

Collaboration Area for Environmental Management Related to Waste Management Around Pusur River Klaten

Mukti Ali

IAIN Salatiga, Indonesia

muktiali@iainsalatiga.ac.id

Alita Amamil Hana

IAIN Salatiga, Indonesia

alitahana99@gmail.com

Reza Ahmadiansah

IAIN Salatiga, Indonesia

rezaahmadiansah@iainsalatiga.ac.id

Abstract

The objectives of this research were: to find out the role of Pusur Institute in processing waste as a form of environmental management, and the impact of waste management on ecological preservation in Pusur River Klaten. This research used descriptive qualitative. The results of the study indicated that the pusur river in Klaten can reduce waste by converting it into use value. Pusur Institute's waste processing activities included sort-ing waste according to its characteristics, recycling waste into crafts, re-cycling waste into fertilizer, and minimizing the use of items that produce waste. The impact of the waste processing at Pusur Institute Klaten was: (1) improving environmental quality, (2) improving health quality, (3) developing environmental knowledge.

Keywords: Pusur Institute, Waste Management, Environ-mental Management, Pusur River

Introduction

Broadly speaking, problems regarding the amount of waste growth can be caused by the imbalance between the production of waste produced and the handling process (Rizal, 2011). If this continues, it is often the environment that receives the impact of this problem. As a result, the environment becomes polluted and then ultimately has an impact on the health quality of living things around it (Tambe et al., 2016). In general, people recognize waste as something that is produced from

various objects that have been used and are no longer useful for themselves and can cause contamination of water, soil and can harm the environment. The impact of throwing garbage just into the environment can be felt in the future. Several disasters that can be caused by littering activities such as; floods, damage to land, water, not good for health and so on. Based on empirical observations, the waste problem does not only affect the short term, but also has an impact on the long term. This is because most of the waste is difficult to decompose and causes bacterial development. Meanwhile, according to Yulida., et al (2016), the measure of the quality of life of the community can be seen from the cleanliness of the environment in which they live. As a result, development is often blamed for environmental damage caused. The development paradigm is carried out with the aim of increasing the level of welfare fairly and evenly in all aspects of life. In simple terms, the environment according to Law No.32 of 2009 is everything that is around humans and affects life itself. It is probable that everything that occurs in the environment in the physical dimension occurs because of human exploitative attitudes and behavior. As in the research of Yulida., Et al. (2016) stated that attitudes can influence behavior. In fact, exploitation of resources can turn the environment into disrepair. The result of environmental exploitation without thinking about the situation, only makes the environment a victim. Various natural disasters are a sight that is often encountered and leaves behind torture and suffering. Seen from the cause, humans have a very big possibility. This begins with the actions of irresponsible human hands in utilizing the environment. According to Hand, et al (2018) "The ecological setting is nested within the human-social setting, which also includes multiple interacting such as social values, and the impact of local hometowns and development". Therefore, humans who are the most important actors must make efforts to restore environmental balance. Environmental preservation efforts are shared responsibility, both government and society. Therefore, humans can actively manage and influence the ecosystem according to the given behavior.

Viewed from the quality of society in developing countries, where the condition of the community is still classified as poor, this exploitative

attitude comes with reasons due to limited costs and also the size of the needs. According to (Abdillah, 2014) this behavior is called anthropocentric, which is placing humans and their interests above everything. According to Parsons, Voluntary behavior can also cause good or bad environment and the individual has an important role to either maintain the environment or damage the environment (Susilo, 2008). So that often the environmental crisis becomes a global theme showing a very severe level of damage. When this problem continues, the environment becomes the biggest threat to sustainability in the future. In addition, nature is seen as being able to re-generate naturally, so people do not understand the importance of protecting the environment. Therefore, it is necessary to have environmental management, as in the Stockholm Declaration (1972) in (Akib, 2015), that development does not need to be opposed to the environment. This means that development can still be carried out by emphasizing the smallest possible impact on the environment or it can also be said as sustainable development. One that is affected by the lack of environmental management is rivers. This is due to the limited capacity of the government in managing it and the attitude of the people who are far from being concerned about its conservation, for example floods in the capital city of Jakarta. Problems regarding flooding apart from being a lowland area of Jakarta are also caused by rubbish, overflowing rivers and low absorption, which are the scourge of problems that are difficult to solve, explained BMKG (Meteorology and Geophysics Agency) (Tobing, 2020; Arnani, 2020).

The practice of processing waste as a resource has become commonplace in the community. Now many developed countries and big cities are practicing waste processing by recycling waste into goods that have useful values, due to the lack of land to be used as TPA (Final Disposal Sites). The approach for developed countries compared to developing countries is quite different. In developed countries the waste processing process is more hygienic because it is assisted by high technology developments so there is little risk that will be caused. Whereas in developing countries, the approach has not been much assisted by technology, so there is a greater chance of the risk, Soma (2010).

However, Yulida (2016) quoted a different thing from Muchlashin (2019) that the waste problem does not only question government policies on waste and technology, but the most important thing is the behavior of disposing of waste and education from different sides. According to Issahaku., et al. (2014) the growth in the quantity of waste is proportional to population growth, this is related to people's lifestyles, development, and product consumption. Therefore, waste management is not only a government affair, but also requires community participation, including in river areas. The river is one of the springs that the community still uses to meet their needs. Pusur River is one example of a river which is still used by the community until now. the use of the Pusur River starts from waters for irrigation, fish farming, tourism and by part of the community it is used for consumption.

Pusur Institute is a collaborative institution that stands on the awareness of the parties and has the same concern, namely river conservation. Pusur Institute was not established by itself, but had the same desire and vision and mission. This stems from the environmental crisis that is felt to be disturbing the community. Then, the community was moved to carry out river management which eventually became a routine agenda. However, these community groups work in different fields, such as: agriculture, land conservation, environment, tourism, and waste and rock from elements of CSR (Corporation Social Responsibility) PT. Tirta Investama, and academics. Even though there are different focus of activities, the most important thing is to manage the environment well and generate benefits for the community at large. Managing means changing, repairing, caring for and maintaining, in environmental management and culture to be mutually sustainable. As the cultural ecology theory introduced by H. Steward (1930) states: "Environment and culture cannot be seen as separate, but is a mixture that proceeds through dialectics. In other words, ecological processes are interrelated. Environment and culture are not entities that are independent or not static goods. Both have a big role and influence each other. It cannot be denied that the environment has an influence on human culture and behavior (as in the theory of environmental dominance), but at the same

time humans also influence environmental changes” (Susilo, 2008). So far, the groups under the Pusur Institute are still active and productive with their respective activities. From this awareness, changes for environmental improvement can be emulated in other places. With the unification of common goals and management can reduce the environmental crisis which is now getting a lot of attention. In addition, it is evident that a large number of people have felt the impact of the benefits from group activities. To be a good example in managing the environment, the Pusur Institute Klaten must still exist. With the hope that it will become a source of knowledge for other community institutions to learn about processing waste as a form of environmental management, especially in the area around the river. Furthermore, research that has been carried out by Arisyanti (2018) reveals that the level of community concern in waste management is an effort to community welfare in a case study in Kelurahan Bumi, Laweyan, Surakarta. According to Arisyanti, said that the welfare of the people of village Bumi had increased, but not too rapidly. While at the economic level, the community of village Bumi is quite good from the results of waste management and from the results of tourist visits to the Earth Village.

Solihin., et al (2019) discussed about the community participation in reducing waste problems through the management of a waste bank in Ragajaya Village, Bojonggede, Bogor City. The purpose of this study is to discuss the factors related to the level of participation of housewives in waste management through waste banks. The level of knowledge, the level of family support and the level of infra-structure, can be the cornerstone of the success of running a waste bank. This is because high awareness and strong support are motivation. Permatasari & Meirinawati (2017) discusses about the strategic management efforts in waste management, one of the efforts made by maximizing waste management in landfills and socializing the application of waste banks to public. The results of this study indicate that the environmental office of Bojonegoro Regency has done its best to manage waste at the landfill or Tempat Pembuangan Akhir (TPA) Banjarsari. The difference between

previous research and this research is that the management system used in community empowerment is different. The difference is focusing on the role of non-governmental organizations in managing the environment in the waste sector. This research uses qualitative research methods, using a descriptive analysis approach. In this research, it is included in the category of social research, the researcher aims to systematically reveal the facts about the visible picture and how the situation is being researched correctly and carefully Rustanto (2015). Preserving the environment is a common task of all groups not only borne by one party. One of the small things that can be done, for example, is to reduce non-biodegradable waste and be more sensitive to the environment. That way sustainable based development will be carried out, both now and in the future. This study aims at describing the role of community groups in environmental management in the area around the river. As previously explained, waste is a problem in environmental sustainability, especially in rivers.

Metode Penelitian

This research uses qualitative research methods, using a descriptive analysis approach. In this research, it is included in the category of social research, the researcher aims to systematically reveal the facts about the visible picture and how the situation is being researched correctly and carefully Rustanto (2015). Preserving the environment is a common task of all groups not only borne by one party. One of the small things that can be done, for example, is to reduce non-biodegradable waste and be more sensitive to the environment. That way sustainable-based development will be carried out, both now and in the future. This study aims at describing the role of community groups in environmental management in the area around the river. As previously explained, waste is a problem in environmental sustainability, especially in rivers.

Results and Discussion

Analytical route to chaos

Pusur Institute Profile

Discussing about the Pusur Institute means that discussing the Pusur River which is the object of its management. Physically Pusur River is a river that flows in Boyolali and Klaten districts. With the administrative division of the Upstream region in Boyolali Regency and the middle and downstream areas in the Klaten Regency area. It has a length of approximately 30 KM with an area of 5,781 Ha Sub-watershed, and is included in the small river category because the area is less than (<10,000 Ha) (Wijayanti, et al., 2016). According to its administration, the Pusur River passes through 5 upstream villages, 9 central villages, and 8 parts downstream villages. Pusur Institute's journey in managing is not as smooth as the results that can be seen and felt as it is today. The achievement of the results that are currently being felt is a long journey by reducing individualistic attitudes to unite with each other in its management. It is not a new thing when there are still problems in the journey, especially when encountering social perceptions. The background of the establishment of the Pusur Institute was by the large number of people who did not care about their environment. Public ignorance has an impact on natural destruction. People often use the river as a place for disposal of household waste, and it keeps happening again and again. The damage caused by the community has had an impact on public health, such as dengue fever, decreased quality of clear water and so on. Eventually the community began to worry and began to realize the importance of protecting the environment by cleaning the river.

Each subsection has a different role and function in influencing the sustainability of community life. In the aspect of meeting community needs, the Pusur River has a strategic position in a spring. Each subsection has a different role and function in influencing the sustainability of community life. As is well known, the source of this river's water comes directly from Mount Merapi's springs. Although it is a small river basin, the water produced is able to support communities in several sectors such as agriculture, livestock, and tourism. so that in this case management with the participation and collaboration of the parties is needed for the sustainability of the Pusur River ecosystem for present and future. Since 2013, it has initiated programs and management activities for the Pusur

sub-watershed. As time goes by, these activities continue to be held as routine community activities, and these activities begin to develop and continue to develop. Many river activists come and participate in river management activities. So that an idea emerged that was mutually agreed upon with many supporting elements such as the surrounding community, sub-district government, academics, river activist groups and PT. Tirta Investama which forms a forum for integrated river management, namely the Pusur Institute. This departs from a common vision and mission which aims at managing the Pusur River so that it is well maintained.

Waste management

Garbage needs renewal so that it can be reused and has a use value. Waste management according to Tchobanoglous (1977) quoted by Soma (2010) that waste management is a comprehensive effort to handle waste generated from various human activities. Ali & Hasan (2019) also said the same thing that waste management activities are not only a learning space but can also make the community responsive in managing waste such as in social or religious activities. In managing waste in the area around the Pusur river, Polanharjo sub-district is directly managed by the Sumutharjo Paguyuban. The formation of the Sumutharjo association itself was carried out long before the Pusur Institute was formed. His concern for the environment and his active participation eventually joined and became part of the Pusur Institute. So far, the development of members of the Sumutharjo association who are also part of it, there are 17 waste banks and two water tours. The names of the Waste Bank groups that participate in the Sumutharjo Garbage Bank Association are as follows: Rukun Santoso, Saras Watra, Sekar Keprabon, Jatidiri, Margo Saras, Karang Indah, Uwuh Mulyo, Mitra Mandiri, Mugi Berkah, Citrabuana, Kahuman Resik, Guyub Rukun, Berkah Berkarya, Bank Mas, Mrisen Makmur, Rekso Bumi, Sami Ikhlas. In the category of ecotourism groups in the Pusur River including: Rivermoon and Watu Kapu.

Waste banks carry out activities with a "collector" management system by collecting waste from each customer. Then the results from

which are collected to be sorted based on their characteristics, to be weighed. The results that have been collected from all customers are managed together to be sold to large amounts of garbage collectors. So that the money obtained is also large to be distributed to customers again in accordance with the amount of waste previously collected. The benefits that customers can get by joining, there are no deductions from sales, so the money they get is greater than selling individually. Besides engaged in the collection sector, each waste bank also has different characteristics. Not only collecting waste to be sold to collectors, the development of this waste bank has now entered the industrial area or processed waste to become products for useable goods, such as: bags, fertilizer, raw materials, for example plastic pellets as a basic material for making plastic and many others. Even those who produce waste into handicrafts, such as in Rukun Santoso, have produced on a large scale with a large enough market area and employ employees.

The existence of this waste bank has helped many people to get additional income, many of them even save their money as savings. Because this waste bank makes it like a customer system in conventional banks, people only deposit their goods then the results are saved and can be taken at any time. The advantage is, the public is not subject to additional or discounted interest. "The point is for those who like to go to the river, throw garbage there. With this, they finally think twice about throwing out the trash. This can be sold, when we find any kinds of garbage on the road is taken, it reduces waste. Besides that, it is also taught to process waste into fertilizer. Even the baby diapers trash can be processed into fertilizer". (Interview with Ninna, 20 July 2020, at 08.45). Since there are garbage banks in various branches, changes in the environment are very clear. The mindset of the Polanharjo people has also changed for the better. The Polanharjo community also actively participates in environmental activities because they are fully aware of the benefits that can be obtained. Not only economic value, but also with this activity they can add insight into proper waste management.

The Role of Pusur Institute in Waste Management

Discussing the role of an institution in managing the environment, of course, cannot be separated from its planning and implementation in the field. Because basically in its management it must be in accordance with the conditions and the potential available. Although sometimes there are obstacles, this does not prevent development actors from empowering them. According to Hastuti (2018) environmental preservation is a shared responsibility, both government and society. Therefore, humans who are the most important actors must make efforts to restore environmental balance. In this discussion, environmental management as described in the previous understanding, is a conscious activity carried out in the hope of improving or preserving the environment. Environmental damage when viewed from the causes can be seen due to two things: natural factors and human factors. There is very little possibility of environmental damage due to natural factors, often it is found that environmental damage is caused by human hands. This is because humans have an active role in managing or influencing the ecosystem according to the given behavior. Environmental management carried out by the Pusur Institute covers many aspects, starting from the management of the upstream to downstream areas with land conservation in the upstream part of the river, becoming a source of irrigation in agriculture, maintaining water quality, managing, treating and minimizing waste both household, industrial and livestock waste, improving the social and economic aspects of society.

Viewed from the factor of damage to the Pusur River before it was managed as it is today, it can be seen clearly that the cause of the damage to the Pusur River was caused by the community's hands, such as throwing garbage in the river. However, the community finally realized, and united together to fix it. This can be seen from the condition of the Pusur River, which is well managed. as stated by Rahmawati (2017) that this environmental rescue movement is a form of public awareness to preserve the environment. no doubt, that the management of the Pusur Institute itself is very clear. The entire area is harmoniously integrated, starting from the upstream to the downstream. To be able to assess a role, a performance appraisal is needed that can assess the extent to which

that role is carried out. as stated by Bernaddin and Russel (1993) "Performance depends on the combination of ability, effort and opportunity, and performance can be measured by the results produced" Istono (2016). Based on the results of the interviews, so far the results shown by the Pusur Institute can improve, manage and pre-serve the Pusur River to the maximum. This can be seen in two ways: quality and quantity. The quality of water produced from the Pusur River itself is safe for the community to use in their daily activities, such as agricultural irrigation, livestock, and ecotourism. For quantity, it can be seen from the amount of water discharge so that it can flow and be utilized in the downstream. Even with a well-integrated management, the Pusur River gets an achievement as the best river at the provincial level. Then there is no doubt how the combination of ability, effort and opportunity as a form of performance implemen-tation.

Related to the performance carried out as described by Khulkarni and Khot (2012) cited (Hadiguna, 2012) an effective performance measurement system by presenting the system as a whole, capable of influencing the entire behavior system and provide system performance information for decision makers as well as decision makers. In this study, performance measurement is defined as a method for obtaining activity achievement results. As previously known, waste processing is one of the focuses in the environmental management sector in the Pusur River. A work system built in managing rivers by empowering the community, namely placing the community as the main actor in the process. As the above understanding by Khan and Kats states that an organizational environment can influence the expectations of each individual regarding behavior and roles. These expectations are in the form of norms or pressures, then people will accept the message and interpret it and respond in various ways. So with the Pusur Institute, it is hoped that the community will care more about the environment and take good care of it and it becomes a sustainable investment field, both now and in the future. Through the Pusur Institute there are many benefits that can be obtained by the community, such as the community can learn a lot in supporting social and economic life, utilizing waste to be something

valuable is not wasted, not only that the community can learn, especially farmers in controlling the use of chemicals.

Supporting and Inhibiting Factors for Waste Management

In the waste management process, there are supporting and inhibiting factors that accompany the activities. talking about the reasons for waste management becomes a supporting factor in carrying out activities including the following: first, the environmental conditions are apprehensive, where a lot of garbage is scattered and people's hobby in littering. This is a very supportive factor for waste management. In addition, managing yourself means doing activities by doing something to be a new benefit. So when the environment is not in a good condition, it needs to be managed to improve it better. Second, the condition of the community which has the characteristics of being friendly or mutual. Structurally, the community area around the Pusur River is a village community whose characteristics are socializing and gathering and are not individualistic. This makes it easier to organize people to participate in preserving the environment. An important factor in an activity is human resources that support it, because in the process, the community is positioned as the subject or actor.

Third, get a lot of support from both the community and agencies that have regulatory power, such as village administration, sub-district government and other stakeholders. This has greatly influenced the community to participate in it. Fourth, material support from nearby companies such as PT Tirta Investama which can be used for operational assistance as well as other supporting facilities that can be utilized, such as borrowing tools and so on. The assistance provided usually comes from the CSR budget, which is a form of company concern that is given to the community around the company in carrying out activities, which can be in the form of direct cash assistance, or philanthropy, or community potential support and so on. Beside the supporting factors in carrying out waste management, there are also inhibiting factors that usually accompany activities, such as: first, there are still people who are difficult to regulate even though most of the community support and feel the

benefits, but in reality there are still people who do not want to participate in its management. Second, there is still a lack of understanding by the community about managing waste in terms of reducing household waste.

The journey of the waste bank association in managing it to become as big and as large as it is now is not easy. In establishing relationships between groups in order to remain harmonious and compact, once a month the waste banks hold an association. The gathering place takes turns in each group. At each meeting there is a schedule to discuss the obstacles during the past month, so that this becomes material for joint evaluation. Not only routine monthly association activities, but also other activities such as cycling around the sub-districts, making fertilizer from garbage and so on. Even garbage such as baby diapers or sanitary napkins, which are a scourge of waste that is difficult to decompose and impede water flow, have been successfully developed into plant fertilizer. Now the waste bank has developed and inspires people in other areas who have initiatives in processing waste.

The impact of Waste Management for Environmental Conservation

The impacts that occur from waste management on environmental sustainability based on the above explanations: first, improving environmental quality. The most significant impact if managing waste properly is environmental preservation. The definition of the environment as explained above is the area where a living being is, or a state / condition that surrounds a living being, or the whole condition which includes a living thing or group living things. So it can be ascertained that the existence of waste management which is one of the problems that triggers environmental damage, it can certainly have an impact on the environment. For example, such as improving water quality, reducing air pollution due to burning waste, increasing water absorption into the soil so that it does not cause flooding, and so on. Second, the impact that can be caused by waste management for the environment is health. Several diseases that can be caused by poor waste management

according to Simanjorang (2014) such as digestive diseases, respiratory disorders, skin diseases, besides that they can also be breeding grounds for animals that cause diseases such as mice, mosquitoes, flies. This is because the garbage contains bacteria or fungi that grow and develop, most of which are invisible. If it enters the body, it will only cause diseases like the one above. So it is necessary to be careful so that parasites in the waste do not harm humans.

Third, it can also have an impact on the development of knowledge related to environmental management. According to Yulida (2016) knowledge is an important thing in acting an individual so as to form a new behavior. Therefore a highly organized management can be an example for other groups in environmental conservation. Not only that, it can also be a reference for research to be developed into new theories in the world of education. So that environmental-based management can contribute or real examples in learning. Waste management as described above according to Tchobanoglous (1977) cited by Soma (2010) that waste management is a comprehensive effort to deal with waste generated from various human activities. When waste is not managed properly, it will only cause disaster for living things. Based on the findings that have been presented previously, it is very clear that waste has a value to be useful.

Conclusions

The results of this study can be concluded that community collaborative organizations have succeeded in providing benefits for the sustainability of the Pusur River, including in waste management. As it is known, one of the reasons for the damage and pollution in the Pusur River is garbage. Meanwhile, in the Pusur River management institution there is the Pusur Institute. One of the groups that took part was the group that cares about waste by the name of the Sumutharjo Waste Bank. This group in practice empowers the community to participate actively in the action. So, it can have a positive impact both in terms of society and the environment.

References

- Abdillah, J. (2014). Dekonstruksi Tafsir Antroposentrisme: Telaah Ayat-Ayat Berwawasan Lingkungan. *KALAM*, 8, 65-86.
- Akib, M. (2015). Penegasan Hukum Lingkungan dan Prespektif Holistik Ekologis. *Graha Ilmu*.
- Ali, M., & Hasan, S. (2019). Da'wah bi al-Hal in Empowering Campus-Assisted Community through Waste Bank Management. *Ilmu Dakwah: Academic Journal for Homiletic Studies*. 13, 201-219.
- Arisyanti, P. (2018). Pengelolaan Sampah untuk Kesejahteraan Masyarakat (studi Kasus di Kelurahan Bumi, Laweyan Surakarta. *Skripsi UIN Sunan Kalijaga*.
- Arnani, M. (2020). Penjelasan Lengkap Penyebab Banjir Jakarta, Curah Hujan Terekstrem Hingga Sejarah. <https://www.kompas.com/tren/read/2020/01/03/092500065>
- Hadiguna, R. A. (2012). Manajemen Rantai Pasok Agroindustri: Pendekatan Berkelanjutan untuk Pengukuran Kinerja dan Penilaian Risiko. Lembaga Pengembangan Teknologi, Informasi dan Komunikasi.
- Hand, B. K., Flint, C. G., Frissell, C. A., Muhlfeld, C. C., Devlin, S. P., Kennedy, B. P., Crabtree, R. L., McKee, W. A., Luikart, G., & Stanford, J. A. (2018). A Social–Ecological Perspective for Riverscape Management in The Columbia River Basin. *Frontiers in Ecology and the Environment*, 16, S23–S33.
- Hastuti, R. (2018). *Ensiklopedia Geografi Lingkungan Hidup*. Cempaka Putih.
- Issahaku, I., Nyame, F. K., & Brimah, A. K. (2014). Waste Management Strategies in an Urban Setting Example from the Tamale Me-tropolis, Ghana. *Journal of Waste Management*, 1–7.
- Istono, M. (2016). Organization Citizenship Behavior Sebagai Mediator Hubungan antara Kepercayaan Kepada Atasan Persepsi Terhadap Dukungan Organisasi dan Performasi Kerja Wiranaga. *Asosiasi Psikologi dan industri. Strategic Roles of I/O Psychology in Building Creative Society*.
- Muchlashin, A. (2019). Optimalisasi Pemanfaatan Bantaran Sungai Anak Brantas dalam Upaya Peningkatan Ketahanan Pangan di Si-doarjo.

- Islamic Management and Empowerment Journal. 1, 1-20.
- Permatasari, B. I., & Meirinawati. (2017). Manajemen Strategi Pengelolaan Sampah di Dinas Lingkungan Hidup Kabupaten Bojonegoro. *Jurnal Ilmu Sosial*, 1, 1–8.
- Rahmawati. (2017). *Green Entrepreneursip. Expert*.
- Rizal, M. (2011). Analisis Pengelolaan Persampahan Perkotaan (Studi kasus pada Kelurahan Boya Kecamatan Banawa Kabupaten Dong-gala). *Smartek*, 9, 155–172.
- Rustanto, B. (2015). *Penelitian Kualitatif Pekerjaan Sosial*. PT.Remaja Rosdakarya.
- Simanjong, E. F. S. (2014). Dampak Manajemen Pengelolaan Sampah terhadap Masyarakat dan Lingkungan di TPAS Namo Bintang Deliserdang. *Ecobisma (Jurnal Ekonomi, Bisnis Dan Manajemen)*. 1, 34-47.
- Solihin, Mochamad, M., Muljono, P., & Sadono, D. (2019). Partisipasi Ibu Rumah Tangga dalam Pengelolaan Sampah melalui Bank Sampah di Desa Ragajaya, Bojonggede-Bogor Jawa Barat. *Jurnal Ilmu Lingkungan*, 17, 388-398.
- Soma, S. (2010). *Pengantar Ilmu Teknik Lingkungan (Seri Pengolahan Sampah Perkotaan)*. IPB Press.
- Susilo, R. K. D. (2008). *Sosiologi Lingkungan*. Rajawali Press.
- Tambe, E. B., Ayongwa, G. C., Ngwabie, N. M., & Forbid, G. T. (2016). Characterisation of Municipal Solid Waste for Planning Sus-tainable Waste Management in Kumba Municipality – South Western Cameroon. *The Open Waste Management Journal*, 9, 19–27.
- Tobing, S. (2020). Memahami Penyebab Banjir yang Selalu Melanda Jakarta. <https://katadata.co.id/sortatobing/berita/5e9a470e8683a>
- Yulida, N., Sarto, S., & Suwarni, A. S. (2016). Perilaku masyarakat dalam membuang sampah di aliran sungai batang bakarek-karek Kota Padang Panjang Sumatera Barat Community behavior in garbage disposal in Batang Bakarek-Karek river basin of Padang Panjang. *Berita Kedokteran Masyarakat (BKM Journal of Community Medicine and Public Health)*, 32, 373–378.