various resources and potentials in an integrated manner, the drinking water supply system can be improved, thus meeting the community's need for clean water that is feasible and of good quality.

5. Level of Community Participation in Formulating Policies and Strategies for Providing Adequate Drinking Water.

The level of community participation in the formulation of policies and strategies for the provision of clean drinking water is very important to ensure that the resulting policies truly reflect the needs and aspirations of the community. Analysis of community participation can be seen from several aspects, namely involvement in the planning process, decision making, and policy implementation.

First, involvement in planning includes community participation in identifying problems and needs related to the provision of clean water. Through discussion forums, village meetings, or surveys, communities can convey their aspirations regarding the quality and accessibility of clean water. A high level of involvement indicates that communities have a significant voice in determining development priorities, so that the resulting policies are more relevant and oriented towards real needs.

Second, in decision-making, community participation can be measured by the extent to which they are involved in the deliberation and decision-making process. For example, by involving community representatives in the policy-making team or holding open meetings to discuss the policy plans to be implemented. This involvement creates a sense of ownership of the policy, so that the community is more committed to supporting and implementing the policy.

Third, participation in policy implementation is also important to analyze. Communities involved in implementation, such as in the management of clean water facilities or maintenance activities, can increase the effectiveness and sustainability of policies. Community involvement in policy monitoring and evaluation is also important, so that they can provide feedback and contribute to necessary improvements.

Challenges in community participation are often related to lack of access to information, limited capacity, and social and economic barriers. Therefore, efforts to increase community participation must include providing clear and transparent information, training to build community capacity, and creating effective communication channels between the government and the community. Overall, an analysis of the level of community participation in the formulation of policies and strategies for the provision of clean drinking water in Batu Bara Regency shows that active community participation is essential to achieving success and sustainability in water resource management. By increasing participation, the resulting policies will not only be more responsive, but also better able to improve the welfare of the community as a whole.

Conclusion

The provision of clean drinking water in Batu Bara Regency faces a number of challenges, including limited availability of water resources, inadequate infrastructure, and low public awareness of sustainable water management. Therefore, integrated and participatory strategies and policies are crucial in overcoming this problem. Drinking water management policies in Batu Bara Regency must prioritize recognition of water as a social and economic resource, involve the community in every stage of planning and implementation, and prioritize environmentally conscious development. The application of approaches that include institution-based management, a combination of institutions and communities, and community-based management can create a more transparent and accountable system. Utilization of existing resources and potential, such as surface and groundwater sources, and efficient water treatment technologies, can improve the quality and accessibility of clean water. Community participation in the formulation of policies and strategies is also very important, because their involvement in identifying needs, decision-making, and implementing policies can strengthen their sense of ownership and commitment to the resulting policies.

By addressing existing challenges and utilizing available potential, as well as increasing community participation, Batu Bara Regency can realize a sustainable drinking water supply system that is responsive to community needs, which ultimately contributes to the welfare of the community as a whole.

References

[1] Ansyhari, A., & Hadi, W. (2021). Evaluation of Drinking Water Supply System in Rasanae Timur District, Bima City. *Journal of Civil and Environmental Engineering , 4* (2), 153-163.

[2] West, STT (2021). Distribution Pipe Network Simulation to Optimize the Cirebon Raya Drinking Water Supply System, West Java, Indonesia.

[3] Dewi, R., Sucipto, B., Kharisma, SP, Pratama, B., & Indramayu, IPSAA (2019). Strategy of Rural Drinking Water Management Policy in Ciamis Regency. Journal of Engineering, Technology, and Science, 3(2).

[4] Haiqal, H., Azmeri, A., & Fatimah, E. (2020). Analysis of Clean Water Service Performance of PDAM Tirta Daroy, Banda Aceh City. *Journal of Civil Engineering and Planning Archives , 3* (3), 203-210.

[5] Iqbal, RM, & Pemerintah, K. (2023). The Influence of Drinking Water Supply System, Flood and Drought Management. *Pancasila University: Jakarta* .

[6] Kornita, SE (2020). Strategy for fulfilling community needs for clean water in Bengkalis Regency. Journal of Ocean Economics and Business, 11(2), 166-181.

[7] Mamik, FA, & Lingkungan-ITS, MTS Regional Drinking Water Supply System (SPAM) of East Java Province. Magister, 3314(202), 802.

[8] Massora, RR, & Zevi, Y. (2024). Analysis of Drinking Water Supply System Development Based on Financial Studies and Community Purchasing Power Affordability (Case Study: Palangka Raya City Center SPAM). Jurnal Serambi Engineering, 9(4).

[9] Nugroho, BH, Medtry, M., Apriliasi, E., Karenina, A., Handayani, N., & Nijmah, N. (2024). Preparation of Regional Strategy Policy for Drinking Water Supply System (SPAM) of Pandeglang Regency (Doctoral dissertation, Indonesian Institute of Technology).

[10] Opirina, L., & Silvia, CS (2022). Analysis of Drinking Water Supply System in Blangpidie District, Southwest Aceh Regency. *Journal of The Civil Engineering Student , 4* (2), 155-161.
[11] Purnomo, S., Halik, G., & Dhokhikah, Y. (2021). Drought Disaster Assessment and Clean Water Provision Strategy in the Northern Region of Lumajang Regency. Journal of Water Resources Engineering, 12(2), 92-103.
[12] Saputra, IPSA, Nurhayati, E., & Sundoro, M. (2023). Asset Management Strategy to Improve the Quality of Drinking Water Services at Perumda Air Minum Tirta Khatulistiwa, Pontianak City. Envirotek: Scientific Journal of Environmental Engineering, 15(2), 171-180.
[13] Sumardianti, T., Rosyani, R., & Syarifuddin, H. (2021). Analysis of Community Participation in the Pamsimas Program (Community-Based Drinking Water and Sanitation Provision) in Geragai District, East Tanjung Jabung Regency, JAMBI Province. *Journal of Sustainable Development , 4* (1), 21-30.
[14] Suratmojo, S., Mukhlis, M., & Lestari, EP (2022). PDAM Strategy in Improving Clean Water Services on Bunguran Besar Island, Natun Regency. Journal on Education, 5(1), 1394-1414.
[15] Wachjoe, MYPCK, & Adab, P. Decision Making in the Initiation and Planning Stages of the Drinking Water Supply System (SPAM) Development Program. Adab Publisher.
[16] Widodo, IR, & Indarjanto, HW (2017). Improving Drinking Water Supply Services in Blitar City. ITS Engineering Journal, 6(2), C369-C374.
[17] Zahra, MJ (2024). Performance-Based Budgeting at the Bekasi City Housing, Residential Areas and Land Agency. Al-Kharaj: Journal of Islamic Economics, Finance & Business, 6(8), 5563-5579.