

Capacity Development of Barangay Water Association Leaders in Davao City

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ABSTRACT

This study aimed to assess the capacity development of barangay water associations leaders in Davao City, particularly in areas not served by the Davao City Water District (DCWD). A quantitative research design was employed utilizing frequency, percentage, and mean analysis. A total of 359 respondents from selected barangays were selected through stratified sampling and completed thirty-item questionnaires designed to measure the capacity development of barangay water associations. The results identified four key areas of capacity development, including technical training, financial management, governance and compliance, and community engagement.

Moreover, the majority of the respondents were female, aged 21-30 years old, married, and had a household size of 10 or more. The majority of the respondents were members of the Barangay Water Association (BAWASA) and had been involved in the association for a long time. The capacity development of BAWASA leaders was mainly focused on technical training, financial management, governance and compliance, and community engagement. The study found that technical training has been instrumental in enhancing the skills and knowledge of BAWASA members and officers. The financial management practices in place are effective and efficient, with regular monitoring of financial performance by a treasurer or secretary, and regular financial audits to ensure transparency and accountability. The governance systems and regulations in place are stable, with regular meetings held to address governance issues and ensure adherence to rules. The community engagement practices in place are active, with the local water system administration playing an integral role in ensuring transparent accountability and supervision.

The study's findings suggested that the capacity development initiatives implemented by BAWASA have been successful in enhancing the skills and

knowledge of its members and officers, and improving its financial management practices. Overall, the study provided valuable insights into the capacity development initiatives implemented by BAWASA and highlighted the importance of effective financial management, governance and compliance, and community engagement in enhancing the organization's capacity to deliver its services.

I. INTRODUCTION

One of the key objectives of the Sustainable Development Goals (SDG 6) is to ensure universal access to clean water and sanitation, thereby promoting the wellbeing of all individuals. However, water scarcity affects over 40% of the world's population, a troubling figure predicted to worsen due to rising global temperatures caused by climate change. Presently, 2.2 billion people worldwide lack access to safe drinking water, while 4.2 billion individuals lack adequate sanitation facilities.

In addition, clean water and sanitation have become a pressing global concern, garnering significant focus from governments and international organizations. These issues have gained prominence in various nations and are recognized as crucial for improving public health and driving socioeconomic progress. According to Srilert and Van (2022), the significance of addressing clean water and sanitation cannot be overstated. Thus, the management of water systems should not only focus on ensuring security and efficient implementation but also on promoting sustainability, fostering economic and social development, and preserving water resources (Cosgrove & Loucks, 2015).

Moreover, the capacity development among Davao City's Barangay Water Associations is quite challenging, as providing safe and dependable water is critical for the community's overall wellbeing. These organizations oversee

managing the local water supply systems. Identifying and addressing these organizations' capacity development needs is essential to ensure long-term viability and efficacy. Across the Philippines, watershed management issues are ecologically, socially, economically, and politically complex. This complexity, coupled with a limited understanding of watershed management issues, including land use change and development trends, and the unpredictability of many natural (Taylor et. al 2006).

Furthermore, numerous barangay water associations have partnered with local government entities and diverse agencies to secure financial resources, technical assistance, and regulatory counsel. This collaborative effort has significantly contributed to the augmentation of water services' durability and quality, as well as their expansion and enhancement, particularly in response to the rapid growth and urbanization of Davao City.

Laslty, even though BAWASA can supply water to the community, it is essential to acknowledge its limitations. One of the key concerns surrounding BAWASA is its sustainability. Also, given that SDG 6 aims to ensure universal access to clean water and sanitation, it is critical to evaluate the performance of governance structures within relevant associations and identify areas for improvement to accomplish this goal. This allows for better management of water resources.

Therefore, the primary objective of this study was to address the existing research gap by examining the capacity development of barangay water associations leaders in Davao City, particularly in areas not served by the Davao City Water District (DCWD).

Objective of the Study

This study was conducted to identify the capacity development of barangay water associations in Davao City. Specifically, this study sought determine the profile of barangay water associations in terms of source of water and membership and fees. It also aimed to determine the level of capacity development of barangay water association Leaders as perceived by the members in terms of technical training; financial management; governance and compliance; and community engagement.

II. REVIEW OF RELATED LITERATURE

Barangay Water Association.Barangay Water Association (BWA) is a community-based

organization established in the Philippines that manages and maintains local water systems. These associations are typically formed at the barangay level (the most minor administrative division in the Philippines). They are responsible for providing, operating, and maintaining water supply services to their respective communities. Barangay Water Associations emerged as a response to the need for more localized and community-managed water systems, especially in rural areas. BWAs aim to ensure sustainable water supply by involving community members in the planning, implementation, and management processes, thereby promoting a sense of ownership and responsibility among the residents.

The Barangay Water Association (BWAs) in Davao City frequently encounters various situations and challenges. These organizations typically work in rural communities with decentralized water delivery systems. They work hard to give their people access to dependable and safe water, but they often need help with problems like old infrastructure and little funding. Many BWAs need help to raise enough money to pay for operations and maintenance because they mostly rely on community volunteers. Furthermore, the irregular quality of the water supply might be caused by inadequate source protection and irregular water quality testing.

Source of Water. Water is the principal constituent of all living things and is needed for various purposes. However, water also houses the most significant number of living organisms when compared with other habitats and ecosystems (Sunday et al., 2014). The demand for quality drinking water changed considerably with the development of the olden days. The only drinking water requirement was to be free-flowing and non-turbid. The need for a better environment and health cannot be overemphasized with increasing industrialization, urbanization, and population growth. Urbanization directly impacts water bodies as settlements occur around the vicinity of water bodies, and due to the lack of space, people tend to encroach upon the lake (Pavendan et al., 2011).

The Philippines reported that, generally, the quality of groundwater and marine coastal waters is good. Still, surface water quality deterioration in urban areas needs to be addressed. However, there are signs of improvement in some waters based on monitoring results conducted by the Sagip blog Program. Partner countries in the region make protecting drinking water sources one of the top priority policy areas (Leopoldo et al.,

2017). The lack of safe drinking water and adequate sanitation measures leads to several diseases, such as cholera, dysentery, salmonellosis, and typhoid, and every year, millions of lives are claimed in developing countries. Water sources in barangay water associations are crucial to community development and public health. Various studies have explored the challenges and successes of these local water systems. According to a report by the World Bank (2020), the sustainability of water sources in barangay water associations often depends on effective management practices and community participation. These associations typically rely on groundwater, spring water, and surface water sources, subject to contamination and seasonal variability.

Membership Fees. The implementation and structure of membership fees in Barangay Water Associations (BWAs) are critical to their sustainability and operational efficiency. Membership fees serve as a primary source of funding for these associations, enabling them to maintain infrastructure, cover operational costs, and invest in future improvements. According to Domingo and Robles (2020), well-structured membership fees contribute to the financial stability of BWAs, ensuring that they can deliver consistent and high-quality water services to their members. These fees often cover administrative expenses, routine maintenance, and emergency repairs essential for the uninterrupted water supply.

Membership fees are typically determined based on various factors, including the cost of water delivery, the community's socioeconomic status, and the association's operational needs. As highlighted by Cruz et al. (2018), the affordability of these fees is a crucial consideration, particularly in low-income rural areas where household incomes are limited. Setting fees too high can result in non-payment or reduced membership, while fees set too low may not cover essential costs, leading to the deterioration of water services. Therefore, BWAs must strike a balance to ensure both affordability for members and financial viability for the association. The effectiveness of membership fee collection and management is another vital aspect influencing the success of BAWASAs. Bautista (2019) notes that transparent and efficient fee-collection systems enhance trust and compliance among members. Implementing digital payment systems, providing clear billing statements, and regular financial reporting are some practices that have been found to improve fee collection rates. Additionally, community involvement in decision-making processes

regarding fee structures can foster a sense of ownership and accountability among members, further supporting the association's financial health.

Capacity Development. Capacity connects with the concept of 'potential.' In this case, the Potentialities' resources effectively and preserve gains in performance by gradually reduced levels of external support (Krishnaveni & Sujatha, 2013). It might focus on assessing the training needs of barangay water associations to identify gaps in technical skills and knowledge. Capacity-building is defined as the process of developing and strengthening the skills, instincts, abilities, methods, and resources that organizations and communities need to survive, adapt, and thrive in a fast-changing world. An essential ingredient in capacity-building is transformation that is generated and sustained over time from within; transformation of this kind goes beyond performing tasks to changing mindsets and attitudes. Sustainable Development Goal 6: Global Partnership for Sustainable Development, the United Nations is committed to transformation from within. Goal 6 includes targets for capacity-building, including increasing technology and innovation in least-developed countries and improving data collection and monitoring for achieving the SDGs.

Another essential element of sustainable capacity building is the use of appropriate technologies and practices. This includes technical solutions for water treatment and distribution and management practices that enhance efficiency and accountability. BAWASAs can improve their operational performance and financial sustainability by adopting appropriate technologies and practices. Several studies have highlighted the importance of sustainable capacity building for BWAs. For example, a study by Ramirez et al. (2018) found that BAWASAs that engage in sustainable capacity building are more likely to achieve their goals and objectives. Similarly, a study by Fernandez and Lopez (2019) emphasized the role of sustainable capacity building in enhancing the resilience of BWAs to climate change and other external shocks.

Technical Training. Technical training programs can be crucial in addressing this challenge by equipping association members with the skills and knowledge needed to manage water resources effectively. According to Bhatnagar and Bhatnagar (2019), technical training programs for barangay water associations should focus on several key areas. First, training should cover the basics of water resource management, including

understanding water sources, water quality testing, and basic water treatment techniques. This foundational knowledge is essential for ensuring that water association members understand the principles behind their work. Barangay water associations (BWAs) provide clean and safe water to their communities. However, many BAWASAs need more technical expertise to manage and maintain water systems. This literature review explores the importance of technical training for BAWASA and identifies critical areas for training focus. Technical training is essential for BAWASA to manage water resources effectively. According to Smith (2018), technical training programs should encompass a range of topics, including water quality testing, water treatment, and infrastructure maintenance. These programs should be tailored to the specific needs of BAWASA, considering factors such as geographic location, water source, and community size. In addition to technical skills, training programs should also focus on governance and organizational development (Jones, 2017).

Financial Management. One of the fundamental financial management principles in barangay water associations is transparency and accountability. According to Alcantara and Villanueva (2018), transparency ensures stakeholders can access information about the association's financial activities, including income, expenses, and assets. This transparency builds trust among members and external stakeholders, fostering a sense of ownership and commitment to the association's goals. Effective financial planning is another critical aspect of financial management in barangay water associations. Planning helps associations anticipate future expenses, such as maintenance and repair costs and ensures they have sufficient funds to meet these obligations. A study by Gonzales et al. (2019) found that associations that engage in proactive financial planning are better equipped to handle emergencies and sustain their operations in the long run. In addition to financial planning, proper record-keeping and accounting practices are essential for barangay water associations. Accurate and up-to-date financial records help associations track their income and expenses, identify trends, and make informed decisions about resource allocation. Alcantara and Villanueva (2018) emphasize the importance of maintaining clear and organized financial records, which can facilitate audits and compliance with regulatory requirements.

Governance and Compliance. Policy mixes, the concept of policy accumulation adopts an aggregate focus on sectorial policy

developments over time. Adam et al. (2019) defines policy accumulation "as the result of a continuous addition of new policy elements to existing policy portfolios without the compensatory reduction of already existing policy elements." Any policy is typically composed of two dimensions: policy targets and policy instruments. While policy targets are all of the issues addressed by the government (and hence capture the "breadth" of state activity), policy instruments are the means governments have to address policy targets. Policy instruments include informational instruments, economic incentives (subsidies, grants, etc.), and hierarchical forms of governing (obligatory standards, prescriptions, etc., and hence capture the degree or "depth" of state intervention in society). The differentiation between policy targets and instruments creates a two-dimensional portfolio space within which policy accumulation, adding new targets and instruments to the portfolio space, takes place (Fernández-Marín et al., 2021). While rule growth, policy layering, policy mixes, and policy accumulation are primarily descriptive concepts that capture policy growth in individual cases (i.e., policies) or about a policy sector, the concepts of policy capes and the policy state focus more on the broader implications of governments' adoption of ever more policies. Policy capes refer to constellations where policies created in the past have become institutions that currently shape governing operations, political behavior, the policy agenda, and the relationship between state and society (Mettler, 2016).

Community Engagement. It is a broad concept that encompasses any form of management primarily driven by or at the community level. It posits that individuals possess the right to access information, transparency, and participation in decision-making processes. It has emerged as a prominent approach to addressing sustainability challenges encountered by water supply projects in numerous countries worldwide (Munck et al., 2013). It has become a leading policy and program strategy aimed at tackling the sustainability concerns faced by such projects. CBM encompasses various aspects of governance, ensuring the effective discharge of responsibilities by elected representatives from the community and promoting the long-term viability of the projects. These governance aspects encompass training, capacity building, and water management. CBM flourishes within a functional and supportive policy and service delivery environment, which allows for articulating the specific needs of the water sector and the community. Lockwood and Smits Stef

(2011, p. 24) argue that the sustainability of the service is not solely influenced by the technical attributes of the system but also by the service providers' financial, organizational, and managerial capacities.

III. METHODOLOGY

Method Used. This study used a quantitative research method to identify the issues and problems encountered by the barangay water associations. It also examined the performance of barangay water associations and the strategies employed to address the problems and challenges. This study also tried to determine what can be done further to improve capacity development from the perspective of concerned personnel in barangay water associations in Davao City. According to Waliman (2011), descriptive research is data collection based on observation. Thus, this study involved conducting surveys and questionnaires with relevant individuals, including water association officers, members, and staff. This data collection approach aimed to gather information on the challenges and obstacles they encounter, evaluate the effectiveness of current strategies, and obtain recommendations for enhancing capacity development.

Sources of Data. This study utilized primary data. The primary data of this study were taken from the responses to a survey questionnaire.

Data Gathering Instrument. This study used questionnaires. Each member's questionnaire included various sections. Section 1 covered details like the type of water system and respondent profile such as age, sex, civil status, relationship to the household, account holder's relationship to the head of the household, number of residents, and house ownership; section 2 focused on assessing the capacity development of barangay water associations, encompassing areas like technical training, financial management, governance and compliance, and community engagement. Lastly, section 3, the performance of barangay water associations, examined aspects such as the source of water, membership fee, water quality, water supply, water pressure, water usage, payment methods, affordability, quality of water service, and overall satisfaction. In addition, the survey questionnaire was adopted that had already been established and were subject to experts from the College of Development Management. After the reliability test, the researcher proceeded to gather information. Moreover, the findings of the reliability assessment indicated that Cronbach's alpha coefficient is 0.918 for a sample size of 20 individuals.

Sampling Technique. The sampling technique used in this study was Non-Probability Sampling, in which Quota Sampling was utilized. Accessible samples were identified according to a particular fixed quota. The primary motivation of using quota sampling was to reduce the time required and complete the survey by using samples who are actual concessionaires of barangay water associations in Tugbok District, Davao City. Besides, this sampling plan protected selection bias. After obtaining the population of current consumers as participants, the researcher proceeded with the Raosoft process to determine the frequency, percentage, and sample size. Also, the unit of analysis used in this study was the actual water consumers having specific responsibilities, such as association officers and the members, quota sampling was the exact technique that was utilized, as shown in the table below.

Statistical Treatment. Mean and frequency count were used to identify the underlying capacity development of barangay water associations. Describing the main features of the data, such frequency count and percentage distributions. This can be applied to quantitative data analysis. These tools provide simple summaries about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data. (Creswell, J. (2003).

IV. RESULTS AND DISCUSSION

Profile of Barangay Water Associations

Profile of barangay water associations in this study includes source of water, membership and fees, and water quality and testing.

Source of Water. Table 1 exhibits the distribution of profile of the barangay water associations in terms of source of water. Widespread existence of water associations throughout barangays, indicating broad access to water services. The involvement of these associations plays a crucial role in community water management. Almost all barangays surveyed have a water association, emphasizing the significance of local initiatives in water resource management. As result, the distribution of source of water which means that the 100 percent are reservoir and avoid confusion, there is one respondent who told me that he has had a jet Matic for a long time, they still only use it occasionally to clean around the house, even

though he is a member of the BAWASA. The 3 percent for a Jet Matic. This shows that most of the

source of water has been operating for reservoir system.

Table 1. Distribution of profile of the Barangay Water Associations in terms of Source of Water

Source	Frequency	Percent
Reservoir	359	100
Jet Matic	1	.3
Total	360	100.3

Membership and Fees. Table 2 shows the distribution of profile of the barangay water associations in terms of membership fee. The table shows that the distribution of membership fee has a 24.8 percent under the frequency of 89, 31.5

percent has a frequency of 113, 16.4 percent has a 59 frequency and lastly 15.3 percent has a 55 frequency. This shows that the majority of the membership fee has been operating 2700.

Table 2. Distribution of Profile of the Barangay Water Associations in terms of Membership Fee

Membership Fee	Frequency	Percent
None	113	31.5%
150	59	16.4%
325	43	12.0%
1000	55	15.3%
2700	89	24.8%
Total	359	100%

Level of Capacity Development of Barangay Water Association Leaders

Capacity development of barangay water association leaders in this study was measured in terms of technical training, financial management, governance and compliance, and community engagement.

Technical Training. The overall mean score of 4.38 strongly indicates that technical training robustly supports ongoing capacity development efforts. This underscores a consensus on the efficacy of technical training in fostering capacity development. Moreover, it highlights BAWASA's compliance with the association's constitution and bylaws, ensuring an ample water supply through diligent monitoring by technical personnel. According to the evaluation of BAWASA's capacity development, technical training has been instrumental in enhancing the skills and knowledge of its members and officers. As stated by Smith (2018), technical training is a crucial component of

capacity development, as it enables individuals to acquire the necessary skills and knowledge to perform their duties effectively. This is consistent with the findings of Jones (2019), who found that technical training can lead to increased capacity and improved performance.

Financial Management. It can be seen that barangay water associations have implemented a widely accepted financial system. The financial performance of these associations is regularly monitored by either a treasurer or a secretary. Furthermore, regular financial audits are deemed necessary to uphold transparency and accountability in the financial matters of the associations. The collection and management of funds are overseen by the water system authority's collector. Additionally, the barangay association has established a budgeting process to ensure the effective allocation of funds. The assessment of capacity development in BAWASA reveals a high rating for financial management, indicating strong

consensus among stakeholders. Consequently, the overall mean score of 4.31 underscores the effective implementation of these financial management practices.

The study's findings suggest that the barangay water associations have implemented a widely accepted financial system. As stated by Tan, effective financial management is critical for the success of community-based organizations" (Tan, 2015). This conclusion is supported by the rationalization that regular monitoring of financial performance by a treasurer or secretary ensures accountability and transparency (Cordella & White, 2012). Additionally, regular financial audits are necessary to maintain transparency and accountability in financial matters (Hood & Jones, 2015).

Governance and Compliance. Barangay water association follows stable governance systems and regulations. Regular meetings are held to address governance issues and ensure adherence to these rules. Despite the insufficient ground water available for current and future needs, every BAWASA member is given the opportunity to vote during elections. Additionally, government grants and subsidies contribute to the enhancement of BAWASA services. The mean score for governance, compliance, perception/assessment, and capacity development of BAWASA indicating a strong agreement among members. Consequently, the overall mean of 4.31 suggests successful implementation of capacity development initiatives within BAWASA.

On the other hand, some authors may support the rationalization provided. They may argue that the high mean scores demonstrate a strong agreement among members and suggest that the association is indeed working effectively. They may also argue that the governance systems and regulations in place provide a framework for decision-making and resource allocation. The community's perspective on rationalization is crucial in understanding how they perceive and interpret the statement. The community may view the rationalization as a way to demonstrate accountability and transparency in the association's decision-making processes. They may also see it as a means to ensure that the association is working towards the betterment of their community. Ultimately, rationalization is a critical aspect of understanding how communities perceive

and interpret statements about successful implementation of capacity development initiatives. While some authors may support or refute the rationalization provided, it is essential to consider multiple perspectives and approaches to gain a comprehensive understanding of the issue.

Community Engagement. The local water system administration plays an integral role in ensuring transparent accountability and supervision. BAWASA provides trainings and workshops to its members, aiming to improve their skills in water management, operation, and maintenance. Additionally, the association collaborates with local community leaders and organizations to foster community engagement. Regular community meetings and forums are held to address water-related concerns and gather feedback from residents. The mean score for these activities indicating a strong agreement from the community. Consequently, the overall mean score of 4.30 suggests that the community engagement initiatives implemented by BAWASA are effective. In this case, the rationalization is that BAWASA actively seeks feedback from the community to enhance its services, and that it provides trainings and workshops to its members to improve their skills in water management, operation, and maintenance. The association also collaborates with local community leaders and organizations to foster community engagement and holds regular community meetings and forums to address water-related concerns and gather feedback from residents. To the community, this rationalization means that BAWASA is committed to being transparent and accountable in its operations, and that it is willing to listen to their concerns and involve them in decision-making processes. This can help to build trust and confidence between the community and BAWASA, which is essential for effective community engagement.

According to Improving Transparency, Integrity, and Accountability in Water Supply and Sanitation is the result of a partnership between the World Bank Institute (WBI) and Transparency International (TI). It was developed under the Open and Participatory Government Program at the Municipal Level (known by its Spanish acronym as the GAP Municipal Program).

Table 3. Summary of Level of Capacity Development of Barangay Water Association Leaders

Items	Mean	Description
Technical Training	4.38	Very High
Financial Management	4.31	Very High
Governance and Compliance	4.31	Very High
Community Engagement	4.30	Very High
Total Mean	4.325	Very High

V. SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter presents the summary of the study that was drawn after the analyses of data, conclusions based on the essential findings of the study, and the recommendations.

Summary. The study aimed to assess the capacity development of barangay water associations in Davao City, focusing on their profile, technical training, financial management, governance and compliance, community engagement, and performance. The study found that most barangays have water associations where the majority use reservoirs as their primary source of water, and membership fees range from 150 to 2700. The study also found the involvement of association members in planning, design, and decision-making processes related to water management is present.

In addition, the results showed that barangay water associations' capacity development is strongly supported by technical training, indicating substantial agreement among members. The study further revealed that barangay water associations have implemented a widely accepted financial system, with regular financial audits and budgeting processes, and that governance systems and regulations are followed properly with regular meetings and elections. Furthermore, the study found that barangay water associations actively seek feedback from the community and provide training and workshops to improve water management skills. Likewise, barangay water associations' capacity development was found to be strong in several areas, including technical training, financial management, governance and compliance, and community engagement. Overall, the study provided valuable insights into the capacity development initiatives implemented by barangay water associations in Davao City. It also highlighted the importance of technical training, financial management, governance, and community

engagement in improving the effectiveness of community-based organizations.

Conclusion.

The researcher concluded that the study participants were satisfied with the Davao City barangay water associations' services and had positive experiences with the organization. Many participants reported that the barangay water associations have improved the water supply in their area, making it more reliable and accessible. They also appreciated the regular communication and updates from the barangay water associations, which helped them stay informed about water supply issues and management. Overall, the results suggest that the barangay water associations in Davao City have made significant progress in capacity development, particularly in technical training, financial management, and governance and compliance. Community engagement is also a vital aspect of the associations' activities. However, based on the study findings, there is no significant difference in capacity development in barangay water associations.

Recommendation

Based on the findings and conclusions, these recommendations were formulated:

Barangay water associations should continue providing capacity development and training because these are instrumental in enhancing the skills and knowledge of the members. Regular audits and monitoring are recommended to maintain the acceptability of the financial management system. The organization should also conduct regular meetings to be stable and ensure member participation in decision-making.

In addition, community engagement should be observed in the processes in the barangay water associations to gather feedback and maintain

the spirit of participation among the organization's stakeholders. Barangay water associations should also consider improving the delivery of capacity development initiatives, such as exploring the impact of technical training and conducting a comprehensive assessment of capacity development initiatives.

Moreover, to address the issues of delayed payment, low water pressure, and water supply schedule, the barangay water associations should create interventions, including cash flow management, infrastructure improvements, scheduling and management of water supply, regular payment reminders, and customer communication. Furthermore, addressing water shortages and low water pressure in some barangays requires investing in infrastructure development. This can include upgrading or replacing old pipes, constructing new water treatment facilities, or implementing more efficient pumping systems. Lastly, it is essential to provide additional support to members of barangay water associations in areas where they face challenges in accessing water services. This can include technical assistance, training, or resources to help them overcome these challenges and provide better services to their communities.

Lastly, by implementing these recommendations, barangay water associations could develop effective capacity development programs, improve their water supply management, reduce water losses, and increase community engagement.

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