

Analysis of the Availability and Sustainable Management of Clean Water and Sanitation in Bogor Regency

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ABSTRACT

The provision of clean water includes several main components, including a raw water source unit, processing unit, production unit, transmission unit, and production unit. Humans use water for various daily needs. Water needs for individual needs vary for each place and each level of need. The higher the standard of living in a place, the greater the need for water. The goal that must be achieved in managing clean water in stages is to have access to household drinking water services reaching 100% by 2030. The next achievement is the achievement and realization of sanitation and clean water management for vulnerable community groups at 68.77%, as shown by this achievement in 2026. To achieve the number of sub-districts or villages implementing community-based total sanitation of 98%. Meanwhile, the achievement of the proportion of households served by a centralized clean water waste management system is 71.66% in 2026. The proportion of households served by a fecal sludge management system until this data is published has not been covered so the baseline set at 20% in 2021 will be achieved in 2023 The Bogor Regency Government's target in establishing this feces processing concept is very good.

Keywords: clean water; achievement targets; wastewater; fecal sludge.

INTRODUCTION

The clean water supply system includes several main components, including a raw water source unit, processing unit, production unit, transmission unit, and production unit. Water is very important in life because all living things in this world need water. Plants and animals are mostly composed of water. Plant cells contain more than 75% water and animal cells contain more than 67%. Less than 0.5% of water can be directly used for human benefit (Permenkes, 2017). Humans use water for various daily needs. Water needs for individual needs vary for each place and each level of need. The higher the standard of living in a place, the greater the need for water. The use of water is very extensive, so efforts must be made to ensure that it remains available and meets certain physical, biological, and chemical requirements. Water is one of the main elements on earth and an inseparable part of all humans. Living things cannot live if there is no water, so water is needed to maintain the survival of living things. Water in the human body functions to replenish fluids in the body by drinking water. Apart from quenching thirst and other main benefits of water for the body, water also has other benefits that are needed to support life (Permenkes, 2017; ISSDP, 2010; Komalia K and Indrawan I, 2021; Said NI, 2000).

A form of Clean and Healthy Living Behavior or PHBS is using clean water every day. Because water quality can affect health and daily life, the water we use every day, such as drinking, cooking, bathing and so on, must be clean so that we can avoid diseases caused by poor water quality. By using clean water we can avoid diseases such as diarrhea, cholera, dysentery, typhus, worms, skin diseases and even poisoning. For this reason, all family members must use clean water every day and maintain clean water quality in their environment (Pynkyawati T et al, 2020; Suhadi MZ, Namara I, 2016).

In maintaining clean water quality in the environment, several processes can be carried out.

1. Separate the distance between the water source, the toilet, and the rubbish dump at least 10 meters.
2. Spring water sources must be protected from pollutants

3. Dug wells, pump wells, public taps, and springs must be protected so that they are not damaged
4. The well floor should be watertight (plastered) and not cracked, the well rim and well walls must be plastered and the well covered;
5. The water storage bucket is equipped with a lid and a ladle with a handle and is kept clean.
6. Water must be kept clean with no puddles of water around the water source, and equipped with drainage channels, no dirt or moss on the floor/walls of the well (Permenkes, 2017; Cita Karya, 1987; William CH, 1973; Budiman C, 2007).

Planning the management of clean water and proper sanitation is generally interpreted as an effort to ensure the availability and sustainable management of clean water and sanitation. This research aims to obtain the availability of sustainable management of clean water and sanitation in the Bogor district, the targets to be achieved are:

1. Achieve universal and equitable access to safe and affordable drinking water for all,
2. Achieve access to adequate and equitable sanitation and hygiene for all, and end the practice of open defecation, paying special attention to the needs of women and vulnerable community groups (Morel A and Diener, 2006; Pohan N, 2008; PP, 2001; PP, 1990).

Furthermore, the policies implemented in Bogor district regarding clean water and sanitation management are:

1. Increase awareness and culture of clean living, caring for nature and the environment,
2. Building effective and efficient businesses in raw water management,
3. Improve water quality.

Related to this, ensuring the availability and sustainable management of clean water and sanitation for all, the essence of which is contained in several strategies as follows:

Increased conservation of water resources,

1. Improved control and utilization of surface and groundwater,
2. Encourage clean and healthy living,
3. Revitalization of water resources,
4. Increased cooperation in water resources management.

Regarding proper sanitation launched by the Bogor district government, steps are needed in land development which will be the basis for determining adequate sanitation and processing of waste contained therein. The appropriate processing pattern is to place a concept that can be created and carry out trials to determine the material that will be used as a model (Husadi SP, Namara I, 2016; , Kruijff DGJW, 1987; Departemen Pekerjaan Umum, 1996; Departemen Kesehatan 2004)).

In sanitation planning, the government requires seriousness to implement patterns that comply with the required standards. This standard is a reference to be able to mobilize all sectors as a key indicator of the success of implementing successful and well-functioning sanitation (Ariyanti R and Sugiri A, 2015 SNI, 2002; SNI 2002).

RESEARCH METHODS

Methods used in managing clean water and proper sanitation

The method used in this planning is to create an initial concept that there will be data collection activities, literature studies and FGDs carried out for each person responsible for the activity. The departments involved were the public works and spatial planning department, the environmental department, PDAM Bogor Regency, and experts who understood this concept were involved as shown in Figure 1 below.

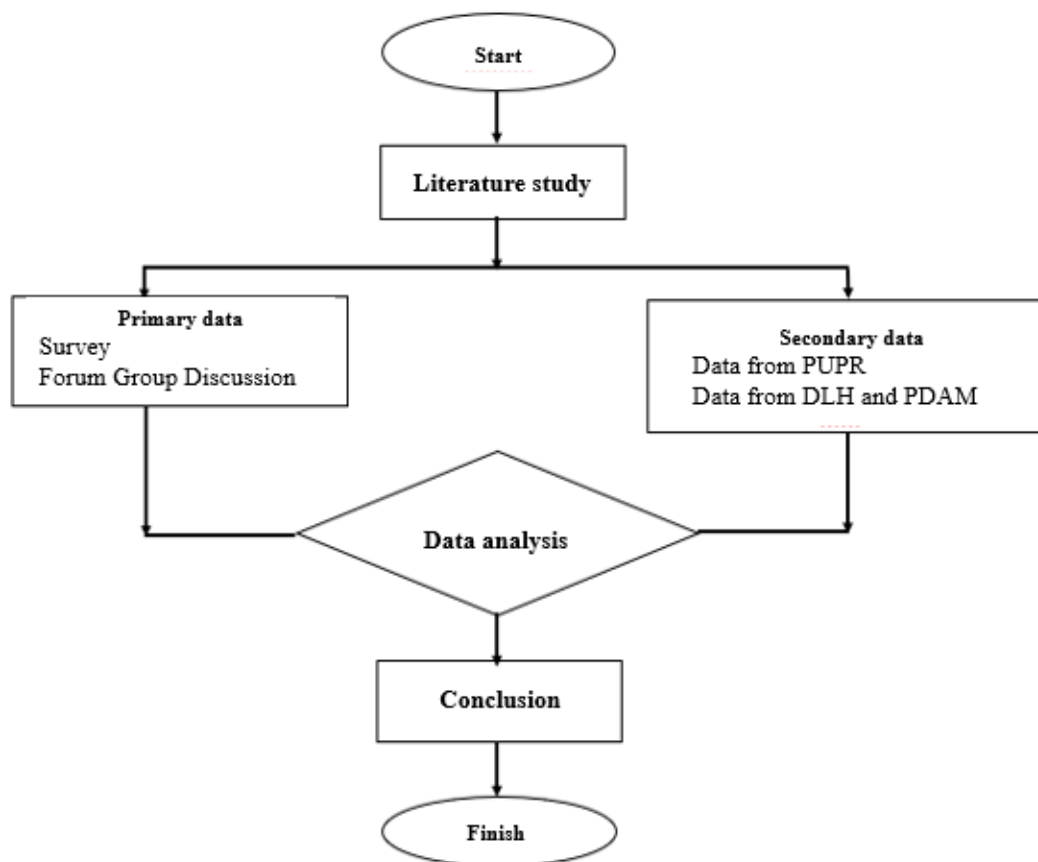


Figure 1. Research planning flow chart

RESULTS AND DISCUSSION

Results of Studies on Clean Water and Adequate Sanitation

To achieve sanitation and sustainable clean water management in Bogor district with the established program, namely:

1. SAMISADE (One Billion One Village) Program,
2. Empowerment and Family Welfare Improvement Program.

Bogor Regency has a very large population of more than 5 million people. From the results of the 2020 Population Census held by the Central Statistics Agency (BPS), Bogor Regency has a population of 5,427,068 people. This makes Bogor Regency the district with the largest population in West Java Province.

To achieve the target of making it affordable by 2030, it is stated that universal and equitable achievement of safe and affordable drinking water for all levels of society is shown in table 1 below.

Table 1. Program for achieving targets and realizing sanitation as well as managing clean water and proper sanitation

Indicator	Data source	Unit	Baseline Numbers (2021 Baseline)	Target					
				2022	2022	2023	2024	2025	2026
Percentage of households	Dinas Pekerjaan	Percentage	91.83	100	71.95	90.65	90.85	90.77	90.80

that have access to adequate drinking water source services.

Umum dan Penataan Ruang

Furthermore, to achieve the access target by 2030, access to adequate and equitable sanitation and hygiene for all, and ending the practice of defecating in the open, paying special attention to the needs of women and vulnerable community groups. This achievement is shown in table 2 below.

Table 2. Program for achieving sanitation targets and realization as well as managing clean water and adequate sanitation for vulnerable community groups

Indicator	Data source	Unit	Baseline Numbers (2021 Baseline)	Target		Achievement plan			
				2022	2022	2023	2024	2025	2026
Percentage of households that have access to adequate sanitation services.	Dinas Pekerjaan Umum dan Penataan Ruang	Percentage	69.52	80.31	69.81	70.03	70.11	68.56	68.77
Number of villages/subdistricts implementing Community Based Total Sanitation (STBM).	Dinas Pekerjaan Umum dan Penataan Ruang	Percentage	98	100	98	98	98	98	98
Proportion of households (RT) served by a centralized wastewater management system.	Dinas Pekerjaan Umum dan Penataan Ruang	Percentage	71.4	70.07	71.7	71.65	71.66	71.66	71.66
Proportion of households served by the fecal sludge management system.	Dinas Pekerjaan Umum dan Penataan Ruang	Percentage	20	100	20	NA	NA	NA	NA

Households with Access to Adequate Drinking Water Source Services

The percentage of households with access to adequate drinking water in Bogor Regency is 91.83%, this figure has exceeded the national average of 90.78%. However, this figure is still below the provincial average of 93.24%. This condition is shown in figure 2 below.

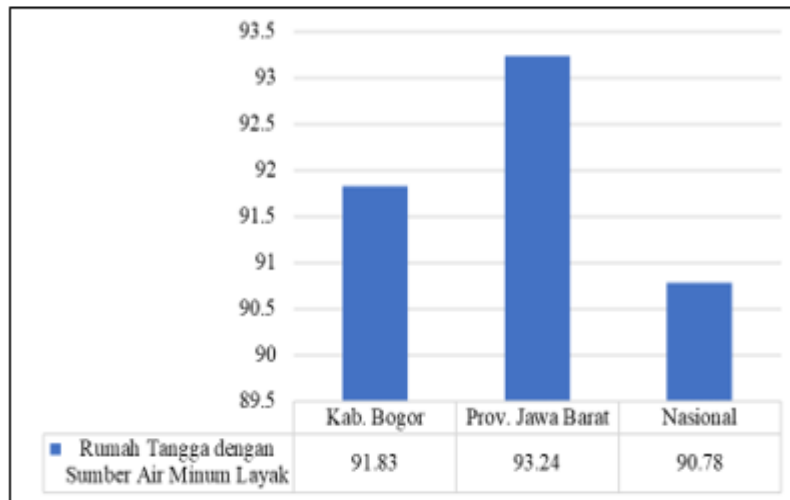


Figure 2. Percentage of Households with Adequate Drinking Water Sources in Bogor Regency, West Java Province and Nationally in 2021 Source: Central Statistics Agency, 2022

The percentage of households that have access to adequate drinking water source services in Bogor Regency during 2020-2022 tends to decrease. The development of this percentage in Bogor Regency is shown in Figure 3 as follows.

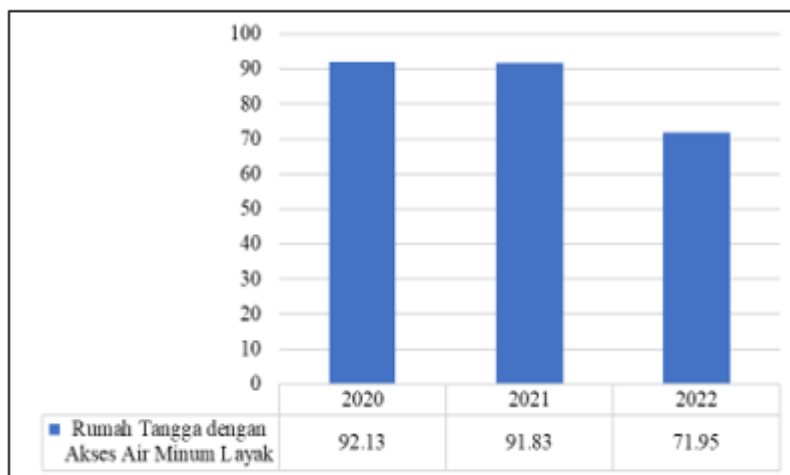


Figure 3. Percentage of Households with Access to Proper Drinking Water, Bogor Regency, 2020-2022 Source: Bogor Regency Public Works and Spatial Planning Service, data processed 2022

Based on Figure 3 above, the percentage of households with access to adequate drinking water continues to decline during 2020-2022 from 92.13% to 71.95%.

Households with Access to Adequate Sanitation Services

The percentage of households with proper sanitation services in Bogor Regency is 63.91%, this figure is quite far below the provincial and national average, where the average achievement for West Java is 71.66% and the national average is 80.29%. These conditions are shown in the graph below.

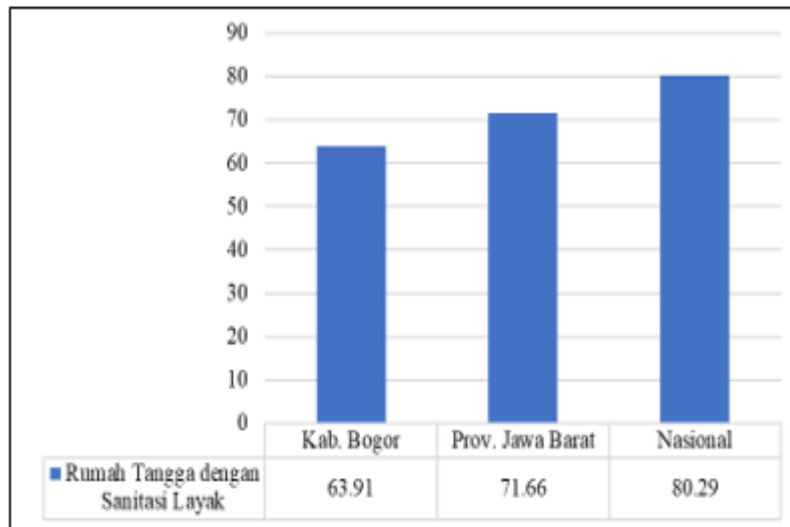


Figure 3. Percentage of Households with Adequate Sanitation in Bogor Regency, West Java Province and Nationally in 2021 Source: Central Statistics Agency, data processed 2022

The percentage of households that have access to adequate sanitation services in Bogor Regency during 2020-2022 tends to increase. The development of this percentage in Bogor Regency is shown in Figure 4 below.

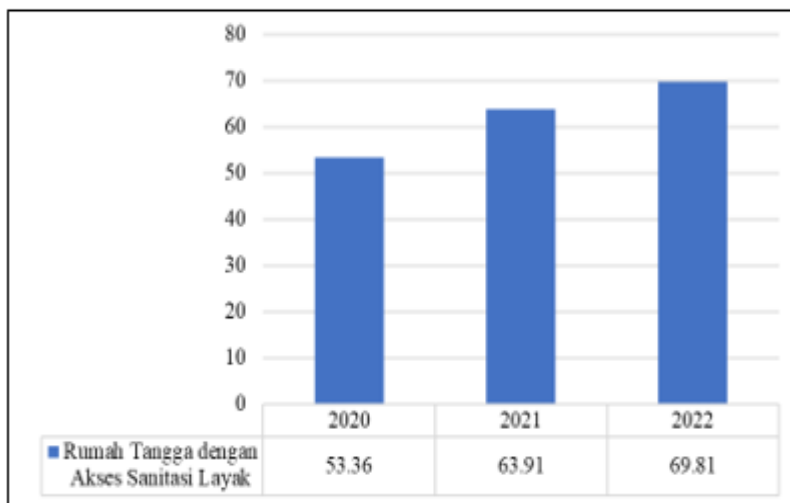


Figure 4. Percentage of Households with Access to Adequate Sanitation Services in Bogor Regency in 2020-2022 Source: Bogor Regency Public Works and Spatial Planning Service, data processed 2022

Based on Figure 4 above, the percentage of households with access to adequate sanitation continues to increase from 53.36% in 2020 to 69.81% in 2022.

Villages or sub-districts that implement STBM

The number of villages/sub-districts implementing Community Based Total Sanitation (STBM) in Bogor Regency is 98%. This figure is above the provincial and national average achievement, where the average achievement for West Java is 84.7% and the average national achievement is 77.3%. This condition is shown in Figure 5 below.

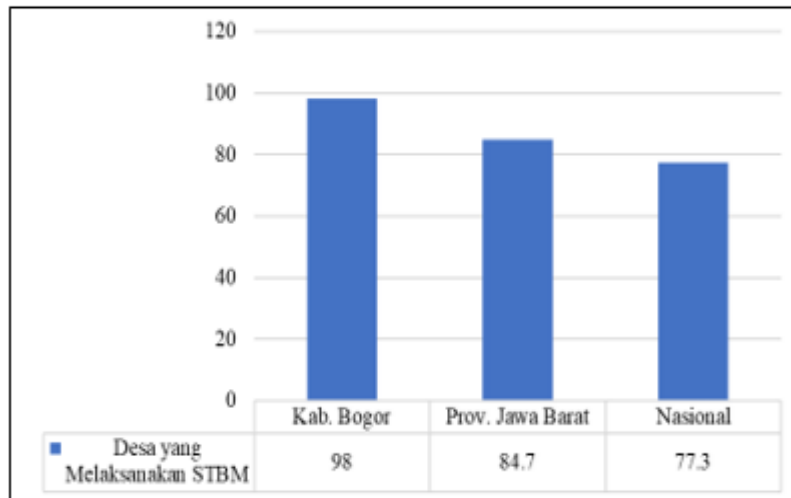


Figure 5. Proportion of Villages/Subdistricts Implementing STBM in Bogor Regency, West Java Province and Nationally in 2021 Source: Health Service, data processed 2022

The number of villages/sub-districts implementing Community Based Total Sanitation (STBM) in Bogor Regency during 2020-2022 tends to decrease. The development of this number in Bogor Regency is shown in Figure 6 below.

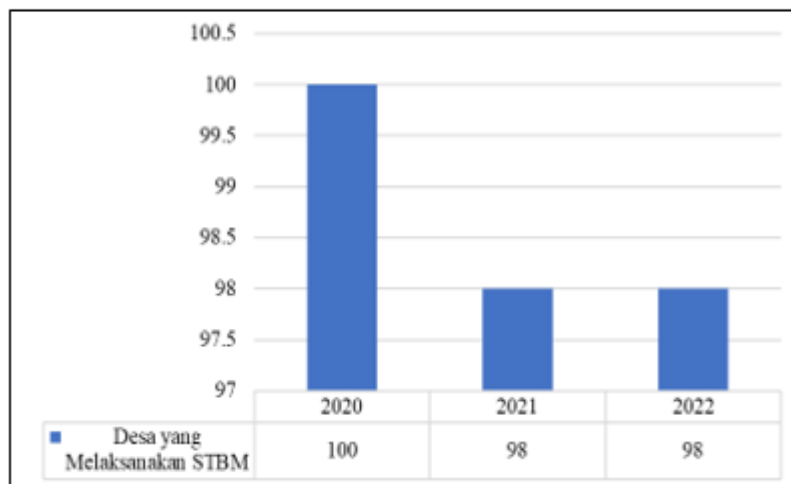


Figure 6. Percentage of Villages Implementing STBM Bogor Regency 2020-2022 Source: Bogor Regency Public Works and Spatial Planning Service, data processed 2022

Based on this graph, the percentage of villages/subdistricts implementing STBM has decreased from the original 100% to 98% in 2021 and 2022.

Households with a Centralized Waste Water Management System

The proportion of households (RT) served by a centralized wastewater management system in Bogor Regency during 2020-2022 tends to increase. The development of these numbers in Bogor Regency is shown in Figure 7 below.

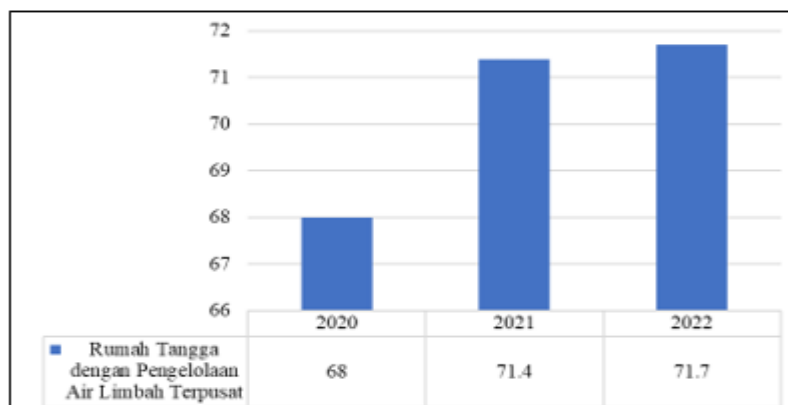


Figure 7. Proportion of Households with a Centralized Waste Water Management System in Bogor Regency, 2020-2022. Source: Bogor Regency Public Works and Spatial Planning Service, data processed in 2022

Based on Figure 7 above, the proportion of households with a centralized wastewater management system has continued to increase over the last three years from 68% to 71.7% in 2022.

Households with Access to Adequate Sanitation Services

The percentage of households with adequate sanitation services in Bogor Regency is projected to tend to fluctuate during 2023-2026. The development of this percentage in Bogor Regency is shown in Figure 8 below.

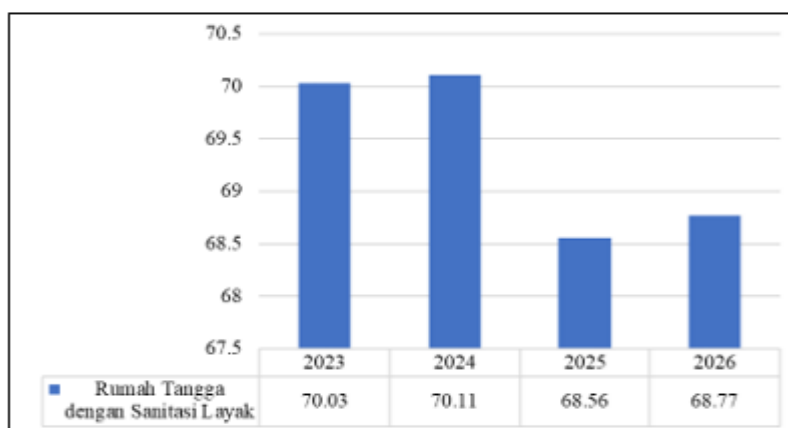


Figure 8. Projection of the Percentage of Households with Adequate Sanitation for Bogor Regency in 2023-2026 Source: Bogor Regency Public Works and Spatial Planning Service, Data processed 2022

Based on Figure 8 above, the percentage of households with adequate sanitation is projected to experience an increase in achievement from 70.03% to 70.11% in 2024. This figure will then decrease in 2025 to 68.56%, but there will be an increase again in 2026 with an achievement figure of 68.77%.

Villages or sub-districts that implement STBM

The number of villages/sub-districts implementing Community Based Total Sanitation (STBM) in Bogor Regency is projected to tend to remain constant during 2023-2026. The development of this number in Bogor Regency is shown in Figure 9 below.

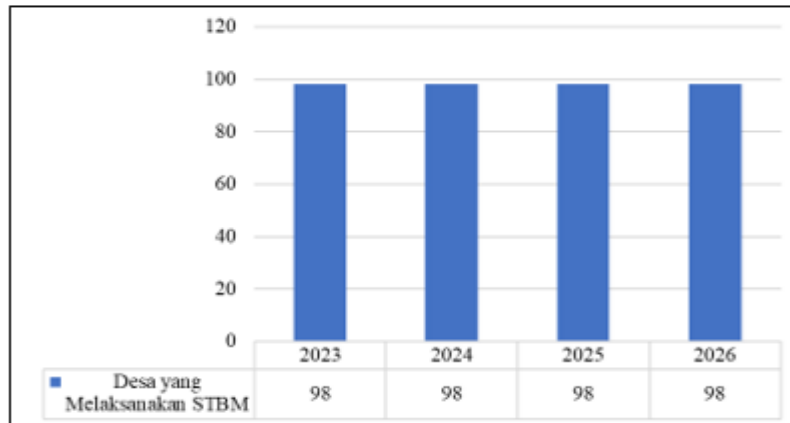


Figure 9. Projection of the Percentage of Villages Implementing STBM for Bogor Regency in 2023-2026 Source: Bogor Regency Public Works and Spatial Planning Service, Data processed 2022

Based on Figure 9 above, the number of villages/sub-districts implementing STBM in Bogor Regency is projected to have constant achievements during 2023-2026, namely with a percentage of 98%.

Households with a Centralized Waste Water Management System

The proportion of households (RT) served by a centralized wastewater management system in Bogor Regency is projected to tend to remain constant during 2023-2026. The development of this proportion in Bogor Regency is shown in figure 10 below.

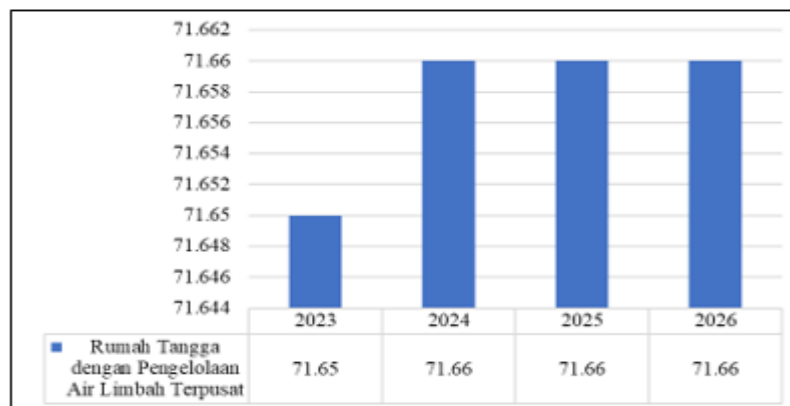


Figure 10. Projection of the Proportion of Households with a centralized Waste Water Management System for Bogor Regency in 2023-2026 Source: Bogor Regency Public Works and Spatial Planning Service, Data processed 2022

Based on Figure 10 above, the proportion of households (RT) served by a centralized wastewater management system in Bogor Regency is projected to reach 71.65% in 2023. This figure will increase by 0.01% in 2024 to 71.65% and this achievement is projected to remain constant. constant until 2026.

CONCLUSION

Achieving the goal of achieving the availability of clean water management in stages by having access to household drinking water services reaches 100% by 2030. The next achievement is the achievement and realization of sanitation and clean water management for vulnerable community groups of 68.77%, shown by this achievement in 2026. To achieve the number of sub-districts or villages implementing community-based total sanitation of 98%. Meanwhile, the achievement of the proportion of households served by a centralized clean water waste management system is 71.66% in 2026. The proportion of households served by a fecal sludge management system until this data

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