COMMUNITY SERVICE THROUGH DISSEMINATION OF RAW WATER FROM RAINWATER

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Abstract - *According to the residents of Papak Hamlet, there is a clean water drought every year. With this condition, it requires special attention. It becomes homework for the government to provide direction, and education to the local community to understand the importance of clean water for daily needs. This research uses qualitative research methods that are often used and conducted by a group of researchers in the social sciences, including education. The initial enthusiasm of residents in the socialization of making raw water from rainwater is expected to be sustainable. To achieve this, there needs to be support from the government and various related parties in providing adequate rainwater collection facilities and sustainable education programs. Raw water from processed rainwater is proven to be healthy and can be a long-term solution in overcoming water shortage problems, especially in drought-prone areas. This shows that this socialization has achieved its goal of raising public awareness of the importance of utilizing rainwater as a sustainable resource.*

Keywords: *Dedication, Community, Raw Water, Rain*

1. INTRODUCTION

Padukuhan Papak is a Padukuhan that is geographically located in the Kalirejo Village area, Kokap District, Kulon Progo Regency, Yogyakarta Province, Indonesia. The Kalirejo village government is headed by a village head assisted by village officials assisted by the hamlet head who oversees several RTs. In terms of location, the Padukuhan Papak area has different land elevation conditions, which affects the clean water sources of each hamlet (Multazam et al., 2019). According to Padukuhan residents, Papak explained that every year, there is a drought of clean water in Padukuhan. The condition of clean water is dry. This condition requires special attention and is homework for the government to provide guidance and education to local communities to understand the importance of understanding clean water for daily needs, both for sanitation so that they do not get diseases due to using unclean water such as skin diseases, and illnesses. stomach and other diseases that require quite expensive medical costs for the community (Pijoh et al., 2022).

Apart from consumption, water is also used for other things, such as bathing, washing, industry, agriculture, etc. Every use of water for these purposes must meet the water quality standards themselves, such as water for agriculture which can use water whose quality is not as good as water for drinking and bathing (Lomi et al., 2020). On the other hand, if you use poor-quality water for drinking and bathing, it will cause health problems such as diarrhea and skin diseases (Triono, 2018). The World Health Organization (WHO) informs that deaths caused by poor water quality (waterborne disease) reach 3,400,000 people every year (Prince Syahtri, Dina Dwi Nuryani, 2019). Still, according to WHO, of all deaths that are rooted in poor water quality and sanitation, diarrhea is the largest cause of death, namely 1,400,000 cases in one year. According to Hardoy & Satterhwaite (1992), poor quality drinking water services and inadequate wastewater and waste disposal systems hurt the environment and cause endemic disease, especially in poor households (Birawida et al., 2021).

In Indonesia itself, there are still many people who do not have adequate clean water. Based on data from the Department of Settlements and Regional Infrastructure (Astrid et al., 2021) only around 19% of Indonesia's population (39% of this group are urban residents) can enjoy clean water using a piped system. Meanwhile, in rural areas, only around 5% of the village population uses a piped system, 48% uses a non-piped system, and the remaining 47% of the village population uses water sourced from dug wells and unprotected water sources (Ikhsan et al., 2023).

Water is a component of the environment that is very important for life. Water is the main need in the process of life on Earth, so there is no life if there is no water on Earth. Clean water is water used for daily needs whose quality meets health requirements and can be drunk if it has been cooked (Djana, 2023). Based on the Republic of Indonesia Minister of Health Regulation No. 416/ MENKES/ PER/IX/1990.

In the Kyoto Declaration held in 2003 by the World Water Forum, it was stated that increasing access to clean water is important for sustainable development,

namely fulfilling three aspects of sustainability, environmental, economic, and social. Utilization of water resources to provide drinking water must be carried out by the principles of justice (social equity). Clean water is a human right to obtain it, this means that the state must provide guarantees to its people to obtain clean water (Triono, 2018). Access to clean water services that are equal and fair for all communities must be guaranteed by the government. Increasing the condition of drinking water can improve human development, reduce poverty and death, increase productivity, and encourage economic growth in a country (Putri, 2021).

Based on the results of observations and short interviews with the community in Padukuhan Papak, the researchers saw a fundamental problem related to the need and availability of clean water, namely that the community did not get an adequate source of clean water, this was because the community in Kalirejo Village got a source of clean water from drilled wells. However, this is considered less effective, especially for people who are less well off because the cost of making it is quite expensive, apart from that, the condition of the soil is not good, so sometimes it causes problems, such as the water produced contains quite high levels of rust so it is not good for consumption.

The problem of providing clean water is currently a particular concern for developed and developing countries. Indonesia, as a developing country, cannot be separated from the problem of providing clean water for its people. The limited availability of clean water in various regions, especially in rural areas and areas with low rainfall, is a big challenge for people in meeting their daily water needs (Rahmida, 2015). Climate change which causes erratic weather patterns is increasingly exacerbating this problem, so innovative and sustainable alternative solutions are needed (Fransiska et al., 2024). The use of rainwater as a source of raw water offers an efficient and cost-effective solution to overcome the problem of limited water (Annaifah, 2024). Education about how to collect, store, and purify rainwater can not only reduce the risk of disease caused by polluted water but also increase public awareness about the importance of protecting the environment (Hargono et al., 2022). Through education and the application of simple technology, communities can be empowered to utilize rainwater safely and sustainably, thereby improving their overall quality of life (Lasaiba, 2022).

2. METHOD

This research uses qualitative research methods which are often used and carried out by a group of researchers in the social sciences, including education. In addition, various reasons were put forward (Pijoh et al., 2022). Qualitative research is used to advance knowledge by encouraging understanding and discovery (Suwandi et al., 2024). Qualitative research methodology is a process of discovery and understanding based on methods for investigating social phenomena with socialization and human problems, especially through reviewing various published literature articles (Adlini et al., 2022).

This research was carried out by KKN in Padukuhan Papak which was carried out on July 30 2024 where the work program was carried out to provide

environmental awareness. The method used to determine the research sample was simple random sampling. Determining the sample using the simple random sampling method is illustrated by providing education to PKK mothers who have the same opportunity and are free to be selected as samples. This activity was carried out by KKN 114 group 62 of Sunan Kalijaga State Islamic University, Yogyakarta. This activity uses counseling methods and practice in the field. The aim is to analyze the potential for utilizing rainwater in Padukuhan Papak, planning an effective rainwater harvesting system, and providing quality raw water for extension needs in Padukuhan Papak.

Counseling about raw water from rainwater is a non-formal education aimed at increasing public awareness and understanding regarding the use of alternative water resources (Rismayadi, 2017). This program aims to provide practical and applicable information about how to collect, store, and utilize rainwater as raw water in everyday life. Through outreach, it is hoped that the community can better understand the ecological and economic benefits of using rainwater, reduce dependence on conventional water sources, and increase water security at the household level. These extension activities usually involve demonstrations, interactive discussions, and distribution of educational materials tailored to local needs, so that individuals can easily adopt these practices in their households (Sawaluddin et al., 2024).

3. RESULTS AND DISCUSSION

The results and discussion must contain the following things in order. Community service activities through outreach on the use of rainwater as a source of raw water have been carried out in Padukuhan Papak. The local government has a Drinking Water Company (PAM) to supply or provide clean water for the Padukuhan Papak community.

a. Education and Community Understanding

Indonesian people's understanding and interest in the material presented reached 78%. The outreach program succeeded in increasing public awareness about the importance of treating rainwater before use, with analysis results showing that the program was effective in increasing community satisfaction with the tools provided. Water has become the foundation of life or a basic need for all living things on Earth. Where water is not only important for human welfare but is important for the lives of all living creatures (Limbong, 2024).

In general, each person needs around 50 liters/day, to fulfill the four basic human needs, namely for drinking, personal hygiene, cooking, and sanitation. Meanwhile, European society consumes an average of 128 liters of water/per person/day. Daily water consumption for households in several European countries may far exceed this figure, reaching 245 liters/person/day. Daily water consumption for households in most non-European countries is much higher, reaching 335 liters in Canada and as much as 380 liters in the US.

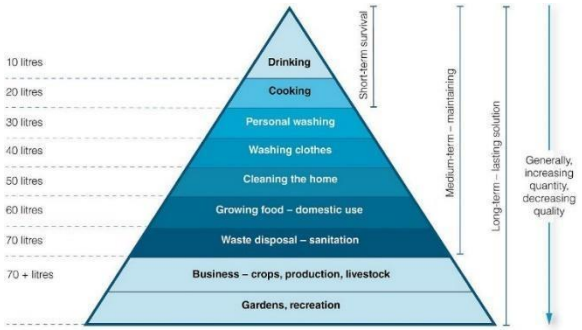

Figure 1. Hierarchy of Water Needs According to WHO

The problem is, that the need for water is always overshadowed by the ongoing threat of water scarcity throughout the world. According to the United Nations World Water Development Report in 2021, more than 2 billion people live in countries experiencing a shortage of drinking water (water stress). It is estimated that as many as four billion people currently live in areas that suffer from severe physical water stress (Physical water stress), due to the lack of available water, for at least one month each year. Around 1.6 billion people face economic water scarcity, namely a condition where water is physically available, but the infrastructure to access water is not available.

Providing clean water in Indonesia is also a problem, in terms of the low level of drinking water service, water quality and quantity as well as supply and distribution. Special Region of Yogyakarta. For example, based on search results, several areas in Kulon Progo Regency, Yogyakarta are experiencing a shortage of clean water due to the long dry season.

- The affected areas are 23 villages in 8 of the 12 sub-districts in Kulon Progo experiencing drought and a clean water crisis, especially in the sub-districts of Samigaluh, Kalibawang, Girimulyo, Kokap, Pengasih, and Temon.

- The government is still distributing clean water to the affected villages to date. The efforts of the Kulon Progo BPBD Government to prepare 900,000 liters of water to overcome the impact of the drought, using a budget of IDR 189 million from the 2023 APBD unexpected costs (BTT) item. The government issued an emergency response status for the drought disaster from 11 September - 11 October 2023. The Kulon Progo Regency Government assisted in dropping clean water to various affected villages, including Sidomulyo Village, Pengasih District in the context of the 68th Kulon Progo Anniversary.

b. Relevance to Local Conditions

This activity is held in areas with limited sources of clean water so that using rainwater is a practical and economical solution. The high enthusiasm of the community in socialization activities shows that they are aware of the importance of rainwater to meet water needs in their area. Community involvement in this process also contributes to program sustainability.

Figure 2. Socialization of Raw Water from Rainwater

The socialization of making raw water from rainwater was welcomed with great enthusiasm by the residents of Padukuhan Papak. They realize that by utilizing rainwater, they can save on PAM water use and contribute to preserving the environment. Apart from that, homemade raw water is also considered more hygienic and safe for consumption. And considering the importance of the availability of clean water for the community in Kalirejo Village, specifically Padukuhan Papak, KKN 62 Group conducted a preliminary survey to identify the severity of the water shortage problem, especially during the dry season. The results of this survey will be the basis for designing an effective outreach program, one of which is encouraging the use of rainwater by building public awareness so that rainwater is not thrown away but can be put to good use. We hope that this program can increase public awareness of the importance of managing water resources sustainably.

Treating rainwater before use not only aims to provide clean water, but also to improve public health, especially dental and oral health, which is often neglected. The water crisis that hit the Kokap area, Kulon Progo, has made the community very dependent on clean water supplies from PDAM. Long drought and climate change are the main factors causing this crisis. This condition forces people to save on water use and look for alternative water sources, even though they are limited.

Dependence on PAM water not only has an impact on health and sanitation aspects but also on socio-economic aspects of society. Regional governments and various related parties need to work together to find long-term solutions to overcome this water crisis problem, such as building sustainable water management infrastructure and community education programs regarding the importance of

Aspect	Rainwater	PAM water
Source	Sky (Evaporation and condensation)	Ground or surface water sources, treated in water treatment plants

Mineral Content	Low in minerals, especially during the first rain	Mineral content varies depending on the raw water source but is generally higher and controlled
Quality	Varies greatly depending on environmental conditions (Air pollution, dust)	More standardized and safe for consumption
Acidity (pH)	Generally slightly acidic (pH around 5-6)	Neutral or slightly alkaline (pH around 78)
Availability	Seasonal, depending on rainfall	Available all the time, unless distribution disruptions occur
Cost	Free	Paid, cost depends on usage

c. Water Management System

Organizing rainwater management in the community is an important step to ensure that the distribution and maintenance of the rainwater harvesting system runs well, so that the benefits can be felt in the long term. Overall, education on the use of rainwater as a source of raw water not only provides a practical solution to the problem of lack of clean water, but also increases public awareness and knowledge about the importance of sustainable water resource management.

d. Simple Rainwater Storage (Target or Tank Pond)

The simplest rainwater harvesting system is a system that has been commonly used since ancient times. Rainwater containers can be in the form of ponds, barrels, or other similar containers intended as rainwater reservoirs. In principle, this model does not have a filtering system or a system for absorbing water into the soil. People generally use rainwater from storage containers for washing or watering plants in their yards. However, in several areas with low rainfall, people have used rainwater as a source of drinking water. Apart from the various rainwater harvesting models that have been presented, it is worth reminding yourself of the key role of plants. The ability of plants to absorb and release water back into the environment through the transpiration process has made plants the main "actors" in the rainwater harvesting stage.

It is hoped that the initial enthusiasm of residents in socializing the production of raw water from rainwater will be sustainable. To achieve this, there needs to be support from the government and various related parties in providing adequate rainwater storage facilities as well as sustainable education programs.

4. CONCLUSION

Based on the results of the outreach, the community is very enthusiastic about making raw water from rainwater. As many as 30 participants from PKK women stated that through this socialization, the community became increasingly aware of the importance of using rainwater as a sustainable alternative resource. Raw water from processed rainwater has been proven to be healthy and can be a long-term solution to overcome the problem of water shortages, especially in areas prone to drought. This shows that this outreach has achieved its goal of increasing public awareness of the importance of using rainwater as a sustainable resource. Apart from that, processed raw water is also considered fresher and beneficial for health.

The government should pay more attention to the community's clean water supply, especially for mountainous and remote areas that are experiencing a clean water crisis, and think about ways to answer and overcome the clean water problems that many communities in mountainous and remote areas still experience.

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