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Participation of Watershead Communities for Environmental Rescue Efforts

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The purpose of this study was to describe the profile of watershed community participation. The type of research used is descriptive qualitative research with a case study design. Data collection was carried out through observation and in-depth interviews with the community in Banjararum Village, Singosari District, Malang Regency. The results of the study show that community behaviour does not reflect the awareness and involvement of efforts to save the watershed environment as evidenced by the following phenomena: (1) community knowledge about saving the environment is still limited; (2) there is still a lot of environmental damage around the watershed; and, (3) there are negative community behaviours that damage the environment around the watershed. Based on these findings, it is suggested that educative efforts be made to the community, especially around the watershed to form a comprehensive understanding of the importance of efforts to save the environment.

Keywords: *participation, environment, watershed-communities*

INTRODUCTION

The continuity of life and human well-being are strongly influenced by the environment. But environmental damage has occurred everywhere, on land, sea, mountains, rivers, villages and cities. As reported, more than 2,000 seaweed cages on Saseel Island and Sepanjang die due to oil exploration waste (Surya, 2015). The results of the Bapedal study also state that most of the large cities of the air have been polluted by substances produced by motorised vehicles (Abubakar, 2008). The impact of the damage is very detrimental to the interests and health of society such as global warming, the rise of natural disasters, air pollution and instability in climate change (Finn & Springer, 2017; Greszczuk, 2009). Therefore, the problem of environmental damage has become a big issue that requires serious handling. Various programs and efforts to minimise environmental damage have been carried out by the government, including (1) issuing Law No. 23 of 1997 concerning environmental management; (2) making national parks as biosphere reserves, for example biosphere reserves on Siberu, Gunung Leuser, Komodo Island, Mount Gede Pangrango, and Tanjung Puting in Kalimantan; (3) carrying out waste recycling movements; (4) reducing Lead (Pb) content in gasoline and so on. But these efforts have not produced maximum results, in fact environmental damage has increased and has a major impact on every dimension of human life.

The most important thing that causes the widespread destruction of the environment is due to the presence of important factors that have not been touched seriously, namely human factors and behaviours. Negative behaviour of the community has a very large contribution to the occurrence of environmental damage (Hinteregger, 2009; Rumbayan, 2018; Wicke, 2019). Among them are: (1) the behaviour of people living in mountainous areas who often carry out deforestation and illegal logging; (2) people living in coastal areas who have a habit of destroying mangrove forests, taking rocks, using tiger trawlers or explosives; (3) people living in urban areas that are exposed to high levels of motor vehicle fumes and industrial waste, as well as being involved in the excessive use of air conditioners and refrigerators; (4) communities in rural areas who also carry out environmental destruction actions such as piling up domestic waste and livestock manure in their yards, disposing of garbage in rivers and ditches, making the river a toilet facility; and (5) communities in the mining area that are prone to illegal mining so that they damage the environment (Brookfield, 1999; Crow, 1973; Fayette, 2002; Woodliffe, 2002). These various negative behaviours show how low the knowledge, awareness and participation of the community is in protecting the environment.

Environmental damage, especially river pollution occurs also in Banjararum Village, Singosari District, Malang Regency. Surrounding communities often carry out activities that cause environmental pollution such as bathing in rivers, disposing of garbage in rivers, and bathing livestock in rivers. All toilets activities are also carried out on the river (Manning, 2007; Ong, 2002; Parker, 1991; Platt & Lambshead, 1985). The condition lasted for years so that it has become a developing culture in the village. Meanwhile, efforts to continuously promote and educate the public about saving the environment are still very limited. Education and awareness raising efforts are not easy jobs because people's awareness and participation cannot grow instantaneously. Continued education efforts and active participation from all components of the community are needed. Based on the results of the Percik Institute's research, it was explained that involvement or community participation in

every decision making related to environmental management activities is important to be carried out to form a balance of social integration between social structure components. In sociology, social integration is commonly conceptualised as a process when various social groups in the community maintain a balance with each other to form social, economic and political relationships. This community participation can be used as a two-way communication process between the government and the community. The first priority that needs to be considered in an effort to maximise community participation is strengthening local knowledge about the environment, management and the danger of damage. Various resources and learning groups in the community have not been widely used, such as the Majlis ta'lim, PKK groups, dasawisma, and youth organisation. These institutions have great potential as a source and means of learning for the community. Facts on the ground show that the activities of the institution only revolve around joint prayer and social gathering. The existence of these groups has not been used maximally as a means to educate the public, especially about the environment. So that there are often various violations in terms of saving the environment (Basir, 2019; Khan, 2012; Markham & Fonjong, 2015).

METHOD

The research design used in this study is a case study. The location of the study was focused on villages in the watershed, namely Banjararum Village, Singosari District, Malang Regency. This village is included as a village that has a high level of river pollution. The parties used as sources of research data are residents and community leaders who live around the river. Data were collected by observation and in-depth interviews, and analysed qualitatively using interactive-inductive thinking process based on the opinions of Miles and Huberman (1984: 21-22), namely collecting data, data reduction, data display, and conclusion drawing / verification. The technique of checking the validity of the data is done by using source and method triangulation techniques.

RESULTS AND DISCUSSION

In accordance with the focus of the research, this research activity is directed at efforts to describe the following topics: (1) Profile of people's knowledge of efforts to save the environment; (2) Forms of environmental damage in watershed communities; (3) Participation of watershed communities towards efforts to save the environment. The following is an explanation of the results of research based on these topics.

A. Profile of Community Knowledge of Watershed on the Environment

Based on the results of the study of some literature, information is obtained that the environment is everything that exists around humans that affects the development of human life both directly and indirectly. The environment can be divided into two types, namely the biotic environment and the abiotic environment. In particular, the term environment is often used to mention everything that affects the survival of all living things on earth. Based on Law No. 23 of 1997 concerning the environment, what is meant by environment is the unity of space with all objects and the unity of living things including human beings and their behaviour which perpetuates the life and welfare of humans and other living beings. Environmental elements are divided into 2 groups, namely biological (biotic) and physical (abiotic) elements. Biological elements (biotics) which are environmental elements

consisting of living things such as humans, animals, plants, and microorganisms. Physical elements (abiotic) are environmental elements consisting of non-living things such as soil, air, water, flora and fauna, and others. From the statement, it can be concluded that the environment has several elements consisting of soil, water, air, forest (flora & fauna), and energy/ light.

According to Chen (2013) (Latif, Omar, Bidin, & Awang, 2012) knowledge of the environment is an ecological series that is owned by individuals in addressing the environment. Whereas Lee (2011) considers that knowledge about ecology is a basic knowledge that must be possessed by each individual in order to be able to show attitudes towards the environment, so that it can help efforts to protect the environment. Lee further stated that knowledge of the environment will have a further impact on individual behaviours toward the environment. Information about the environment is needed by the community because based on the results of data collection carried out by researchers, data obtained that community knowledge of the environment is still low. This can be seen from several statements of research informants recorded through open questionnaires and interviews. The low level of public knowledge is related to the nature and importance of the environment, the danger of environmental damage, and ways to save the environment. Most of the target village people do not know well about the nature of the environment. Such as the statement of the informant who said that he did not really know what the environment was, as the following expression *"kulo mboten semerep nopo niku lingkungan hidup, soale kulo mboten nate tumut penyuluhan sing ngoten-ngoten niku"* (I don't know, what is the environment, because I never attended counseling about it). W / S / 9/2017.

Another informant also said that he did not know which environment to protect and save. One of them can be seen from the statement of the informant who was used to throwing garbage in the river as follows; "*kulo pun biasa mbak ngeten*".. (I'm used to this) W/ D/ 9/2017. Most people are not aware of the dangers that will be caused by environmental damage. People are very comfortable with negative habits that are not realised that their behaviour can endanger the environment. In fact, the public is trivial about the problem of the danger of environmental damage, as stated by one of the residents who often throws trash in the river as follows: "It is worthy to say that the village is missing the yellow hole lepen". (It's okay mom, people here are used to throwing trash in river. Starting from west village also throw garbage in the river). W / N / 9/2017. When the researcher clarified and provided feedback about the dangers of throwing garbage in the river, the informant concerned still gave the answer *"mboten nopo-nopo"*.

The statement of the informant was strengthened by other informants, even strengthened by his children who happened to listen to the interview process. This indirectly shows that the habit of disposing of garbage in the river is a routine habit that has been ingrained and passed down through generations that is not aware of the negative impact. In addition to the lack of knowledge about the nature and danger of environmental damage, people also do not understand how to maintain and secure the living environment. The results of data collection through open questionnaires obtained information that most people had never received counseling about the environment. Thus, there is not much knowledge that is owned by the community related to efforts to save the environment. The lack of public knowledge about the environment affects the attitude of the community in developing

environmentally friendly behaviour. As stated by Julina (2013), attention and exceptions to the environment will affect a person's attitude. According to Sumarsono and Yayat (2012), attitudes toward the environment are a general tendency that is formed, or studied in the form of, a consistent response to the environment in the form of likes or dislikes (positive or negative). This attitude is based on three components, namely, (1) a component of knowledge or perception regarding environmental problems, (2) affective or emotional to the environment; and (3) components of tendency to act or behave towards the environment. Attitudes that are based on knowledge of the environment will foster a higher awareness of the environment. Furthermore, environmental care can have consequences for the emergence of other positive attitudes towards the environment. This is evidenced by Weigel in Joshi (2012) that environmental awareness is a concern for facts and behaviours of oneself that have certain consequences for the environment, such as the tendency to use products that are environmentally friendly and improve the quality of life.

B. Forms of Environmental Damage in Watershed Communities

Based on the results of observations in the study location villages, it was found 6 phenomena of environmental damage and pollution, firstly the phenomenon of garbage accumulation, including: (1) there are piles of garbage near villages such as in empty yards, under bridges, and near housing; and, (2) there are piles of garbage in the rivers, and there are no garbage cans in each village. This phenomenon of accumulation of garbage can be seen in almost every village in the study area. This pile of garbage is not small, but has accumulated into a large pilehigh and causes a very unpleasant odour. Moreover, the rubbish in the village compounded, and under the bridge, its existence is very disturbing to the residents because the smell spreads everywhere, as shown in the following picture (Figure 1; Figure 2).

The second phenomenon is the presence of puddles on the roadside, especially during the rainy season. This can be seen on roads with holes that areand not yet paved. In the mountainous areas these water streams occur because of leakage of clean water pipes. The presence of this puddle shows the poor absorption of soil in these roads. Third, there are pet cages and livestock that are located in one location with the home environment. Most of the livestock raised by residents are chickens, ducks, butterflies, goats, buffaloes and oxen. The cleanliness of the cage is not well maintained, giving rise to a dirty and dirty atmosphere and a disturbing smell., Fourth, there are arid and unkempt city parks, especially city parks located on the edge of the highway along the research location villages. Trash cans on the roadside are not used properly, and the amount is not adequate. Most of the location villages do not have garbage bins, meaning that waste management has not been done well. Fifth, there are no more plants that can produce oxygen and decomposing bacteria such as dadap, turi, and the like. This kind of plant has rarely been found in areas of highway grinding. The sSixth phenomenon is a pile of shoe industry waste in the form of pieces of skin in front of residents' houses. This pile of industrial waste has not been utiliszed or recycled so that it is left to pile up. The term environmental damage is often equated with environmental pollution. According to Supardi (1994) (Şener, 2012) environmental pollution is the occurrence of pollution which can cause a decrease in the quality of the environment and disruption of the health and calm of living things. Whereas, according to the lLiterature by Wijaya (1991), environmental pollution occurs when there are deviations from the environment caused by

pollution and adverse effects on the environment. In general, environmental pollution or pollution is the event of the entry of substances, elements, energy, and components that are harmful to the environment as a result of human or natural actions. Materials or substances that can pollute the environment are called pollutants.

A substance is said to be a pollutant if it meets the following criteria: (1) The amount exceeds the normal limit; (2) Being in an inappropriate place; and (3) Being placed at the wrong time. In connection with these criteria, there are two2 kinds of pollutant properties, namely damage for a while, if it has reacted with environmental substances that are no longer destructive and destructive for a long time. Based on the pollutant, environmental pollution is divided into three types as follows

(1) chemical pollution, namely pollution caused by pollutants in the form of chemicals both organic and inorganic, for example radioactive substances, heavy metals (Hg, Pb, As, Cd, Cr, and Ni), pepticides, oils and detergents;
(2) physical pollution, namely pollution caused by pollutants in the form of cans, bottles, plastic and rubber; and
(3) biological pollution, namely pollution due to pollutants in the form of various types of disease-causing microorganisms, for example, escherichia coli, entamoeba coli, and typhosa salmonelia. Pollutants released into the environment somewhere can spread throughout the world.

At the North and South Poles, far from human settlements, there are already pollutants. Media spreading pollutants can go through the atmosphere, water cycle, soil and ecosystem. Inhaling polluted air, drinking dirty water, and consuming foods containing pollutants can interfere with human health. Based on contaminated objects, pollution is divided into (1) soil pollution, (2) water pollution, (3) air pollution, and (4) forest damage. The impact of soil pollution on health depends on the type of pollutant, the entry into the body and the vulnerability of the affected population. Chromium, various kinds of pesticides and herbicides are carcinogenic ingredients for all populations. Lead is very dangerous in children, because it can cause brain damage, and kidney damage in the entire population. Kuri (mercury) and cycloodiene are known to cause kidney damage, some cannot even be treated.

PCBs and cyclodiene are related to liver poisoning. Organophosphates and karmabat can cause disorders of the nerve muscles. Various chlorine-containing solvents stimulate changes in the liver and kidneys as well as a decrease in the central nervous system. There are several types of health effects that appear such as headaches, dizziness, fatigue, eye irritation and skin rashes for exposure to the chemicals mentioned above. What is clear, in large doses, soil contamination can cause death. Soil pollution can also have an impact on the ecosystem. Radical changes in soil chemistry can arise from the presence of toxic / dangerous chemicals even at low doses. This change can cause changes in metabolism of endemic and anthropod microorganisms that live in the soil environment. As a result, it can even destroy several primary species from the food chain, which can have a major effect on predators or other levels of the food chain. Even if the chemical effects on the lowest forms of life are low, the bottom of the food pyramid can swallow foreign chemicals which over time will be concentrated in the creatures of the upper pyramid inhabitants. Many of these effects are seen at this

time, such as the concentration of DDT in birds causing fragility of eggshells, increased mortality of puppies and the possibility of loss of the species. The impact on agriculture is mainly changes in plant metabolism which in turn can cause a decline in agricultural products. This can cause further impacts on the conservation of plants where plants are unable to resist the soil from erosion. Some of these pollutants have a long half-life and in other cases derivative chemicals will be formed from the main soil pollutants. Air pollution has the following impacts; (1) Depletion of the Ozone layer, (2) Global Warming, (3) Respiratory diseases, for example: heart, lungs and throat, (4) Impaired reproductive function, (5) Stress and decreased levels of productivity, (6) Health and decreased mental abilities of children, (7) Decreasing the level of intelligence (IQ) of children, and (8) the occurrence of acid rain. Deforestation (damage to forests) has a significant impact on society and the natural environment in Indonesia. Logging activities that exclude forest conversion result in a decrease in environmental quality which ultimately increases the incidence of natural disasters, such as landslides and floods. Other adverse effects due to forest destruction are the threat of the preservation of animals and flora in Indonesia, especially endemic flora and fauna.

C. Behaviour of Watershed Communities Against Environmental Safeguards

Based on exploration and field observation, forms of environmental salvation behaviour have not been seen in the target villages. What is seen in the village are actually some forms of negative behaviours that damage the environment, including dumping garbage in the river. Almost every citizen near the river has a habit of throwing garbage in the river. Disposable waste is not selected first, so that all kinds of waste are disposed of in the river, such as household wet garbage, plastic, foam, dampers, iron and wood. Every day household waste such as laundry marks is thrown directly into the river, as shown in the following picture (Figure 3).

According to Puspita's research (2016) the habit of people throwing directly into rivers of domestic wastewater can affect COD parameters exceeding quality standards. Washed water and leftover cooking water are thought to cause ammonia to also exceed quality standards. As a result of this behaviour, the rivers become dirty and clogged up due to the garbage pile. Waste disposal is not only done in rivers, but also under bridges, and in empty yards with holes. As said by one of the following informants, "I want to make a hole in the ombo, sakniki me roto" (yes, it used to be a big hole, now it's almost flat). This behaviour is in line with Hardiana's research (2018: 495) which revealed the behaviour of the community in maintaining the cleanliness of the environment of the Sasak Subdistrict Beach in the Pasamane Subdistrict of West Pasaman Regency.

The results of this study explained that the behaviour of the community about the environmental cleanliness of Sasar Beach was still not good, because it was still found in the behaviour of people who dispose of garbage by collecting and burning on the beach, and who are accustomed to defecating on the beach. This was also confirmed by the Septiana (2014) (Feng & Reisner, 2011) study which explained that 46.9% of the community around the market in Mandau, Duri Timur Village, Mandau District, Bengkalis Regency had not paid attention to the cleanliness of the living environment by littering. The second behaviour is the habit of bathing, washing, and removing waste in the river and making the river a toilet. Citizens ranging from children to adults, both men and women every day

morning and evening. go to the river to take a shower, brush their teeth, wash, or poop. Even though there is a bathroom at home, some people prefer to bathe in the river. Water that is brown and dirty and full of dirt does not make people reluctant to take a bath in the river. Every morning and evening, the river will look crowded because there are many people who are bathing and washing clothes. This habit is very visible in villages that are in the watershed. Often rivers are also used to bathe livestock, such as buffalo, oxen, and goats. This phenomenon is seen along the river flow from the bottom to the top, as shown in the following picture (Figure 4).

The community also uses the river as a place to defecate, so the river functions as a toilet. Along the banks of the river small huts were built that were covered using used plastic banners. It was the hut that was used to defecate for some people. The river by some people is also used as a place to bathe livestock, as shown below (Figure 5; Figure 6).

Another negative behaviour that is usually done by citizens is the excessive use of clean water. This can be seen very much in motorbike washing businesses, where clean water is used to wash motorbikes and the remaining washing water is allowed to flow everywhere. Community members also have the habit and behaviour of watering the yard with clean water and the behaviour of throwing water randomly on public roads and yards so that it makes it muddy. The appeals from the local government were ignored and were not responded to well by community members. Until now, the habit of mining sand by residents is still being done. But based on the results of observations at the Malang Regency Environment Office, data was obtained that the government continued to strive to carry out counseling and awareness of the community surrounding the mining.

Based on the results of observations in the field and interviews with the government, researchers also have not found many activities carried out by the government and the community. The government in this case was carried out by the Office of Environment of Malang Regency, that has carried out extension activities around the village of sand mining. According to the agency's recognition, extension activities have not produced maximum results because the community is still carrying out random mining. The local government has provided caskets or trash cans on the side of the highway but not maximally utilised. The government has given commemorative writings such as "Don't Throw Trash Here"; "No Smoking:", "Do not Step on the Plant"; "Take care of cleanliness", and several other slogans. The aim is to increase public awareness of the environment. Based on the results of the exposure of the elements of the environment, the community needs to be given insight or knowledge about the elements or components of the environment, and how their respective characteristics, and ethics must be considered when dealing with environmental elements life. This knowledge is very beneficial for the community so that the community has the knowledge to take part in maintaining and preserving the existence of these environmental elements.

As Wang and Reisner's (2011) stated, to influence public behaviour environmental knowledge and information about the environment is needed. These challenging values have a role in influencing behaviour (Latif et al., 2012). Things related to the function and role of the environment for life also need to be informed to the public, so that public awareness of the need for friends with the environment

is getting bigger. In the community there are still many phenomena of environmental damage. In general, environmental damage will cause a decrease in environmental quality. Soil contamination can cause the death of other plants, and a loss of soil nutrients. Air pollution is the presence of one or more physical, chemical, or biological substances in the atmosphere in amounts that can endanger the health of humans, animals and plants, disrupting aesthetics and comfort, or damaging property. (Wikipedia, 2011). Air pollution can be caused by natural sources or human activities. There is still a lot of pollution that can be found in the community such as water damage and forest damage.

The many phenomena of environmental damage requires various efforts to increase public awareness of saving the environment. In general, rescue efforts can be carried out by the government, schools and business actors. Government efforts include: firstly, the implementation of the AMDAL (Environmental Impact Analysis) in accordance with government regulation No. 27 of 1999. The purpose of the preparation of the AMDAL document is (1) minimising the negative influence on the environment, (2) maximising the positive influence of human activities on the environment (3) detecting the early occurrence of environmental pollution, and 4) suppressing the emergence of pollution to as low as possible. The second effort that needs to be implemented is clean production, which is a preventive and integrated life management strategy which needs to be applied continuously in the production process and product life cycle; with the aim of reducing risks to humans and the environment.

The efforts made by the school are by implementing the Adiwiyata program which aims to create good conditions for the school to become a place of learning and awareness of the school community so that later on, the residents of the school can take responsibility in efforts to save the environment. Whereas the efforts made by business actors are (1) Environmental audits which are internal management tools that must be applied on the basis of voluntary awareness to overcome environmental challenges; (2) Fulfilling ISO 14000, namely a national environmental management standard, and 3) Ecolabel, which is a guide for consumers to choose products and services that cause minimum damage to the environment.

Efforts to save land can be done in several ways including remediation and bioremediation. Remediation is an activity to clean contaminated soil surface. There are two types of soil remediation, namely in-situ (or on-site) and ex-situ (or off-site). On-site cleaning is cleaning on site. This cleansing is cheaper and easier, consisting of cleansing, venting (injection), and bioremediation. Off-site cleaning involves extracting contaminated soil and then being taken to a safe area. After being in the safe area, the soil is cleaned of pollutants. The method is, the soil is stored in a tight tank, then the cleaning agent is pumped into the tank. Furthermore, pollutants are pumped out of the tub which is then processed with a wastewater treatment plant. This off-site cleaning is far more expensive and complicated. Bioremediation is the process of cleaning up soil contamination using microorganisms (fungi, bacteria).

Bioremediation aims to break down or degrade pollutants into less toxic or non-toxic materials (carbon dioxide and water). According to Dr. Anton Muhibuddin, one of the microorganisms that functions as

bioremediation is the arbuscular vesicular fungus (vam). Vam mushrooms can play a direct or indirect role in soil remediation. Direct role, because of its ability to absorb metal elements from the soil and act indirectly because it stimulates the growth of other bioremediation microorganisms such as certain bacteria, fungi and so on. Efforts to save the environment that can be done by the community include management of waste for animal feed, compost, and for biogas. Waste that can be used for this is organic waste. Whereas inorganic waste requires its own handling, it can be through the assistance of scavengers or by making efforts to use and recycle. The community can also make efforts to save water by holding biofori holes or infiltration holes on the edges of the road. Communities can also regulate the use of pesticides for agricultural purposes, planting plants that are useful for producing oxygen and helping to decompose, such as turi trees, dadap and beans.

For waste management, people need to get used to separating between wet and dry waste and between organic and inorganic waste. However, based on field exploration, the forms of participation have not been seen in the target villages. What is seen in the village is actually some form of negative community behaviour that damages the environment. This negative behaviour is strongly influenced by the limited knowledge of the community about the importance of the environment and how to preserve the environment. The higher people's knowledge about the environment, the higher their participation in environmental preservation on the contrary the lower the community's knowledge about the environment, the lower their participation in environmental conservation efforts. This is revealed in the results of a study conducted by Ariwidodo (2014) which states that knowledge about the environment and environmental ethics have significant relevance to community participation in environmental preservation.

CONCLUSION

Based on the exposure of the results of the study it can be concluded that the behaviour of the community has not reflected the existence of concern and involvement in efforts to save the environment of the watershed. This is evident from the following phenomena: Knowledge and understanding of the target village community about the environment is still low, most of them do not understand the components and importance of the environment for life. This is due to the lack of information that can be accessed by the community. There is some quite serious environmental damage occurring in the target villages, such as the presence of piles of garbage in the river and under the bridge, the presence of muddy roads with stagnant water; city parks are not maintained, household industrial waste is piled up in front of houses, livestock waste accumulates around the settlements, large amounts of vehicle fumes, leakage of water pipes, poorly managed market waste, and sand mining areas prone to landslides. There are still many negative behaviours of target communities that damage the environment. such as disposing of garbage in the river, the habit of bathing, washing, and disposing of waste in the river, using excessive clean water such as washing motorbikes, watering plants and allowing drainage leaks to cause inundation.

Fig 1. Stacking Of Garbage In The River

Fig 2. Waste Accumulation Around The Settlement

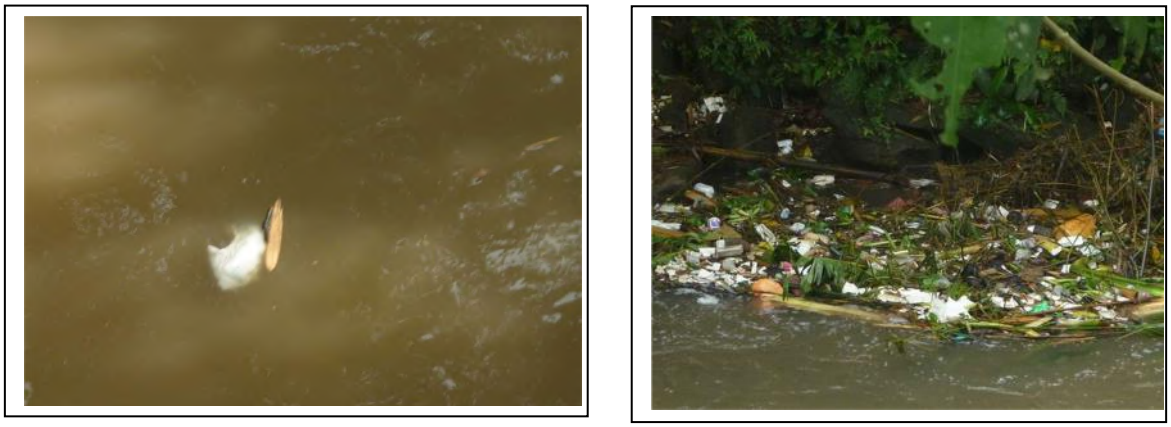

Fig 3. River Is Used To Dispose Of All Types Of Garbage

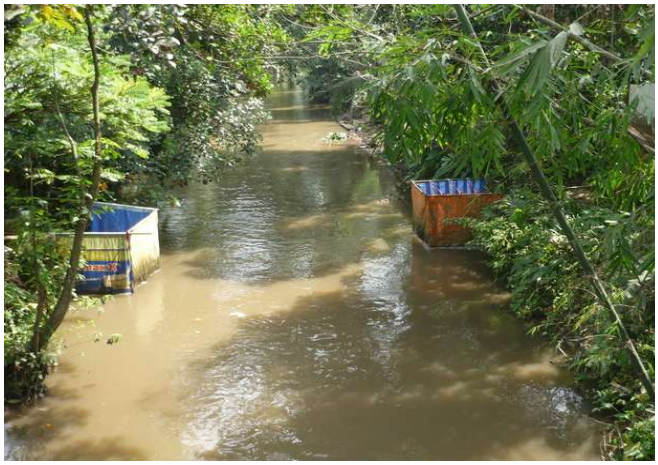

Fig 4. People Use The River To Bathe And Wash

Fig 5. There is a building that is used as a toilet

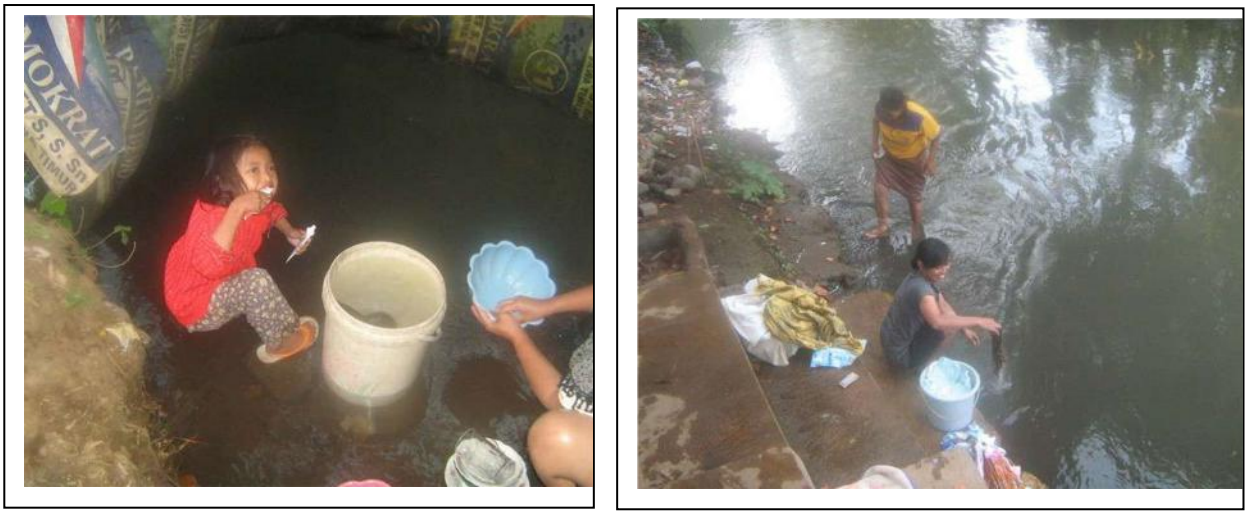

Fig 6. Rivers are used as a place to bathe animals

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