



Community Empowerment Efforts in Preserving the Environment Around the Karang Mumus River

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ARTICLE INFO

Article history:

Received March 11, 2023

Revised March 15, 2023

Accepted August 10, 2023

Available online August 25, 2023

Kata Kunci :

Pemberdayaan Masyarakat,
Pelestarian Lingkungan, Sungai
Karang Mumus.

Keywords:

Community Empowerment,
Environmental Conservation,
Karang Mumus River.



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ABSTRAK

Permasalahan sampah yang berada di Sungai Karang Mumus belum dapat dikatakan usai. Hal ini diakibatkan oleh beberapa faktor, yaitu: masih banyaknya masyarakat yang tinggal di bantaran Sungai Karang Mumus dan melakukan segala aktivitas sehari-hari sehingga membuat fungsi sungai menurun dan juga masih terdapat masyarakat yang membuang sampah tidak pada tempatnya. Maka dari itu penelitian pengabdian ini bertujuan untuk berkontribusi dalam melaksanakan kegiatan pengumpulan sampah. Metode pendekatan yang dilakukan yaitu dengan melakukan observasi dan wawancara dengan informan tentang asal mula komunitas didirikan dan bentuk pengelolaan lingkungan yang dilakukan di Sungai Karang Mumus. Di akhir kegiatan dilakukan monitoring dan evaluasi untuk meningkatkan kesadaran masyarakat. Hasil dari kegiatan pengabdian ini memberikan contoh kepada masyarakat sekitar Sungai Karang Mumus dan seluruh masyarakat untuk membiasakan hidup sehat dengan memperhatikan lingkungan sekitar yaitu dengan membuang sampah pada tempatnya, menggunakan barang dan melaksanakan kegiatan yang ramah lingkungan. Kegiatan Pengabdian Kepada Masyarakat Program Studi S1 Administrasi Publik Fakultas Ilmu Sosial dan Ilmu politik Universitas Mulawarman Bersama komunitas Gerakan Memungut Sehelai Sampah Sungai Karang Mumus diharapkan dapat meningkatkan kepedulian mahasiswa dan para alumni sebagai bagian dari civitas akademika dan masyarakat sekitar Sungai Karang Mumus.

ABSTRACT

The waste problem in the Karang Mumus River cannot be said to be resolved. This is caused by several factors, namely: there are still many people who live on the banks of the Karang Mumus River and carry out all their daily activities, causing the river's function to decline and there are also still people who throw rubbish out of place. Therefore, this service research aims to contribute to carrying out waste collection activities. The approach method used is by conducting observations and interviews with informants about the origins of the community and the form of environmental management carried out on the Karang Mumus River. At the end of the activity, monitoring and evaluation was carried out to increase public awareness. The results of this service activity provide an example to the community around the Karang Mumus River and the entire community to get used to living a healthy life by paying attention to the surrounding environment, namely by throwing rubbish in its place, using goods and implementing them. environmentally friendly activities. Community Service Activities for the Bachelor of Public Administration Study Program, Faculty of Social and Political Sciences, Mulawarman University, together with the community of the Movement to Pick Up a Piece of Garbage from the Karang Mumus River, are expected to increase awareness of students and alumni as part of the academic community and around the Karang Mumus River community.

1. INTRODUCTION

Karang Mumus River is a place for the local community to carry out their daily activities. This is because there are still people who live around the riverbanks, causing a decrease in the quality of the river which will ultimately have an impact on a disaster-prone environment, outbreaks of disease, and so on, so that it becomes one of the causes of ineffective flood control (Mislan et al., 2018; Widiyastuti & Ivo, 2020). Based on the results of a review by the Community Service Team, there was still trash scattered due to the

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tides which resulted in a flood of shipments so that trash from other areas was stuck on piles around the Karang Mumus River. Even so, people still use river water by using paralon pipes which flow into the house which is then used for washing clothes, washing furniture, and bathing (Sugara & Sugihen, 2017; Suharko & Kusumadewi, 2019). Humans are a determining factor in the beauty of the environment, especially in protecting and preserving the environment (Handayani et al., 2021; Karim et al., 2021). The life of the people who live around the river banks makes the river very vulnerable to contamination. This is because most of the people's daily activities utilize the river so that river pollution occurs, one of which is due to intentional and accidental elements, which are the main causes of water pollution due to human activity (Rahmat et al., 2016; Yati, 2021). The location of the Karang Mumus River, which is a densely populated area and a trading area, makes it difficult for the government to control and relocate, considering that relocating is tantamount to changing people's living habits and not a few people do not want to change their habits, even the mindset of the importance of preserving the environment (Suharko & Kusumadewi, 2019; Widiyastuti & Ivo, 2020). This is also supported by the problem of slum settlements around the Karang Mumus River which is a protracted problem that has not been resolved (Ariyanti, 2017). The City of Samarinda Environment Service (DLH) informed that the water quality of the Karang Mumus River was no longer suitable for use, due to pollution from household waste that exceeded the normal threshold. In addition, after walking around along the road around the Karang Mumus River there is a Bathing, Washing and Latrine (MCK) area which is still in use or is commonly referred to by the local community as the Independent Tinja Pavilion (ATM). The existence of this ATM certainly makes the quality of river water to decrease and become dirty due to the generation of waste in the area around the Watershed (DAS). The types of waste found included household waste, agricultural, garden, trade and home industry processing residues, which play a role in generating the weight and volume of waste, both biodegradable waste that can be decomposed such as food, vegetables, fruit and other organic materials as well as non-biodegradable waste. recoverable (Huda et al., 2020; Nasution et al., 2016).

One of the efforts to change awareness, understanding, and attitudes is through the environmental movement. There are efforts from the community to implement "learning by doing" as a form of outreach to the people around the river so they can see and apply actions not to litter and to foster self-awareness in protecting the environment through small things (Priambudi & Utami, 2020; Suharko & Kusumadewi, 2019). The birth of the Garbage Picking Movement (GMSS-SKM) community is a manifestation of the community around the Karang Mumus River through concrete actions in preserving the environment around the river by carrying out actions to pick up trash on land and rivers. The aim of this movement is to improve the condition of the Karang Mumus River so that it becomes clean, healthy, productive, safe, sustainable and beneficial to the surrounding area as a form of preserving the Karang Mumus River area. In addition to garbage collection activities, there are several programs developed by this movement such as promoting river tourism, creating a river conservation forest, and building a river school as well as building a collection base post right beside the Karang Mumus River. Community empowerment through the Community Movement Picking up a Piece of Garbage on the Karang Mumus River is able to have a positive, sustainable impact as a form of environmental preservation on the Karang Mumus River. Based on this, the community service team of the Public Administration Study Program Bachelor of Public Administration Fisipol Mulawarman University together with members of the GMSS-SKM environmental activist group did not just walk around the Karang Mumus River to see the current situation and condition of the river and review community activities on the banks of the Karang Mumus River but also contributed in carrying out waste collection activities that start from around the collection base post by prioritizing the principle of "prioritizing action" in realizing the desire to preserve the environment around the river with the hope of being able to set an example for the surrounding community and foster a pattern of public awareness not to throw garbage where it shouldn't as a form of education indirectly to the public in an effort to preserve the environment.

2. METHOD

This activity is located at the Pangkalan Pungut Environmental Activist Group (GMSS-SKM) Post on the Karang Mumus River Jalan Abdul Muthalib, Samarinda City on July 12-13 2022 with student participants and alumni of the Mulawarman University Public Administration Study Program S1 accompanied by the community GMSS-SKM activists. The implementation method used is to carry out observations at the Community Service location from March to May 2022 at the Pangkalan Pungut Environmental Activist Group (GMSS-SKM) Post on the Karang Mumus River Jalan Abdul Muthalib by conducting discussions and interviews related to the procurement of Community Service activities (Yanto & Efendi, 2021). The approach used is to conduct discussions and interviews with members of the environmental activist group (GMSS-SKM) to find out information related to the beginning of the founding

of the community until it was formed into an organization and identify the problems that arise based on field reviews related to the condition of the surrounding environment and make related observations the consequences caused by the daily activities of the people living on the banks of the Karang Mumus River.

The method of achieving the goal of carrying out the action of picking up trash around the river is by reducing floating garbage around the river and on land along the Karang Mumus River and providing education to the public about preserving the Karang Mumus River from garbage, especially household waste. So that this activity has a positive impact on the local community and is expected to increase solidarity between communities in Samarinda City to preserve the environment around the Karang Mumus River. At the end of the activity monitoring and evaluation was carried out to raise public awareness, especially those living around the banks of the Karang Mumus River to be more concerned about cleanliness and proper sanitary conditions so as to reduce the impact of river pollution which will ultimately lead to the health of the people around the Karang Mumus River.

3. RESULTS AND DISCUSSION

Results

Empowerment includes the inculcation of modern cultural values such as hard work, openness, responsibility towards society aimed at vulnerable and weak groups of people. This empowerment requires that the community does not depend on various charitable programs, so the purpose of this empowerment is to be able to make the community self-sufficient and able to build society towards a better life on an ongoing basis. Community empowerment for problems in the Karang Mumus River environment is carried out through the Community Movement for Picking up a Piece of Garbage on the Karang Mumus River (GMSS-SKM) to preserve the surrounding environment. This environmental preservation aims to overcome water quality problems that exist in the Karang Mumus River. One of the factors causing the decline in river water quality is due to the existence of toilets or ATMs along the Karang Mumus River. People living in slum settlements generally use the river as their daily activity due to several factors, namely population density, easy availability of water which is calculated at a low cost, education and income are so low and understanding of the importance of a clean environment is still low so they consider it reasonable to activities that make the condition of the river polluted.

The Community Service Team for the Bachelor of Public Administration Study Program, Fisipol, University of Mulawarman, conducted a survey around the Karang Mumus River to see the condition of residents' homes and activities carried out by residents on a daily basis. This is a step to identify problems caused by activities around the river so that efforts can be made to improve the quality of river water and to develop healthy residential areas in river areas by conducting outreach and facilitation regarding the provision of proper and clean MCK in the area. Activities along the river past the Independent Tinja Platform (ATM) of the Karang Mumus riverside community is show in [Figure 1](#).



Figure 1. Activities Along the River Past the Independent Tinja Platform (ATM) of the Karang Mumus Riverside Community

Government Regulation No. 82 of 2001 concerning Water Quality Management and Pollution Control states that water is a natural resource that has a very important function for human life and livelihood, plays an important role in realizing general welfare, and becomes the basic capital and main factor of development. Dense settlements along the river will result in obstruction of the flow of the river due to the large amount of waste dumped into the river body resulting in reduced capacity of the river to drain the incoming water due to high rainfall in the upstream area. There are still people who still throw garbage into the river due to a lack of firm action from the government where even though there is a ban on throwing garbage around the river it does not make people afraid to keep throwing garbage so that the impact of this makes the quality of river water decrease. The Environmental Service through the installation of garbage nets on the tarmidi bridge aims to catch the sent garbage.

In addition, the benefits of garbage collection are that it can improve the quality of clean water around polluted rivers, reduce bad odors caused by garbage, improve river water quality, reduce the risk of flooding due to garbage blockages, and maintain the ecosystem in the river. The community service team for the Bachelor of Public Administration Study Program at the Faculty of Social and Political Sciences Unmul passed the tarmidi bridge and obtained a trash net that looked torn which allowed small trash to get out of the net so that undecomposed waste was still found floating around the river. Garbage Netting at the Tarmidi Bridge is show in [Figure 2](#).



Figure 2. Garbage Netting at the Tarmidi Bridge

In maintaining sustainability around the river, strategic and continuous steps are needed. Departing from this, there were 2 (two) posts built by the Karang Mumus River Garbage Picking Movement Community (GMSS-SKM) to deal with pollution and other problems related to the environmental banks of the Karang Mumus River, namely posts for pollution and posts for damage. The Command Post for environmental damage which is commonly called the Karang Mumus River School (As you like) is located in Muang Ilir, Lempake Village, Samarinda City. Where the main activity is to plant local vegetation trees in order to restore the environment and restore the food cycle by carrying out reforestation. This aims to make people aware that this world is not only for humans but also for all God's creatures. This post can later be used as a forum for preserving the environment around the banks of the Karang Mumus River as well as a place to carry out actions and permanent posts in the hope that this movement can reach many people to get involved.

The two posts have existed since 2015 and are fully managed in 2019 which are located on Jl. Abdul Muthalib (Veterinary Bridge). The existence of these posts appealed to the public to participate in and care for the environment along the Karang Mumus River. Cleaning support facilities at the collection base post are quite complete where there are facilities such as hooks and nets for picking up trash in the river as well as cleaning tools such as garden brooms which are also available at the post. There are also three-wheeled motorized vehicles equipped with open tanks to transport garbage at the post so that this park can be managed properly. GMSS-SKM Samarinda City won the top 3 national awards when participating in a river care community competition assessed by an assessment team from the Ministry of PUPR. The existence of this post is expected to support and facilitate the community to build awareness of environmental cleanliness, especially the environment around the river. Environmental awareness is a person's ability to understand and how that should be in the environment. The existence of the GMSS-SKM community invites people to care about the cleanliness of the environment around the Karang Mumus River so that it remains sustainable. Environmental pollution due to waste on the riverbanks greatly disrupts the aesthetics around the river, causing the water quality to decrease and cause flooding. The GMSS-SKM community has conducted counseling for the public to dispose of waste in the bins provided and by providing this counseling, it is hoped that the public will know and understand the importance of keeping the river environment clean.

This community teaches that in an effort to maintain sustainability around the river it prioritizes action to pick up trash directly around the river and does not hesitate to reprimand people for littering around the river and invites people to practice directly to dispose of waste in its place rather than just make speeches to keep the environment clean. Apart from that, this community is also active in carrying out greening around the river starting from around the GMSS-SKM post to the surrounding area which can be seen by the presence of green open spaces around the GMSS-SKM post. This action is carried out on an ongoing basis so that the community understands, is aware of, and is able to practice directly the importance of disposing of waste in its place, regardless of whether it is personal waste or waste that is disposed of by other people to always maintain sustainability around the Karang Mumus River. Providing education activities related to the importance of maintaining river conservation at the GMSS-SKM pickup post is show in Figure 3.



Figure 3. Providing Education Activities Related to the Importance of Maintaining River Conservation at the GMSS-SKM Pickup Post

Garbage is a problem that often becomes a public concern. Especially the problem of garbage in the river. The current solution is to collect garbage manually by hand, boats and trash nets to minimize the generation of waste that enters the river. Awareness of the importance of preserving the environment is the obligation of all levels of society without exception who not only know about waste, pollution and greening but also implement these actions to raise environmental awareness to have a sense of love for nature and the environment. Human behavior determines success and failure in environmental preservation. In this case, river restoration requires the perspective of community attitudes and behavior towards the river where until now there is a strong view that throwing garbage into the river is a natural thing. Therefore as a form of awareness to preserve the environment The community service team of the Social Sciences Faculty of Social Sciences S1 Public Administration Study Program through collecting trash around the collection base post aims to educate the public in carrying out simple behaviors such as disposing of trash in its place and raising awareness to pick up trash that is visible in plain sight, even though it does not come from personal waste. Garbage collection activities around the GMSS-SKM collection base post is show in Figure 4.



Figure 4. Garbage Collection Activities Around the GMSS-SKM Collection Base Post

Discussion

Empowerment is an effort to motivate, encourage and awaken to build power by developing aspects of people's lives materially to spiritually to achieve an efficient society (Azhar et al., 2016; Margayaningsih, 2018; Suharko & Kusumadewi, 2019). The term ATM or "Automatic Tinja Pavilion" is a term for the toilets of Sungai Karang Mumus residents. This name was coined directly by the GMSS-SKM community with the aim that this unique name could become a concern. The impact caused by the presence of ATMs in the river makes the quality of the water polluted because the dirt produced directly falls into the river so that when the water is high, the dirt will rise or float to the surface of the water (Ariyanti, 2017; Sugara & Sugihen, 2017). Departing from the above, social movements need to be developed which are realized as actions in creating a new order of life in achieving a common goal, namely in keeping the river clean and preserving the environment around the river (Nugroho, 2017; Waskito & Witono, 2014). One form of preserving the environment is through messages and actions to create and preserve a riverbank environment that is clean and free of trash (Chandrabuwono & Atika, 2019; Sari et al., 2021). Through Community Service Activities carried out by the Community Service Team Public Administration Undergraduate Study Program, Faculty of Social and Political Sciences, Mulawarman University through the Movement to Pick Up a Piece of Garbage at the Karang Mumus River is a form of environmental awareness to empower simple behaviors not to litter and provide education to communities around the Karang Mumus River to always maintain environmental sustainability, especially for themselves as God's creatures in order to create a livable City of Samarinda.

The reduced capacity of rivers due to old waste that settles is also one of the causes of flooding, especially during the rainy season. The habit of the community to throw garbage into the river is due to the erroneous view of the community regarding the function of the river which is considered as a backyard (Suganda et al., 2009; Suharko & Kusumadewi, 2019). In fact, in maintaining sustainability around the river, it is necessary to have a complete, and comprehensive management. One of them is by anticipating a decrease in water quality, especially to physically reduce the disposal of garbage and domestic waste in river water bodies, namely by installing garbage nets (Habib, 2021; Komarawidjaja, 2017). This is done around the Karang Mumus River which is placed at several bridge points of other Mahakam tributaries. Trash that is netted will be transported by DLH officials by speedboat and ship. During rainy weather, river currents and water levels will rise so that more trash will be netted compared to the dry season because the water recedes. This netting technique is considered old-fashioned but it turns out to be effective in catching floating trash in the river. The Head of the Samarinda Environment Service (DLH), Nurrahmani stated that within 2 months, since the net was installed, as many as 10 tons of garbage were caught. As for what the community in the environmental field to doing is providing various infrastructures to support that environmental sustainability (Kunyanti et al., 2021; Kusmulyono & Faizal, 2020). The existence of a park facility which is also a GMSS-SKM collection base post is a greening action in rearranging green open spaces around Karang Mumus where all people can have access to carry out daily activities and also be enjoyed by the community (Chen & Chen, 2012; Mashur & Rusli, 2018). Because if there is no balance, the air pollution will be even higher and is intended as an ecological support where the existence of green open spaces on the Karang Mumus River can become a city-forming structure and also increase the quality of the environment in the Karang Mumus River Area.

Previous study stated that environmental cleanliness is inseparable from human life and is a fundamental element in the science of health and prevention where cleanliness is a reflection of humans in carrying out their daily lives (Jumarsa et al., 2020). Judging from several factors, it was found that the cause of the decline in environmental quality was due to a lack of public awareness and people's living habits in disposing of litter indiscriminately causing not the least concern for the environment. For this reason, the importance of environmental awareness to solve environmental problems can affect the sense of human concern as a society for their environment (Du et al., 2018; Ruqoyyah et al., 2019). Therefore, through Community Service Activities carried out by the Community Service Team of Public Administration Study Program, Faculty of Social and Political Sciences, Mulawarman University through the Movement to Pick Up a Piece of Garbage at the Karang Mumus River, not only providing education to preserve the environment around the river, but also through real action to carry out garbage collection activities around the Karang Mumus River site

4. CONCLUSIONS

This Community Service activity carried out by the Public Administration Undergraduate Study Program, Faculty of Social and Political Sciences, Mulawarman University together with the GMSS-SKM environmental activist group, should be able to set an example for the people around the Karang Mumus River and all people to have the habit of live a healthy life by paying attention to the surrounding

environment, namely by disposing of waste in its place, using goods and carrying out activities that are environmentally friendly, especially in areas along rivers and are expected to increase awareness about the importance of preserving the environment

5. REFERENCES

- Ariyanti, B. N. (2017). Penanganan Permukiman Kumuh Di Bantaran Sungai Karang Mumus Kota Samarinda. *EJournal Administrasi Negara*, 5(3), 6312–6326. [http://ejournal.ap.fisip-unmul.ac.id/site/wp-content/uploads/2017/07/JURNAL_Bella_Nur_Ariyanti_\(07-26-17-04-53-44\).pdf](http://ejournal.ap.fisip-unmul.ac.id/site/wp-content/uploads/2017/07/JURNAL_Bella_Nur_Ariyanti_(07-26-17-04-53-44).pdf).
- Azhar, A., Basyir, M. D., & Alfitri, A. (2016). Hubungan Pengetahuan Dan Etika Lingkungan Dengan Sikap Dan Perilaku Menjaga Kelestarian Lingkungan. *Jurnal Ilmu Lingkungan*, 13(1), 36. <https://doi.org/10.14710/jil.13.1.36-41>.
- Chandrabuwono, A. B., & Atika, A. (2019). Komunikasi Lingkungan Masyarakat Sungai Tabuk Dalam Menjaga Kebersihan Sungai. *Metacommunication: Journal of Communication Studies*, 4(2), 195. <https://doi.org/10.20527/mc.v4i2.6939>.
- Chen, Y.-C., & Chen, Y.-T. (2012). The Advantages of Green Management for Hotel Competitiveness in Taiwan: In the Viewpoint of Senior Hotel Managers. *Journal of Management and Sustainability*, 2(2), 211–218. <https://doi.org/10.5539/jms.v2n2p211>.
- Du, Y., Wang, X., Brombal, D., Moriggi, A., Sharpley, A., & Pang, S. (2018). Changes in environmental awareness and its connection to local environmental management in water conservation zones: The case of Beijing, China. *Sustainability (Switzerland)*, 10(6). <https://doi.org/10.3390/su10062087>.
- Habib, M. A. F. (2021). Kajian Teoritis Pemberdayaan Masyarakat Dan Ekonomi Kreatif. *Journal of Islamic Tourism, Halal Food, Islamic Traveling, and Creative Economy*, 1(2), 106–134. <https://doi.org/10.21274/ar-rehla.v1i2.4778>.
- Handayani, T., MS, Z., & Yudha, C. B. (2021). Pendidikan Karakter Peduli Lingkungan Melalui Program Adiwiyata Berbasis Ekopedagogik. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, 13(1), 36–42. <https://doi.org/10.17509/eh.v13i1.25735>.
- Huda, M. A. N., Hadi, H., & Subhani, A. (2020). Pengelolaan Sampah di Sepanjang Sempadan Sungai Kelurahan Pancor dan Kelurahan Sekarteja. *Geodika: Jurnal Kajian Ilmu Dan Pendidikan Geografi*, 4(1), 95–106. <https://doi.org/10.29408/geodika.v4i1.2273>.
- Jumarsa, Rizal, M., & Jailani. (2020). Masyarakat Dalam Menjaga Kebersihan Lingkungan Di Gampong Cot Siren Samalanga Kabupaten Bireuen. *Jurnal Biology Education*, 8(2), 109–121. <https://doi.org/10.32672/jbe.v8i2.2370>.
- Karim, A., Humanism, E., & Environment, B. (2021). Mengembangkan Kesadaran Melestarikan Lingkungan Hidup berbasis Humanisme Pendidikan Agama. *Edukasia: Jurnal Penelitian Pendidikan Islam*, 12(2), 309–330. <https://doi.org/10.21043/edukasia.v12i2.2780>.
- Komarawidjaja, W. (2017). Prospek Pemanfaatan Penyaring Sampah Sungai Dalam Implementasi Imbal Jasa Lingkungan Di Daerah Aliran Sungai Ciliwung Segmen 2 Kota Bogor. *Jurnal Teknologi Lingkungan*, 18(1), 37. <https://doi.org/10.29122/jtl.v18i1.1640>.
- Kunyanti, W. R., Anah, S., & Mujiono, M. (2021). Community Empowerment-based Corporate Social Responsibility Program in Panglima Raja Village. *International Journal on Social Science, Economics and Art*, 11(1), 12–19. <https://doi.org/10.35335/ijosea.v10i1.2>.
- Kusmulyono, M., & Faizal, S. A. (2020). Determinan Kesuksesan Pemberdayaan Kelompok Swadaya Masyarakat Bidang Sanitasi. *Jmbi Unsrat (Jurnal Ilmiah Manajemen Bisnis Dan Inovasi Universitas Sam Ratulangi)*, 7(1). <https://doi.org/10.35794/jmbi.v7i1.28389>.
- Margayaningsih, D. I. (2018). Peran Masyarakat Dalam Kegiatan Pemberdayaan Masyarakat di Desa. *Jurnal Publiciana*, 11(1), 72–88. <https://doi.org/10.36563/publiciana.v11i1.140>.
- Mashur, D., & Rusli, Z. (2018). Upaya Dan Implikasi Penyediaan Ruang Terbuka Hijau (Rth). *Jurnal Kebijakan Publik*, 9(1), 45. <https://doi.org/10.31258/jkp.9.1.p.45-52>.
- Mislan, Sudayanto, Ayub, S. O., & Hadiati, D. S. (2018). Penyusunan aksi restorasi sub DAS Karang Mumus dalam perspektif ketahanan air. *Prosiding Seminar Nasional Geografi UMS IX 2018*, 264–275. <http://hdl.handle.net/11617/10365>.
- Nasution, M. I. T., Awal, S. M. S., & Permana, D. M. (2016). The methods of preventing water hyacinth as aquatic pollution in Lake Toba caused by agricultural waste. *Int. J. Environ. Sci. Dev*, 7, 630–633. <https://www.academia.edu/download/71060852/852-M0011.pdf>.
- Nugroho, A. (2017). Komunitas Muda Urban Mengelola Sampah: Kajian Partisipatoris Gerakan Peduli Sampah Nasional di Kota Yogyakarta. *Jurnal Pemikiran Sosiologi*, 4(1), 106.

- <https://doi.org/10.22146/jps.v4i1.23633>.
- Priambudi, H. W., & Utami, T. (2020). Upaya Komunitas Peduli Sungai Dalam Pelaksanaan Konservasi Sungai Baki Di Kabupaten Sukoharjo. *Journal of Development and Social Change*, 3(2), 36. <https://doi.org/10.20961/jodasc.v3i2.45769>.
- Rahmat, R. F., Syahputra, M. F., & Lydia, M. S. (2016). Real time monitoring system for water pollution in Lake Toba. In *2016 International Conference on Informatics and Computing (ICIC)*, 383–388. <https://doi.org/10.1109/IAC.2016.7905749>.
- Ruqoyyah, S., Fasha, L. H., & Rohaeti, E. E. (2019). Menumbuhkan Kesadaran Lingkungan Kepada Guru-Guru Sd Di Sekitar Sungai Citarum Melalui Penyuluhan Tentang Hakekat Sains Dalam Pembelajaran. *Abdimas Siliwangi*, 2(2), 166. <https://doi.org/10.22460/as.v2i2p166-174.3371>.
- Sari, C. I., Marlina, S., & Tawakal, G. I. (2021). Penanggulangan Sampah Kota Palangka Raya Dengan Menggunakan Model Jaring Perangkap Sampah (Floating Litter Trap) Pada Saluran Drainase. *Jurnal Teknik SILITEK*, 1(01), 54–63. <https://doi.org/10.51135/jts.v1i1.9>.
- Suganda, E., Yatmo, Y. A., & Atmodiwirjo, P. (2009). Pengelolaan lingkungan dan kondisi masyarakat pada wilayah hilir sungai. *Makara Human Behavior Studies in Asia*, 13(2), 143–153. <https://doi.org/10.7454/mssh.v13i2.255>.
- Sugara, R., & Sugihen, B. . (2017). Perilaku Masyarakat dalam Memanfaatkan Aliran Sungai sebagai Sarana Mandi Cuci dan kakus (MCK) (Studi Kasus di Desa Pasir Kecamatan Tripe Jaya Kabupaten Gayo Lues). *Jurnal Ilmiah Mahasiswa FISIP Unsyiah*, 3(1), 232–243. <http://www.jim.unsyiah.ac.id/FISIP/article/view/4270>.
- Suharko, S., & Kusumadewi, C. D. M. (2019). Organisasi Masyarakat Sipil Dan Restorasi Sungai: Studi pada Gerakan Memungut Sehelai Sampah di Sungai Karang Mumus di Kota Samarinda. *Jurnal Sosiologi Reflektif*, 14(1), 81. <https://doi.org/10.14421/jsr.v14i1.1677>.
- Waskito, J., & Witono, B. (2014). Upaya Pelestarian Lingkungan Hidup. *Jurnal Ekonomi Dan Bisnis*, 17(3), 1–16. <http://repository.unj.ac.id/32878/>.
- Widiyastuti, P., & Ivo, K. (2020). Tinjauan Normatif Terhadap Pemukiman Bantaran Sungai Karang Mumus Di Kota Samarinda. *Lex Suprema*, 2(2), 201–217. <http://jurnal.law.uniba-bpn.ac.id/index.php/lexsuprema/article/view/417>.
- Yanto, M., & Efendi, Y. (2021). An Analysis of Marine Tourism Object Development as A Contribution Towards Community Welfare in Lamongan District. *Journal of International Conference Proceedings*, 3(4). <https://doi.org/10.32535/jicp.v3i4.1014>.
- Yati, R. (2021). Permasalahan pencemaran sungai akibat aktivitas rumah tangga dan dampaknya bagi masyarakat. *OSF Preprints*, 1–12. <https://doi.org/10.31219/osf.io/azjhp>.