

THE SOCIAL DYNAMICS OF VILLAGE COMMUNITIES: A CASE STUDY ON THE IMPLEMENTATION OF IMPROVED ACCESS TO CLEAN WATER IN WARGASALUYU VILLAGE

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Abstract

Wargasaluyu Village, located in Gununghalu District, West Bandung Regency, has historically faced limited access to clean water. In mid-2023, a group of students participating in the Perguruan Tinggi Mandiri Membangun Desa (PTM2D) program initiated a project to improve clean water access for the Wargasaluyu village community. This research examines the short-term outcomes of implementing improved clean water access on the social dynamics of the Wargasaluyu Village community. The study aims to identify the social dynamics that have emerged in the Wargasaluyu Village community as a short-term outcome of this implementation. The analytical methods employed were triangulation and descriptive-analytical approaches. Results indicate that the quality, quantity, and continuity of clean water underwent significant improvements, becoming feasible and safe, and subsequently effecting changes in the community's social dynamics. Significant direct changes experienced by the community include shifts in mindset and participation, increased spirit of cooperation, enhanced community organization, and improved utilization of social infrastructure through mutual care, thereby facilitating the implementation of improved welfare levels. These direct changes contribute to indirect changes, namely alterations in employment, income levels, community welfare, and village independence. The social dynamics occurring in the Wargasaluyu Village community affect not only social aspects but also will give impact educational, health, economic, cultural, and environmental dimensions. This research provides insights not only for more effective improvements in clean water access but also for holistic village water management that addresses community needs and aspirations, aiming to achieve sustainable and inclusive rural development in Wargasaluyu Village.

Keywords: *access, clean water, community participation, social dynamics, short-term outcome*

Introduction

Access to clean water is a critical issue in the context of development, representing an essential sustainable need to support the quality of life for humans (Rofil, 2018; Maulana et al.,

2018; Rahmawati et al., 2023). According to data from "SUSENAS, 2023" households with access to safe drinking water sources in Indonesia reached 91.72%. To achieve the Sustainable Development Goals (SDGs), Indonesia continues its commitment to ensuring access to safe and sustainable drinking water and sanitation for all. In line with this, the National Medium-Term Development Plan (RPJMN) for 2020-2024 sets a government target of 100% household access to safe drinking water,

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including 15% access to safe drinking water and 30% access to piped drinking water by 2024.

Not only does this target at the national level, but autonomous regions at the provincial level, including West Java, have adopted similar goals. Based on data from JAKSTRADA SPAM 2017-2022 West Java Province, the target for drinking water service coverage by the end of 2022 was set at 100%, with a proportion of 34% piped networks and 66% non-piped networks. However, according to “BPS, 2023” households in West Java with access to an adequate drinking water source reached only 93.86% by the end of 2023. Consequently, approximately 6% of households in West Java still lack access to adequate drinking water, indicating that the target set by JAKSTRADA SPAM 2017-2022 for West Java Province has not yet been fully achieved.

Various efforts continue to be made by the government and stakeholders to fulfill clean water needs (Kornita, 2020; Firmanasari et al., 2020). These efforts align with village development goals, specifically targeting villages worthy of clean water and sanitation, as outlined in Minister of Village Regulation Number 21 of 2020 on General Guidelines for Village Development and Village Community Empowerment. Although water has reached many villages, safe and proper access remains a challenge, particularly in villages that utilize conventional water management systems (Suryani, 2020).

Wargasaluyu Village, located in West Java, exemplifies an area with limited access to clean water. Administratively part of Gununghalu Sub-district in West Bandung Regency, Wargasaluyu Village relies primarily on spring water for its community's clean water needs, managed through conventional (non-PAM) methods, as indicated by data from the RPJM Desa Wargasaluyu 2020-2025. This traditional

water management approach, lacking proper oversight, has led to various social health issues. These problems include an increased risk of stunting due to inadequate clean water and improper sanitation (Astuti, 2022; Larasati et al., 2022; Saimu et al., 2023), high rates of pipeline leakage, and distributed water that fails to meet the 3K principle (Quality, Quantity, Continuity) (Sukmawardani et al., 2021; Septyanti & Anisyah, 2017).

In mid-2023, a group of students participating in the Perguruan Tinggi Mandiri Membangun Desa (PTM2D) program initiated a service project to improve access to clean water for the Wargasaluyu village community. This initiative aimed to increase access to clean water by minimizing water leakage through the repair of transmission and distribution pipes (Maulana et al., 2018). Additionally, a Slow Sand Filter was constructed to ensure access to safe and suitable water by rendering it clean and clear. Throughout this process, the community was fully involved in the construction of water access infrastructure. This community involvement in the development process resulted in changes to both the condition and quality of clean water, as well as to the social dynamics of the community (Nurhayati & Jamilah, 2021).

The availability of clean water impacts not only household needs but also the social dynamics of a community. Social dynamics arise through interactions between communities and groups, involving a process of mutual influence that creates dynamic change (Melly, 2018; Fauzan, 2020; Kurnia, 2021). These social dynamics trigger interactions between components of society that lead to both progress and regression (Indah, 2021). Among the factors contributing to these social dynamics is the improved access to clean water in Wargasaluyu village, which represents a significant improvement over previous conditions.

While research on social dynamics has been conducted multiple times, most studies have focused on the general impact of activities on social change (Herawati, 2023; Maula & Ramdon, 2022; Sahabudin et al., 2022; Sulaisiyah et al., 2022; Taubat et al., 2024). This research not only examines social change and its aspects but also investigates the extent of social change and explains its processes and impacts. Furthermore, this study represents the first research on the impact of social change in Wargasaluyu village, specifically examining social change as a short-term outcome of improving village clean water access—an aspect that has not been previously studied.

With the improvement of access to clean water in Wargasaluyu Village, social interaction patterns may change, affecting community participation, social activities, and community behavior patterns. To understand the impact of this social change, the researchers conduct an in-depth examination of the social changes occurring in the Wargasaluyu Village community as a short-term outcome of the implementation of improved access to clean water.

Through a comprehensive understanding of these social dynamics, it is anticipated that the village government and relevant stakeholders will be able to incorporate these insights into the formulation of water management policies. This approach will not only lead to more effective improvements in clean water access but also enable village water management to address the needs and aspirations of the community more holistically. In essence, considering the impact of social dynamics resulting from improved clean water access is not only a necessity but also a strategic approach to achieving sustainable and inclusive rural development in Wargasaluyu Village.

Research Methodology

Research Location

This research was conducted in Wargasaluyu Village, Gununghalu Subdistrict, West Bandung Regency. This location was selected due to the village's history of inadequate clean water quality over many years and the recent implementation of new clean water access that meets standards and has been operational for 8 months, allowing for the observation of its impact. The geographical area of Wargasaluyu village is depicted in Picture 1.



Picture 1. Administrative Map of Wargasaluyu Village, Gununghalu Sub-district, West Bandung Regency

Tools and Materials

The equipment utilized in this study included questionnaire sheets, interview forms, survey designs, stationery, cameras, pH meters, stopwatches, buckets, mobile phones, and GPS devices for determining coordinate points.

The analytical methods employed were triangulation and descriptive-analytical

approaches (correlation analysis). The data collected were categorized into primary and secondary data. The research population comprised the heads of households in Wargasaluyu village, totaling 1,815 households, the individual responsible for the village clean water field, and the village planning staff. From this population, 91 household heads distributed across four hamlets were selected as research respondents using the Stratified Random Sampling technique (Yount, 1999). The selected household heads were provided with a questionnaire containing questions with multiple-choice answers.

Additionally, 4 individuals responsible for the Clean Water Field and 1 Village Planning Staff member in Wargasaluyu village were chosen as key informants to supplement the questionnaire data. The questions were developed based on two research variables: one independent variable, namely the Implementation of Clean Water Access Improvement in Wargasaluyu Village, and one dependent variable, the social dynamics of the Wargasaluyu village community.

The secondary data required to support the research included:

1. Previous studies as references.
2. Articles and journals relevant to the research.
3. Books to support research data.
4. Statutory documents and policies related to clean water and drinking water.
5. Data on the number of household in Wargasaluyu village by hamlet in 2023.

The questions in the questionnaires and interviews addressed aspects of rural community social dynamics that occur due to changes in sub-systems (Maula & Ramdon, 2022). Additional indicators characteristic of the Wargasaluyu village community were also incorporated. These indicators were categorized

into two types of change: direct change (evolution) and indirect/long-term change (revolution) (Nofrianti, 2024). The research indicators are as shown in Table 1.

Table 1. Research Indicators

No.	Direct Change	No.	Indirect Change
1	Role Change	1	Job Change
2	Change in Mindset/Participation	2	Change in Revenue
3	Cooperation	3	Changes in Community Welfare
4	Community Involvement in Organizations Needs And	4	Village Independence
5	Utilization of Social Infrastructure		

Result and Discussion

Condition of Clean Water

In providing access to clean water, at least three key factors must be considered: Quality, Quantity, and Continuity of clean water (Kanaf et al., 2022). The following describes the condition of clean water in Wargasaluyu Village before and after the construction of clean water access facilities:

Clean Water Quality

In its implementation, the quality of clean water used by the community must meet decent and safe standards as regulated in the Regulation of the Minister of Health of the Republic of Indonesia Number 2 of 2023 about Environmental Health. This regulation stipulates that safe and feasible clean water should be tasteless, colorless (not cloudy), odorless, have a pH between 6.5 and 8.5, and have a temperature deviation below 3°C. Based on these standards, the condition of clean water in Wargasaluyu village was as follows:

Table 2. Condition of clean water quality in Wargasaluyu village before the construction of clean water access facilities

No.	Water Quality Parameters	Hamlet			
		1	2	3	4
1	tasteless	✓	Has taste	Has taste	✓
2	colorless (cloudy)	slightly cloudy	cloudy	Cloudy	✓
3	odorless	slightly fishy	Smelly	mud smell	slightly fishy
4	pH between 6.5-8.5	5	3.5	4.5	6
5	Temperature deviation of <3° C	✓	✓	✓	✓

Based on observations, the initial condition of clean water used by the community largely failed to meet the standards for safe and suitable consumption. Of the four hamlets, only Hamlet 4 had water quality approaching decent and safe standards; the rest did not. This situation also negatively impacted community health, as it was accompanied by inadequate sanitation (Ronald & Warwuru, 2023).

This finding was corroborated by statements from respondents across the four hamlets regarding the quality of clean water before the construction of clean water access facilities. In Hamlet 1, 68% of households were served by village clean water sources, with water conditions often cloudy and slightly fishy-smelling, especially during the rainy season. In Hamlet 2, 90% of households were served by a clean water source that occasionally felt, was murky, and had an odor. In Hamlet 3, 92% of households received clean water that was described as tasting, murky, and smell like mud. For Hamlet 4, 64% of households were served with clean water that was tasteless and colorless but slightly fishy-smelling.

**Figure 2.** The condition of the water used by the community of Wargasaluyu village before the improvement of access to clean water

After the improvement of clean water access, which has been operational for about 8 months, the condition of clean water quality in each hamlet is as follows:

Table 3. The condition of clean water quality in Wargasaluyu village after the construction of clean water access facilities

No.	Water Quality Parameters	Hamlet			
		1	2	3	4
1	tasteless	✓	✓	✓	✓
2	colorless (cloudy)	✓	✓	✓	✓
3	odorless	✓	✓	✓	✓
4	pH between 6.5-8.5	6.5	7	6	6.5
5	Temperature deviation <3 °C	✓	✓	✓	✓

As evident from the table above, following the improvement of the transmission pipeline, the construction of a slow sand filter basin, and the repair of the distribution pipeline, the quality of clean water in Wargasaluyu village has met the

standards for decent and safe clean water. The water quality in each hamlet is now tasteless, colorless, odorless, has a pH between 6-7, and a temperature deviation below 3°C.

Access to clean water was improved through the construction of a main dam near the spring, the repair of transmission and distribution pipes, and the construction of a slow sand filter basin. According to respondents' statements, Hamlet 1 experienced a significant increase of 68% to 91% of households with access to clean water. Hamlet 2 increased to 95% of households served with clean water. In Hamlet 3, 100% of households now have access to clean water. Hamlet 4 experienced a significant increase of 64% to 91% of households served by clean water. The remaining households use alternative water sources, such as wells and rainwater harvesting. The quality of water currently available meets the proper requirements: it is tasteless, colorless, odorless, and non-foaming in both dry season and rainy season.



Figure 3. The condition of the water used by the community of Wargasaluyu Village after the improvement of access to clean water

Clean Water Quantity

The quantity of clean water is determined based on the sum of the community's clean water needs and the availability of clean water. To calculate the community's clean water needs, reference is made to Law of the Republic of Indonesia Number 17 Of 2019 About Water Resources, which stipulates a standard drinking water requirement of 60 liters/person/day.

Results of the study indicate that prior to the improvement of clean water access, the

community was unable to fulfill basic water needs such as washing and cooking. Community members could only bathe once a day, wash dishes once, and launder clothes once every three days, sometimes resorting to washing in the river. This situation demonstrates that the clean water supply did not meet the required of 60 liters/person/day. The shortfall was attributed to high levels of leakage and damage to existing infrastructure (Sari, 2021). Moreover, there was a lack of community participation in maintaining and controlling water use (Ahmad, 2020).

In some instances, residents had made unauthorized connections to the distribution basins, resulting in uneven water distribution with water flowing only to select households or groups. Although the community was expected to pay a monthly fee of Rp. 5,000 for water maintenance, many failed to do so regularly while still demanding continuous water distribution. The absence of a clear policy on this matter led to social conflicts between neighborhoods and even between hamlets, often resulting in unilateral disconnection of water connections or damage to pipes by residents. Consequently, there was inadequate maintenance and a lack of community order, making equitable water distribution challenging.

The improvement of clean water access, was followed by the improvement of clean water access, the community's water needs were met, with 85% of households evenly served across all hamlets. With improved access to clean water, the community began to pay regularly, enabling consistent maintenance of clean water facilities and infrastructure. The local government also conducted hearings and implemented policies to address non-compliance, imposing sanctions such as temporary or permanent revocation of clean water access for those who were reluctant to pay or made unauthorized pipe connections. As a result, the community has become more orderly over the past 8 months.

Clean Water Continuity

The Continuity of Drinking Water Flow is regulated by Government Regulation of the Republic of Indonesia Number 122 Of 2015 about Drinking Water Supply System, which mandates a guaranteed flow for 24 hours per day.

Before improvements, the community experienced difficulties related to water flow as it was not available 24 hours a day and was distributed on a rotational basis. Hamlet 1 alternated between west and east sectors every 4 hours. In Hamlet 2, the western part received water during the day and the eastern part at night. Hamlet 3 alternated between west and east sectors every 4-6 hours. Hamlet 4 rotated between north and south sectors in the morning, afternoon, evening, and night.

However, after the improvement of clean water access, the flow has become stable, providing 24-hour service across all areas of the village. Residents no longer need to go to the river for washing or bathing. Even micro, small, and medium enterprises (MSMEs), which were initially limited in food production due to lack of clean water, can now increase their production quantity by 3 to 4 times per day.

Community participation in Wargasaluyu Village before the improvement of clean water access

(Hertiari Idajati & Prasetyaningsih, 2020) posit that community participation is influenced by several factors including education, employment, income, awareness, and willingness of community members. Meanwhile, according to (Febriana & Mardiana, 2019) further assert that community participation is closely related to development, especially in rural areas, and has a significant relationship with the level of social sustainability in a region. This implies that as a village undergoes development, community participation and social conditions also evolve.

Before the implementation of improved clean water access, community participation in Wargasaluyu Village was characterized by the following:

1. Water availability and collection is the responsibility of the individual

Based on the questionnaire results, 89% of community members felt that the primary responsibility for water collection often fell on individuals, particularly women and children, who had to walk long distances to the nearest water source.

2. Water Resources Management on personal initiative

90% of the community stated that water management had been primarily individual or family-based, with no organized joint management system. Additionally, those responsible for clean water in each hamlet often received complaints about water not flowing, but there was no community participation in repairing damaged water facilities and infrastructure.

3. Conflicts occur due to inefficient utilization
Limited technology and knowledge related to village clean water management led to inefficient water use and has the potential to cause conflicts between residents regarding the use of limited resources. Conflicts occurred not only between neighborhoods but also between hamlets.

4. Social Participation

Community participation in water management was limited, with few opportunities to gather and discuss solutions to water problems collectively. Consequently, issues related to clean water management remained unresolved for many years. By the end of 2022, the village government attempted to regulate water use through water meters, which were considered more efficient. However, due to lack of community consultation, many

residents complained about water shortages and damaged the installed meters.

Determinants of social dynamics that occur due to short-term outcomes of the implementation of improved access to clean water in Wargasaluyu Village

The increased access to clean water has triggered social dynamics within the community. These dynamics can be categorized into two types: direct social change and indirect social change (Baharuddin, 2015; Suwarjono et al., 2019). Direct social change refers to immediate changes experienced by the community through a short process, while indirect changes are social transformations that occur over a longer period, triggered by short-term outcomes (Suwarjono et al., 2019). The social dynamics arising as a result of the short-term outcomes of improved clean water access in Wargasaluyu Village are as follows:

1. Direct Change

Table 4. Results of Correlation Analysis Using SPSS regarding Direct Changes in Increasing Clean Water Access to Social Dynamics Factors of Wargasaluyu Village Community

		Correlations					
		village clean water improvement	changes in participation	mutual cooperation	organizational life	attitude towards utilizing facilities and infrastructure	
village clean water improvement	Pearson Correlation	1	.196	.983**	.980**	.974**	
	Sig. (2-tailed)		.383	.000	.002	.003	
	N	91	91	91	91	91	

** Correlation is significant at the 0.01 level (2-tailed).

Based on the correlation test analyzed using SPSS, the relationship between improved access

to clean water and social dynamics can be explained in more detail as follows:

a. Role Change

Table 4 indicates that the significance value is $0.383 > 0.005$, which suggests that the increase in access to clean water does not correlate with changes in the role within Wargasaluyu village community. This means that community members have not experienced significant role changes, such as shifts from housewives to heads of households or vice versa.

b. Change in Mindset/Participation



Figure 4. Wargasaluyu Village Community Participates in village clean water management discussion

The analysis results in Table 4 show a significance value of $0.000 < 0.005$, indicating that increasing access to clean water has a perfect correlation with changes in the mindset and participation of the Wargasaluyu village community. Changes in mindset have formed due to alterations in systems and sub-systems. Wargasaluyu villagers have shown increased interest in participating in clean water maintenance activities. This enhanced community participation is characterized by a more proactive community role; whereas previously, issues regarding clean water were only reported to the person in charge, community members now actively convey aspirations, offer assistance, and participate in

clean water maintenance activities. Furthermore, clean water distribution points have become gathering places that strengthen social ties and solidarity within the communities. Residents now feel a shared responsibility to maintain water facilities, fostering a sense of collective responsibility (Nurhidayah et al., 2022).

c. Increased Spirit of Mutual Cooperation



Figure 5. Wargasaluyu Village Community Working Together to Maintain Clean Water in the Spring

The analysis results indicate a significance value of $0.002 < 0.005$, suggesting that the improvement of clean water access has a perfect correlation with the increasing spirit of cooperation among the Wargasaluyu village community. This is evidenced by the emergence of cooperative activities to monitor clean water conditions when problems arise, a task previously carried out solely by the designated Field Officer. Additionally, there are now routine collaborative clean water maintenance activities, including regular maintenance of dams near springs and distribution basins. When damage or distribution problem occurs in one hamlet, community representatives from other hamlets assist in addressing these issues.

d. Organizational life

The analysis shows that a significance value of $0.001 < 0.005$, indicating that improved access to clean water has a perfect correlation with the organizational life of the Wargasaluyu

village community. Previously, there was no community role in clean water management implementation with management limited to the village government and the person in charge of clean water in each hamlet. Following the improvement of clean water access and related education, the community has become more active, particularly in submitting aspirations through the village website for hearings related to the gradual establishment of PAMSIMAS (Community-Based Drinking Water and Sanitation Provision). The community is now prepared to participate in establishing a joint fund or cooperative to finance the construction and maintenance of the water system. They are also involved in organizing and decision-making related to the maintenance and management of clean water sources, enabling optimal clean water management implementation.

e. The need for and utilization of social infrastructure through Mutual Care to Realize Improved Welfare



Figure 6. Wargasaluyu Village Government is discussing the clean water plan for 10 years with PTM2D students

The analysis results show a significance value of $0.000 < 0.005$, indicating that increasing access to clean water has a perfect correlation with the need for and utilization of social infrastructure through mutual care, contributing to improved welfare levels. Initially, the community viewed water needs as an individual concern, with competition for clean water prioritizing personal and family needs. However, a sense of empathy

developed as improved water conditions benefited all community members. After receiving education about water maintenance, the community formed a commitment to increase self-awareness, particularly in maintaining available water facilities and infrastructure, recognizing that the quality of existing facilities and infrastructure affects the community's overall welfare.

2. Indirect Change

Table 5. Results of Correlation Analysis Using SPSS on Indirect Changes in Increasing Clean Water Access to Social Dynamics Factors of Wargasaluyu Village Community

		Correlations				
		village clean water improvement	Job Change	Change in Revenue	Changes in Community Welfare	Village Independence
village clean water improvement	Pearson Correlation	1	.430	.520**	.989**	.829**
improvement	Sig. (2-tailed)		.004	.002	.000	.000
	N	91	91	91	91	91

** . Correlation is significant at the 0.01 level (2-tailed).

a. Job Change

The correlation analysis in Table 5 shows a significance value of $0.004 < 0.005$, indicating a moderate correlation between improved access to clean water and job changes. This finding is corroborated by questionnaire results, where 43% of respondents reported experiencing a change in their employment status, transitioning from unemployment to working as employees of MSMEs (Micro, Small, and Medium Enterprises). Conversely, approximately 57% of the working community did not experience job changes.



Figure 7. MSME Production of Wargasaluyu Village Community

b. Change in Revenue

The analysis results yield a significance value of $0.002 < 0.005$, suggesting that improved access to clean water has a strong correlation with changes in income. This can be attributed to MSMEs' enhanced ability to meet market demands for their products, contributing to local economic growth within the community. Additionally, MSMEs have absorbed labor from the village community, thereby increasing the income of previously unemployed individuals.

c. Change in Community Welfare



Figure 8. Changes in community income so that they can promote better product photos

Improved access to clean water demonstrates a perfect correlation with changes in community welfare, with a significance value of $0.000 < 0.005$. This change in welfare is observable through various aspects, including improved

quality of life, enhanced infrastructure, increased income, and local economic growth (Hertiari Idajati & Prasetyaningsih, 2020). While community welfare cannot be measured comprehensively, improved access to clean water has contributed significantly to these aspects. The quality of life for community members has markedly improved due to access to clean water that meets established standards. has also improved, conforming to the Standard Guidelines and Manuals: Rural Clean Water by Kementerian PUPR.

d. Village Independence

Based on the analysis results in Table 5, the significance value obtained is $0.000 < 0.005$, indicating a perfect correlation between improving access to clean water and village independence. This correlation can be explained by the fact that one of the indicators for assessing village self-reliance is the presence of adequate basic infrastructure, as stipulated in Law of the Republic of Indonesia Number 1 of 2024 About Villages. Improved access to clean water, supported by adequate infrastructure, has a substantial impact on village independence. With enhanced infrastructure, Wargasaluyu village can improve its health, economy, education, and disaster preparedness, all of which contribute to increased self-reliance and long-term sustainability. Adequate infrastructure enables the village to manage its resources more effectively and reduce dependence on external assistance.

The Social Dynamics Process that Occurs in the Wargasaluyu Village Community as a Short-Term Outcome of the Implementation of Improved Clean Water Access

The social dynamics observed in the Wargasaluyu village community following the improvement of clean water access did not emerge spontaneously but underwent processes experienced by the community. This process

was initiated when the PTM2D (Perguruan Tinggi Mandiri Membangun Desa) student participants designed and implemented the plan to improve access to clean water, which has now been in operation for 8 months.

This social dynamic process is formed through intrasociety diffusion, which is a process of spreading ideas, beliefs, results, and innovations from individuals to other individuals, through direct interaction (Karolina & Randy, 2021). The social dynamics process that occurs in the Wargasaluyu Village community as a short-term outcome of the implementation of improved clean water access is as follows:

1. Identifying Village Problems as the First Stage of Shaping Change

In determining the program design, the initial step involved identifying potential and existing problems. Subsequently, an in-depth analysis was conducted to determine the program idea. In this case, the problems identified were related to the condition of clean water in Wargasaluyu village. Following this, an innovation plan was developed, tailored to local needs and conditions. The objective was to increase the likelihood of acceptance and adoption by the community.

2. Deployment through Observation and *Brainstorming* Ideas

The program innovations were then presented and brainstormed with the community using the Hierarchical Diffusion approach to the village government and neighborhood/community units. This approach facilitated community involvement and participation in the program initiated by PTM2D (Perguruan Tinggi Mandiri Membangun Desa) students. At this stage, the spirit of cooperation began to form, community participation levels began to increase, and the foundations for community welfare and village independence were initiated.

3. Implementation of Improved Access to Clean Water

Following the acceptance of the innovation, PTM2D (Perguruan Tinggi Mandiri Membangun Desa) students designed and implemented a clean water access improvement program. This program involved building a water dam in the raw water section, repairing and designing distribution basins at several points in each hamlet, constructing a slow sand filter, and repairing transmission pipes and distribution pipes. The implementation of this program lasted for 4 months, with assistance from the community and relevant stakeholders. During the implementation process, social changes were observed, notably an increased spirit of cooperation and a shift in mindset/participation, with the community recognizing that the management and maintenance of clean water facilities and infrastructure is a shared responsibility.

4. Post Construction of Clean Water Access in Wargasaluyu Village

The process of social change following the construction of clean water access in Wargasaluyu Village demonstrates a comprehensive and sustainable transformation. Community participation plays a key role in fostering a spirit of cooperation, changing mindsets to become more responsible, forming attitudes conducive to organizational living, and recognizing the need for and utilization of social infrastructure through mutual care, thereby improving welfare levels. Ultimately, these changes lead to long-term transformations such as changes in income, employment, community welfare, and increased village independence.

The impact of social dynamics on the community
The impact of the social dynamics that occurred in the Wargasaluyu Village community extends beyond changes in social aspects, influencing

other dimensions of village life. The aspects that have experienced change include education, health, economy, culture, and environment. The changes observed as a short-term outcomes of the implementation of improved clean water access in Wargasaluyu Village are as follows:

a. Education Aspect

Approximately 80% of the community reported that before improvement of clean water access, children, especially girls, often had to spend considerable time collecting water from distant sources. With easier access to clean water, these children now have more time to study and attend school. Moreover, schools and madrasahs have been able to provide clean water and proper sanitation, reducing the incidence of diseases such as diarrhea and skin infections. This has positively affected student attendance rates, with school attendance increasing in recent months as students experience fewer health-related absences.

b. Health Aspects

Access to clean water that meets feasibility and safety standards has had a positive impact on health aspects. One significant outcome is that Wargasaluyu village has been declared free of stunting in 2024.

c. Economic Aspects

Following the establishment of improved clean water access in Wargasaluyu village, the community has experienced changes in the economic sphere. Notably, 54% of MSMEs are now able to meet market supply needs. This has led to an increase in sales production of up to 10 times the previous levels. Additionally, this improved condition has contributed to the creation of employment opportunities for the Wargasaluyu village community, particularly benefiting individuals whose education level is limited to elementary or junior high school.

d. Environmental Aspects

Increased access to clean water has contributed to environmental conservation efforts. Through education, people have become more aware and concerned about environmental issues, as more accessible clean water reduces the need to use polluted water sources. Furthermore, community members who previously used river water for washing clothes, dishes, bathing, and other purposes are now gradually transitioning to using improved latrines and toilets that meet SNI (Indonesian National Standard) requirements.

Conclusions

After the improvement of access to clean water by PTM2D (Perguruan Tinggi Mandiri Membangun Desa) students, the social conditions of the Wargasaluyu village community experienced social change. The research has concluded that the quality, quantity, and continuity of clean water in Wargasaluyu village have changed significantly and are safe and suitable for consumption. Not only that, the social conditions of the community also changed significantly. Direct changes that occur significantly are changes in mindset and increased community participation, the spirit of cooperation, and the community becoming organized. It forms a commitment among the community that self-awareness needs to be increased, especially in maintaining available water facilities and infrastructure to improve community welfare. As for indirect changes, improving access to clean water contributes indirectly to changes in employment for the unemployed, increasing income for MSMEs, improving community welfare, and increasing village independence.

The process of social change began with identifying village problems, followed by observation and brainstorming of ideas. Significant changes were observed during the implementation and post-improvement phases of

clean water access. The impact extends beyond social aspects, affecting the educational, health, economic, cultural, and environmental dimensions of community life.

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