# COMMUNITY KNOWLEDGE AND PERCEPTION FOR WATER QUALITY AND ENVIRONMENTAL SANITATION AT EAST LOMBOK REGENCY, WEST NUSA TENGGARA PROVINCE

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## ABSTRACT

Peoples still widely consumed drinking water from not guaranteed sources. This generally occurs in rural areas that not reached by adequate sanitation infrastructure, but also can occur in urban areas too, especially in densely populated areas and slums. To meet their daily needs of water for drinking and other domestic purposes, people use groundwater obtained from dug wells. Their assumption was the quality of groundwater from wells was much better than utilizing surface water.

The research objectives: evaluate the groundwater quality related to the possibility polluted by domestic waste; and find out the community knowledge and perception.

The research method was survey. Primary data obtained from field measurement and laboratory test. Sampling technique by purposive, done for two variables, groundwater sample and community as respondents and informants. Secondary data obtained from the relevant government agencies and research reports. Analysis data used were descriptive qualitative-quantitative, as well as the correlation test of significance.

The results showed majority of groundwater samples quality still in good condition, only the bacterial content exceeded the allowable quality standards. People's knowledge and perception toward environmental sanitation and water quality showed high enough of knowledge level and good perception. They belief that a clean environment can make their lives better, but the fact, in the level of practical action, quite members of community does not carry out activities that included in the category of clean and healthy living behavior.

KEYWORDS: community, knowledge, perception, water quality, environmental sanitation

## INTRODUCTION

### Background

Water is one of the basic needs of society that very important as for the fulfillment of drinking water needs, bathing, washing and so forth. Therefore, the state and its balance must be maintained through various efforts to conserve water resources. Given the present condition, it can be said that it is difficult to gain access to clean and healthy water, both in quantity and quality. This is due to the amount and availability of the relative remains (or even decreases), but the water requirement can certainly increase with time.

The fulfillment of water needs has become more complex because it is not only to meet the domestic needs, but with the increase of the population demands the availability of water in considerable quantities as well. With the increasing activity of the population and the complexity of the needs that require water, causing the availability of water becomes increasingly diminished in quantity.

March 22th each year celebrated as World Water Day. Unfortunately, in Indonesia, sanitation and clean water still a big problem. Imagine, 63 million Indonesians are still carrying out the practice of defecation at random. The population of Indonesia close to 250 million people, of which 100 million have not had access to good sanitation. Even the update of global data in 2010 revealed that 63 million Indonesians still defecate (BAB) carelessly in rivers, times, lakes, seas or on bare land.

The majority of practitioners of indiscriminate abuses live in villages. Only 38.4% of rural population has access to proper sanitation. According to WSP data (World Bank's Water and Sanitation Program), rural sanitation access has not increased significantly over the last 30 years. Keep in mind that 1 gram of stool contains 10 million viruses and 1 million bacteria. You can imagine what happens to water bodies and rivers when 63 million people in Indonesia are defective every day.

Currently in East Lombok Regency, the system of facilities and infrastructure of waste water management has not been optimal. This is due to the absence of technical handling patterns from the government in implementing waste water management. This is also due to the behavior of people who still tend to choose manual or local patterns (on site system) in the household wastewater treatment business, given that the potential of land that is still very wide, both in urban and in the central region of the economy.

Community behavior towards environmental sanitation is still low, with many incidents of infectious diseases including water borne disease when entering the rainy season. The trend began to fade the value of mutual help in society, which is seen from the rarely gotong royong to clean up the environment carried out by the community, especially in housing complexes and pockets of existing settlements. There is no in-depth analysis or study to understand the dominant factors in public behavior towards environmental sanitation that directly impact on groundwater quality in research areas, especially anthropological and cultural studies.

The engagement of citizens in solving complex and persistent environmental issues such as water quality is value driven and influenced by beliefs about and perceptions of water resource issues. A number of scholars and practitioners suggest that environmental problems can be effectively addressed when scientific knowledge is linked to local knowledge and public deliberation. Differences in experience with and knowledge about water also lead to further divergence in positions. A first step in creating effective place-based deliberations is to understand people's general knowledge, awareness, and beliefs about water, discovering agreement as well as differing viewpoints. This information can provide a foundation for negotiating differences and building common ground that can motivate cooperative environmental planning to improve water quality and changes in community behavior.

At the research site which includes four districts with high population density, most of the population uses water from dug wells to meet daily water needs. The condition of dug wells belonging to the inhabitants is still relatively simple, and there are some that have not met the standard of wells.

The degree of public health is influenced by four main factors, namely: environment, behavior, health services and hereditary. Efforts to maintain and improve public health status should be addressed to these four main factors simultaneously. Behavior is the second largest factor after environmental factors affecting the health of individuals, groups or Communities (Blum, 1974, in Notoatmodjo, 2007).

The formation of a behavior on the individual is influenced by the attitude possessed by the individual. Attitude is shaped by cognitive, affective and conative components. A person's attitude toward an object is a feeling of support or favor or a sense of not supporting or impartial on the object. Attitudes influence behavior through a careful and reasoned decision making process so that attitudes underlie the forms of behavior consistently shown by a person. Individual attitudes play a role in determining how one's behavior in the environment.

Knowledge is an impression in the human mind as a result of its senses and different from beliefs, superstition, and misinformation (Soekanto, 2004). Perception is a process of organizing and interpreting the censorship impression in an attempt to give a certain meaning to the environment. The

perception of a person can be different from each other, although faced with the same situation and condition. Perception is an individual process of selecting, organizing and interpreting the stimulus into a meaningful and coherent picture with the world around it. Perception is influenced by the knowledge that has been owned so it has a certain meaning.

To increase public awareness of the importance of maintaining the sustainability of water resources and quality, as well as environmental sanitation issues in improving public health, it is necessary to know the level of community knowledge and perception. This is what will be expected to be the basis in the preparation of public education programs, which underlie the holding of this research.

## METHODOLOGY

This research takes place in East Lombok District, West Nusa Tenggara Province. Selection of research location done by purposive sampling to determine 4 Sub-districts in East Lombok District. They are Selong, Sukamulia, Masbagik and Labuhan Haji Sub-district as research location. The reason for this election due to the phenomenon of densely populated settlement development due to the large number of immigrants to Selong Town, the capital of East Lombok District for various purposes because economic activity, government, education, health and other activities are centered in this place. Not only in Selong Town, some of the surrounding areas, which have direct access to the district capitals also have an influence.

Interview of respondents was done by setting the number of 100 respondents in each village from 4 sub-districts that become the sample. Determination of number of HHs that become respondents is done proportionally. The respondent are the people who utilize the water from dug wells and pump wells and springs in the fulfillment of daily water needs. Sampling method in this research using quota sampling, which mean sampling by determining the number of first (Usman and Akbar, 2004).

This research intended to be an explanative study. Discussion of the results of research conducted by quantitative descriptive analysis of the pattern of community knowledge and perception on environmental sanitation that may affect the quality of groundwater and the dominant factors that cause it to happen.

Data collection done with some data retrieval technique for both primary and secondary dat. They area: interview, observation, documentation and sampling. This study uses nonparticipation observation, using questionnaires (structured questionnaires) and open interviews and secondary data analysis to obtain social data, which is expected to provide an overview of the social conditions of communities related to community knowledge and perception on water quality and environmental sanitation.

## RESULT AND DISCUSSION

- **Water Quality**

Tabel 1. Water Quality in Research Area

| Parameters | Value | | | |
|---|---|---|---|---|
| | Masbagik | Sukamulia | Selong | Labuhan Haji |
| Temperature | 28.4-28.6 | 27.3-28.7 | 27.3-28.1 | 27.3-27.4 |
| Electric conductivity | 0.27-0.35 | 296-959 | 232-399 | 257-326 |
| Turbidity | 262-550 | 0.24-1.08 | 0.35-0.81 | 0.24-2.51 |
| pH | 7.23-7.57 | 6.51-7.38 | 6.53-7.50 | 7.16-7.39 |
| BOD | 15.3-19.9 | 18-23 | < 2 | < 2-2.16 |
| COD | 29.1-42.6 | 30.2-37.8 | < 4 | < 4-7.76 |
| Phosphate | 0.46-0.98 | 0.73-4.31 | 0.3-1.42 | 1.18-1.71 |
| Nitrate | 5.12-11.9 | 0.08-9.68 | 0.18-3.80 | 1.38-3.14 |
| Ammonia | < 0.02-0.11 | < 0.02-0.45 | < 0.02-0.08 | < 0.02-0.06 |
| Nitrite | < 0.008-0.108 | < 0.008-0.011 | < 0.008 | < 0.008-0.699 |
| Coliform | 170-16000 | 490- > 24000 | 230- >24000 | 230-16000 |

In general it can be said that the quality of water coming from water sources commonly used by people in the research area (dug wells dug and springs) have a good quality. Only on bacteriological parameters whose value is well above the permissible threshold. The result shows that contamination of the water sources exceed the permitted standards based on Permenkes RI No. 416/Menkes/Per/X/1990 about Water Quality Requirements and Control. The possibility of polluted from chemical parameters is very small. In addition, there are no large industries in the study sites. The existing and emerging industries are small-scale households industry. In case of water pollution, then the main cause must be domestic waste.

- **Environmental Sanitation**

Environmental sanitation is the health status of an environment that includes housing, sewerage, water supply and so on (Notoatmodjo, 2003 in Yani and Waluya, 2012). Sanitation is one component of environmental health, a deliberate behavior to civilize clean living to prevent people directly touched with dirt and other hazardous waste materials, in the hope of maintaining and improving human health. Environmental sanitation can also be defined as activities aimed at improving and maintaining the basic environmental conditions that affect human wellbeing. In Masbagik Sub-district, the condition of the trash contained is medium. There are several forms of trash used. For Masbagik Sub-district, the most widely used garbage is a hole in the ground, which was deliberately made as a trash can. For Selong and Sukamulia Sub-districts, the community mostly uses garbage bins (tubs, buckets, baskets, drums), just that there is no separation of previous types of

waste. For Labuhan Haji Sub-district, the dominant community utilizes plastic bags as garbage bins. The reason is easy to get and easy to get rid of trash.

The basis for the assessment of the housing sanitation condition is the concept of a healthy house formulated by the Health and Social Services Office, such as the following: healthy latrines, clean water facilities, landfills, sewerage facilities, home ventilation, occupancy density in accordance with the floor area, The floor of the house is not of the soil, and free of mosquito larvae, insects and rodents or rodents such as mice. For housing sanitation conditions, divided into 5 points, namely: (1) general housing sanitation; (2) availability of sewerage channels; (3) availability of sanitation facilities; (4) access to clean water; And (5) clean water sources.

Table 2. Assessment of Sanitary Housing Conditions environment Condition in Study Area

| Sub-district | Value<br>Housing Sanitation Conditions |
|---|---|
| **Masbagik** | 43,8 (good enough) |
| **Sukamulia** | 52,7 (good enough) |
| **Selong** | 53,7 (good) |
| **Labuhan Haji** | 53,5 good) |

There are the same characteristics of four locations: the dominant floor of the house is the cement floor, followed by the tile floor. For the ground floor is very rare although the location is still included in rural areas. Cleanliness of the floor is dominated by medium category (Masbagik, Sukamulia and Labuhan Haji) and clean (Selong Sub-district). Likewise with the presence of air vents and air ventilation conditions. For Selong Sub-district, the condition is good, while for the other three districts, including in medium condition. For the condition of windows as the entrance of the sun, including good category for Masbagik, Sukamulia and Selong Subdistricts. Only in Labuhan Haji sub-district are medium category. This is caused by the distance of the house that is too close together, so that the shadow of the nearby buildings more often mask the entrance to the sunlight.

The condition of housing sanitation in East Lombok regency can be said to be good category for Selong Subdistrict and Labuhan Haji Sub-district, with total value not too far away. For Sukamulia and Masbagik Sub-districts both are considered good enough, although the total score obtained by Sukamulia Sub-district is higher than that of Masbagik Sub-district. Here it can be seen that there is a pattern of sanitary health conditions housing becomes increasingly unfavorable if the location or location of the settlement away from downtown Selong. This is understandable because the facilities and facilities that exist in a settlement becomes less.

Currently in East Lombok District, the system of facilities and infrastructure of waste water management has not been optimal. This is due to the absence of technical handling patterns from the government in

implementing waste water management. This is also due to the behavior of people who still tend to choose manual or local patterns (on site system) in the household wastewater treatment business, given that the potential of land that is still very wide, both in urban and in the central region of the economy. From the observation and data collection in the field, there is only one area that awareness of the community to build communal waste treatment system already exists, that is in Masbagik Sub-district, precisely in North Masbagik Village. There are 10 families who have joined the group that built the communal septic tank, with each family paying Rp. 200.000, -.

When this research data collection is done, there have been several other families who also signed up to become a new group of septic tank making together (communal). The construction of a communal waste treatment system was initiated by a group of youths in North Masbagik Village, and its manufacture was done with a mutual help system, so the sense of belonging is also firmly planted, which used as a basis to maintain the existence and sustainability of this system, with the hope that other community members are also interested in adopting this system.

From an economic point of view, the construction of this communal waste collection system is becoming more economical as the costs incurred by each family to build a septic tank become more affordable. In their maintenance they can share the task, so that the responsibility will be lighter. With the basis of tolerance, the community can help unable families (viewed from economical factor) to join this communal waste collection system.

- **Community Knowledge and Perception About Water Quality and Environmental Sanitation**

In relation to community knowledge in the research area obtained through questionnaires with 30 items of questions, it was found that the level of public knowledge about environmental sanitation and clean water was categorized well with the interval value 87 - 97. The values of the completed questionnaire items that show some problems that are still poorly understood by the community regarding environmental sanitation and clean water are about the habit of defecation in rivers or ponds, indiscriminate urination habit, healthy water quality assessment is viewed only physically, Especially for water clarity, doubts about the water quality of PDAMs with the water sources they use and doubts about clean and healthy kitchen concepts.

In general, it can be argued that knowledge of sanitation of clean and clean water in the four research sites shows that the results are not very different. All locations get good value, just in a different order. Selong Sub-district became the highest total holder, followed by Sukamulia, Labuhan Haji and the last was Masbagik Sub-district. This sequence caused by slightly different community characters for each location. Masbagik Sub-district

community known as a society that has a strong character and firm hold the principle that their believed so rather difficult to be influenced or directed.

In general it can be said that people's knowledge about sanitation and clean water is good, only for people in Selong Sub-district, although the knowledge is adequate, many things are not appropriate actions, and they do not try to cover it up. There are some items that provide a balanced value for those who feel agreed and hesitant because they feel less confident with their knowledge of the problem. This is only seen in the community in Selong Sub-district, for the item: whether or not the kitchen has its own bin which has a cover, the equipment used to process the food should be sterile, wash the hands by using water and soap, urination in the closet (if urinary is not available), and urination may be done under a tree or in a bush. The reason they answer like that is because in everyday life they still often do such practices or habits.

Community attitudes related to the problem of environmental sanitation and clean water in the research area can be said to be quite good. This can be seen in the scoring results of the question items obtained from the questionnaires distributed on community attitudes related to environmental sanitation and clean water. In the four research sites, the community gained good value for environmental sanitation attitudes. All the study sites obtained values that were at good value intervals, but the total score obtained had a fairly wide margin. Sukamulia Sub-district became the sub-district with the highest value, followed by Sub-district of Labuhan Haji, Selong, and Masbagik.

In the public attitudes related to environmental sanitation and clean water, most have a relatively good attitude. Only in some items indicates a lack of correct information on environmental sanitation and clean water issues. For example, items that illustrate healthy homes are homes that have kitchens with sinks and have a special place to wash clothes with their own sewage dumps, being an item that gives a lot of hesitant or unsure attitude. The other item is about whether crystal clear water is always a healthy one.

With the smoothness of the means of communication and mass media, especially electronic media, the public knowledge about environmental sanitation and clean water is also adequate. The only thing that still remains an obstacle is how sufficient level of knowledge and understanding is applied directly in everyday life through real action. This is still a homework for the government and health and environmentalists to try to change it.

The level of KK education and general overview of family education will affect the type of work and family income. Furthermore, this will affect consumption patterns and family spending patterns. With relatively low levels of education, community access to the types of work that can ensure the viability of income will also be limited. The limited ability of the economy will affect the consumption and spending patterns of families that will cause the main priority is to meet basic needs, especially food. So it can be said that for the problem of providing sanitation facilities and efforts to get clean and

healthy water, is not a priority in the daily life of the community at the study site. An overview of respondents' education level can be seen in Table 3.

Table 3. Level of Education of Respondents in Research Areas

| Respondent Characteristics | Sub-district | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Masbagik | % | Sukamulia | % | Selong | % | Labuhan Haji | % |
| Education Level: | | | | | | | | |
| - Primary School | 43 | 43 | 37 | 37 | 29 | 29 | 46 | 46 |
| - Junior High School | 21 | 21 | 12 | 12 | 10 | 10 | 13 | 13 |
| - Senior High School | 18 | 18 | 10 | 10 | 33 | 33 | 33 | 33 |
| - Diploma | | | 1 | 1 | 3 | 3 | 1 | 1 |
| - Bachelor | 1 | 1 | 4 | 4 | 15 | 15 | 2 | 2 |
| - Postgraduate | | | | | 2 | 2 | | |
| - Not Educated | 17 | 17 | 36 | 36 | 8 | 8 | 5 | 5 |
| | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

If seen from Table 2., it can be said that the number of respondents who have received formal education is much more than the respondents who never attended school or received formal education. And if reviewed further, in all study sites, the number of respondents who finish primary education (primary and junior high) is the dominant. A slightly worrisome number occurs only in Sukamulia Sub-district, where one-third of respondents are never familiar with formal education.

Table 4. Type of Work and Income Level of Respondents in Research Areas

| Respondent Characteristics | Sub-district | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Masbagik | % | Sukamulia | % | Selong | % | Labuhan Haji | % |
| Type of work: | | | | | | | | |
| - Farmers | 31 | 31 | 15 | 15 | 10 | 10 | 17 | 17 |
| - Carpenters and masons | 5 | 5 | 5 | 5 | 9 | 9 | 9 | 9 |
| -Janitor | | | | | 2 | 2 | | |
| -Entrepreneur | | | | | | | | |
| - Civil servants | 5 | 5 | 3 | 3 | 25 | 25 | 4 | 4 |
| - IRT | | | 4 | 4 | 9 | 9 | 7 | 7 |
| - Driver | 11 | 11 | 1 | 1 | 4 | 4 | 8 | 8 |
| - Merchants | | | 4 | 4 | 2 | 2 | 1 | 1 |
| - Labour | 32 | 32 | 11 | 11 | 16 | 16 | 5 | 5 |
| - Others | 20 | 20 | 37 | 37 | 4 | 4 | 28 | 28 |
| -Does not work | | | 10 | 10 | 12 | 12 | 8 | 8 |
| | 1 | 1 | 5 | 5 | 5 | 5 | 13 | 13 |
| | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Income Level: | | | | | | | | |
| - Low | 26 | 26 | 38 | 38 | 18 | 18 | 22 | 22 |
| - Middle | 44 | 44 | 40 | 40 | 32 | 32 | 66 | 66 |
| - High | 30 | 30 | 22 | 22 | 50 | 50 | 12 | 12 |
| | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

By looking at the dominant types of work in the study sites, most of the people in the study sites are at a moderate level, except for Selong Sub-district the percentage of the population, especially the respondents interviewed, including those in high income groups or above the UKK which in 2015 is at Rp. 1.550.000, -. This is because job opportunities are more diverse, so the addition of income can also occur from several sectors, especially from the service sector. Although the average income of the groups included in the high economic level, the actual fact is that their income is only slightly higher than that of East Lombok UKK.

Despite the fact that, with the rapid development of technology and information, for the issue of health education on sanitation and clean water to the community, it is felt that there will be no significant obstacles because all respondents and the general public in the research location understand and be able to communicate with Bahasa Indonesia well. There is no communication difficulties with the community, so later if the health promotion should be done to change their environmental sanitation behavior, then the problem of language and communication will not be an obstacle.

The importance of community education is based on a strong commitment to change the way of thinking and behavior, based on the principle that nothing is difficult if it is sincere and sincere. It is no longer a public secret that the deed toward the good of many trials. In the midst of community life, there are still cultural values that can be used as a basic capital for the progress of life itself. The value of mutual cooperation is never lost, although in some places may have started buried, for example in Pancor Sanggeng Village which is the location of research in Selong Sub-district. At this location which is a suburb area of the district capital of Selong Town, the soul and spirit of gotong-royong have begun to erode. The community already feels to be a more modern society, so when there are social activities such as counseling, village meetings and gotong royong events, they prefer to contribute in the form of money or goods rather than directly involved in the activity through their presence. The reason that you may be heard may seem stereotype, such as there is no free time or very busy.

For the other three research sites, Masbagik, Sukamulia and Labuhan Haji Sub-districts, the people when viewed at the income level, include middle and low, they prefer to contribute energy and thought in social activities or involving citizens. At these locations, any gathering, counseling or other activities involving the people, are in great demand by the citizens. Their reason is that these activities can be used as a gathering event, to gather and know the news and the circumstances of friends, family and friends who may be in everyday life rarely can meet because the daily activities of each person is different.

In order to achieve the expected results, in this case the change of community behavior related to the sanitation and clean water problem, the

utilization of the media in the form of the most easily understood by the community must meet some of the key criteria for successful implementation of the program as contained in Greene Theory (Priyoto, 2014), namely: (1) experience; (2) sensitive to needs; (3) flexible in a condition; (4) focus on goals; And (5) sense of humor.

According to Cheng's proposition (2003, in Hu, 2011) people's perceptions and evaluations of the environment are expressions of place-based self-identity. In this research we explored the water quality and environmental sanitation knowledge and perceptions among four locations. Of course drinking water as an important source of life is viewed as important by all people, but as water takes different forms, functions, and uses, its importance is also viewed differently.

According to Mubarak, et al., (2007) there are seven factors that affect one's knowledge, namely: education, occupation, age, interests, experience, culture and information. From interviews with respondents, the main factor determining the level of public knowledge and perception about water quality and environmental sanitation is information, whether information obtained through audio-visual media such as radio and television, or from print media (magazines, newspapers, posters, leaflets and so on). Respondents stated that they received information primarily from television, as extension activities on environmental sanitation were rare in their area. Additional information on environmental sanitation is usually obtained by unintentional means, for example during a visit to the Hospital or Community Health Centers (Puskesmas). While waiting for a turn or queue check to the doctor or for taking drugs, some respondents claimed to often look around and read posters stuck to the walls and leaflets that exist. Information is also usually obtained when doing silaturrahmi (hospitality) or gathering activities together. From conversations about everyday conditions, sometimes tucked information about other important things, such as environmental sanitation issues.

## Conclusion

The dominant factors that influence the level of public knowledge and perception about water quality and environmental sanitation in the study areas are: education, age, occupation, income and information. To increase public knowledge, information factor should get priority in public education related health promotion program. Mass media utilizing the local culture aspect is the right choice to provide information in improving community knowledge related to environmental sanitation.

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