

## The Openness Of Access And Behavior Of Disposing Of Garbage On The Riverbanks

Ai Nurhayati<sup>1</sup>, Guruh Burhanto<sup>2</sup>

<sup>1</sup>Industrial Engineering, Sekolah Tinggi Teknologi Bandung,  
Bandung, 40235, Indonesia

<sup>2</sup>Antropologi, FISIP, Universitas Indonesia  
Depok, 16424, Indonesia

<sup>1</sup>[ai.nurhayati@sttbandung.ac.id](mailto:ai.nurhayati@sttbandung.ac.id)

<sup>2</sup>[bguruh247@gmail.com](mailto:bguruh247@gmail.com)

### Abstract

*The people of Loji village have limited access to the riverbanks which makes them a place to live rubbish. The purpose of this study is to show what kind of behavior and access the village community Loji behaved to throw garbage on the riverbank. The method used is interview and observation. The results of this study found that the open access factor makes people feel now the riverbanks have become common property and are used together to be used as a place of waste disposal. The concepts of access and rational choice are used because they can explain the behavior of residents to dispose of waste that pollutes and damages the environment.*

**Keywords:** Access, Rational Choice, Riverbank.

### 1. Introduction

Rivers are part of the nature of planet earth that has existed for millions of years. Humans live side by side with nature, including the river which is the source of human life. Humans need land for dumping waste from their daily activities so that not a few of them throw garbage anywhere and at random. Humans then throw garbage on riverbanks, and rivers until they destroy nature to become a disaster. The natural river then becomes polluted due to the garbage.

Garbage is the remains or traces of modern human civilization that then destroy nature so it takes hard work to make nature back like always due to the impact of waste. Public Loji Village then made the vacant land on the banks of the Cisadane river into a place to throw garbage which then turns into spring in a pile of garbage closed and the Cisadane river was affected by the waste. Loji Kelurahan Village is a sub-district in West Bogor District, Bogor City, West Java Province. Loji village is crossed by the Cisadane river so people live side by side with the river. The people of Loji Village live close to the Cisadane river and have the same problem, namely the lack of access to a place to throw garbage so they choose to throw garbage on the banks of the Cisadane river and the Cisadane River.

Anthropological studies are the study of human behavior while ecological anthropology is how humans behave towards the nature around them. Ecological anthropological studies are relevant to see how human behavior throws garbage on riverbanks in Cisadane, Loji village, which makes the river's nature polluted and not what it used to be when. The reason people throw garbage in the river, among others, is to throw away waste into the river is considered more practical and free and does not need to be

bothered. However, this thing eliminates the impact of the waste on the environment around the waste.

This study was conducted to determine the behavior of the Loji village community throwing away waste garbage in the river to destroy the natural life of the river. What's the background Loji village community until it becomes a common thing and not an issue.

Definition of a river from the understanding of the government, namely Government Regulation Number 35 of 1991, namely the river is a place and container as well as a water drainage network starting from the spring to the estuary with a borderline. The river that is in Bogor City there is two, namely the Ciliwung River and the Cisadane River. According to understanding Law, PP 38 of 2011 concerning rivers defines a river as a channel or channel natural or artificial water containers in the form of a water drainage network and the water in it, starting from upstream to an estuary, bordered on the right and left by a borderline. PP 38 years 2011 on the river mentions the borderline is a virtual line on the left and right riverbank which is designated as a river protection boundary. The left and right edges of the trough river are the edges of the riverbank determined at the time of delimitation.

Based on the Decree of the President of the Republic of Indonesia No. 32 of 1990 concerning Management of Protected Areas, river borders are defined as areas along the left and right of rivers, including artificial rivers/canals/primary irrigation canals, which have important benefits for maintaining the function of the river.

River channels are the part of the earth that always contains running water sourced from runoff, sub-surface flow run-off, springs, and underground water (base flow) (Jiang et al. 2022). The riverbanks are part of the river structure which is very vulnerable (Seele-Dilbat, Kretz, and Wirth 2022). Located between the river body and the river embankment, from the riverbank to the flat (Tandon and Sinha 2008). Its function is quite effective as a nutrient filter, blocking the flow of nutrients surface and controlling the rate of erosion (Singh 2008). Meanwhile trash according to Law Number 18 of 2008 concerning waste management, waste is residual human daily activities or natural processes in solid form. Specific trash is waste that due to its nature, concentration, or volume requires management special (Wiprächtiger et al. 2022). The people of Loji Village do not have access to a landfill proper garbage so they require to dispose of garbage in a proper way the most practical and hassle-free is to make throw trash into the river where they are staying. They still live in Loji Village because that is where they live and keep throwing garbage in the river. After all, they don't want to bother and take the route easy for them.

Problem formulation:

1. How is the life of the community around the Cisadane river in general?
2. What made the people around the Cisadane river, Bogor City chooses to keep throwing trash on the riverbank?
3. How do residents access to dispose of waste so that they have to throw it away trash on the riverbank?

Purpose of study:

1. Knowing the life of the community around the Cisadane river, Loji village in general.
2. Knowing the background of the community around the Cisadane river, Bogor City choose to throw garbage in the river.

3. Knowing the community's access to a garbage disposal.

Garbage has become a social problem and a natural problem that occurs everywhere (Verma et al. 2022). Garbage becomes a problem when humans dispose of waste carelessly without thinking about the impact that will result from throwing garbage haphazardly (Peura, Voutilainen, and Kantola 2022). Garbage that is thrown into rivers, on riverbanks, and into the environment will hurt nature itself which then results in human life. Temporary they know and feel the impact of throwing garbage on the riverbanks and rivers that have harmed them as human beings. Garbage is a destructive ecosystem, that makes trees have to be cut down, and animals lose their habitat due to pollution and natural damage to rivers and riverbanks.

This garbage has become a piling pile in the Loji village where the garbage disposal is privately owned land that became a former avalanche until it can no longer be used until it is used as a garbage dump, bank rivers, and streams. The river is no longer usable for drinking, and cooking, and making some residents just use the river as a place to throw garbage.

The riverbanks are now filled with garbage with various types of garbage. According to the informants, the behavior of throwing garbage that destroys nature has occurred for so many years that it is difficult to change just like that. It takes time and requires a process that will take a long time to change the behavior of disposing of waste that destroys nature.

Every culture has a pattern of adaptation to respond to disasters (Rayeni et al. 2021). Adaptation is a process carried out by individuals and groups as a series of choices and alternatives that have consequences different. Disaster is a process or event that involves a combination of potentially damaging agents from the natural and/or technological environment and population in conditions of socially and technologically produced vulnerability.

Rational Choice is defined as someone's actions that are carried out intentionally and consciously and lead to something goals, with those goals shaped by values and choices (Krstić 2022). In a condition, an actor will make a choice that he thinks will be profitable for him both in the use of resources, access, information, and other sources. A person's action in this theory is purposive. The purposive action in question is an action based on the desire to gain an advantage over his choice (Garcés 2022). Rational Choice Theory is used to analyze the decision-making fisherman's decision to continue his profession as a fisherman. Rational choice is a choice between two or more goals and wishes that may be made based on differences in profit or loss expected future, as influenced by other factors (Herfeld 2022).

Access is the ability to derive benefits from things (Hinnou, Obossou, and Adjovi 2022). Using access theory to look at the behavior of people throw garbage on the banks of the Cisadane River, Loji village. Why citizens can easily access the riverbank to be used as a garbage dump but did not get a warning or anything else. Access is always changing depending on the position and strength of individuals or groups in various social relations. Using this theory because the people of the Loji village throwing garbage on the banks of the river due to the difficulty of access related to the disposal of trash, where should they

throw the trash if it's not on the banks of rivers and streams where they reside. Loji village community has difficulty getting access to vacant land that can be used as a place for garbage disposal so it makes riverbanks and rivers a place for waste disposal.

## **2. Method**

The methodology used when researching is a qualitative method descriptive or commonly referred to as ethnography. Data collection is done through interviews, data collection from informants is carried out by key informants then flows to see the roles of the actors involved in the case.

The requirement to determine the informant who will be interviewed are informants who understand correctly and provide accurate information about the research (Garrels, Skaland, and Schmid 2022). Condition other informants must have relevance and participation in the topic researched. The sampling procedure in this qualitative research is purposive sampling, namely, sampling carried out by referring to research objectives, so that the unit of analysis selected within the framework of the criteria allows for answering research questions (Bryman, 2012: 418). We conducted interviews and observations in the Loji village to obtain reliable data expected.

This research was conducted in Loji village, West Bogor district because of the habit of people who throw garbage on the banks of the river to make garbage piled up very high. This makes the environment unhealthy and clean.

Loji Village borders Sindangbarang Village in the north, Gunung Batu and Pasir Jaya villages in the north in the south, and Menteng village in the east. Loji Village is passed by the Cisadane river so people live side by side with the river Cisadane. The Cisadane River surrounds the Loji village so that it makes the Loji village coexists with rivers and riverbanks. The river had become the source of life for the residents of Cisadane village and is used to fetch water for drinking, eating, bathing, fishing, and so on.

## **3. Result and Discussion**

Humans have long coexisted with nature and humans can't help but depend on the nature around them. Humans live side by side with nature and are very dependent on nature in every aspect of life. Humans cultivate nature to meet the needs of life-giving birth to remnants.

Natural processing is waste resulting from human activities. The human disposes of the remaining results of these activities back to nature to pollute and destroy nature. Garbage that destroys nature and pollutes nature is not a few then give birth to natural disasters that harm human life.

In this study, several informants live in the place where the garbage is piled up on the riverbank. These residents are who know and are close to the owner of the land which is partly used as a garbage dump.

Other informants are from the kelurahan which takes care of the environmental sector. He is very close to the people and has long given advice and solutions to overcome the waste problem in both Loji and Kota Bogor as a whole. He finally managed to get a transport motorbike garbage for residents of Loji village for a solution to solve the waste problem which continues to mount and rise and pollute the surrounding environment. He



has long been socializing the impact of littering and trash that destroys and pollutes the environment so that it can be detrimental to the future of mankind.

Other informants are residents who have lived in Loji villages for a long time experiencing a phase where the riverbanks have not been used as garbage dumps until later became a garbage dump by the residents of Loji village. He also took part in disposing of waste using a waste management system located in the Loji village which ends on the riverbank. According to him because indeed it is the easiest and most effective way and does not make a headache. We are a lot discuss with him to get a lot of information. He has also included an elder and respected public figure for his age and influence.

Loji sub-district does not have adequate land and systems to process waste until it turns into ashes or is eliminated. Rubbish is only dumped on the banks of rivers, rivers, and some are immediately burned by residents in his yard. For a long time, there is no waste management system, residents make their management system by throwing garbage on the riverbanks. Residents pay workers who pick up trash from each resident's house then the garbage is dumped on the riverbank. The worker is paid by citizen dues paid per week to pay for the services of the worker transporting trash.

Garbage that is transported from residents' homes is transported using carts pushed trash. Inhabitants throw garbage there because it gets a permit and there is a management system for the garbage so that you don't feel guilty to throw garbage on the riverbanks. The trash is already there and used as a garbage dump on riverbanks for several years. This trash has piled up for so many years that it emits an unpleasant odor from a considerable distance.

From the results of interviews with informants, they said that they do not agree with the behavior of throwing garbage on the banks of the river which can harm nature and leads to themselves. According to residents who throw garbage on the banks of the river to the river, the act of throwing garbage has been a habit for a long time and is carried out by many people. The act of throwing garbage on the banks of the river is recognized by residents as an act that is wrong and can have a bad impact.

However, the act of throwing garbage on the banks of the river cannot be left alone because according to them, it is difficult for them to find a replacement place for throwing garbage. After all, garbage is always in their house almost every day so it is very difficult not to produce waste for one day or find a replacement place for throwing garbage. apart from the river. They admitted that they throw garbage directly into the river. However, now because there is a landslide that can no longer be used for commercial purposes, residents use it as a garbage dump.

The behavior of throwing garbage that destroys nature is done because they think that if they go to the river, the impact they feel will only be flooded or polluted and even then the garbage has been washed away to other areas so they don't care harmed. The garbage has piled up so high that residents believe that one day the waste will be handled by the relevant parties so that they don't mind the behavior of throwing garbage on the riverbanks or in the river where they live. Because they feel that they are not alone in throwing garbage, this is used as an excuse that this is normal behavior and is not a problem. Waste has been piling up for a long time, but even though it has been socialized not to throw garbage there, residents still throw garbage for various reasons so that appeals,

prohibitions, and outreach are in vain. In addition, there is no other waste disposal site in the kelurahan except for having to dispose of garbage outside the kelurahan in collaboration with related parties which allows it to be used as a final waste disposal site.

Residents throwing garbage there has become a habit that is difficult to deal with. Disposed of, it has become like culture because it has become a habit, people throwing garbage there do not feel guilty because everyone throws garbage in that place, and the behavior of throwing garbage on the banks of rivers and rivers is wrong. We both know that this behavior harms nature and us as humans.

They have been trying to clean up the mountain of garbage, however, after the garbage is clean, riverbanks and rivers are turned into trash cans, throwing garbage that damages the environment, throwing garbage in that place seems to have become a habit for the local community because there is no longer any place except to walk far to the market in Bogor. A city that takes time and distance. What is difficult is changing people's habits of not throwing garbage on the riverbanks, even though they have been socialized many times, they still throw garbage there. Because that's the only access they have to be used as a garbage dump.

The various views, both pros and cons towards garbage disposal on riverbanks, have existed for a long time. However, due to the limited time and the high need for a place to dispose of the trash, residents inevitably throw the trash can on the banks of the river. This is because they can't just leave Loji village because of their daily life and place of residence they are in Loji village.

The riverbanks before being used as garbage dumps contained private land and state-owned land. People sometimes use it as a place to relax, a place for children to gather to play, such as playing marbles, playing kites, playing hide and seek, and so on. By some residents along the river, it is used as a place to rest, fish, or just a place to put things while swimming in the river. The Cisadane River still likes to be used as a place for washing clothes, bathing, fishing, and swimming by residents when the riverbanks are still not used as garbage dumps like now, although until now some residents still carry out these activities in the river. Rivers and riverbanks were still clean and beautiful in the past, but now they have become so dirty and polluted due to the behavior of disposing of garbage by humans.

Riverbanks are places where animals and plants live to breed and live life. They lived a life without any obstacles when humans were not yet on the banks of the river. When humans came, they brought changes to nature, animals, and plants. Slowly their lives are displaced for the benefit of humans. Now, the interest is to turn riverbanks into garbage dumps. Garbage has taken the lives of animals and plants that were previously undisturbed on the riverbanks. Humans utilize nature to meet their needs, the remnants of their activities, namely the garbage dumped into nature, namely the riverbanks.

The community had previously proposed to the kelurahan and related parties to be able to overcome a common problem, namely the waste disposal site. This submission was made long ago in previous years. The community and local leaders have even submitted proposals and letters of complaint so that this problem can be immediately resolved before the garbage piles up and builds up like it is now.

According to residents, the Environmental Service was even able to attend the location of the garbage disposal site to check and survey and ask residents about the waste

problem. The agency said that the real problem in Loji village was that there was that no land could be used as a dumping ground for rubbish. Therefore, people make riverbanks and rivers a dumping ground for garbage.

However, the community's hopes have been dashed until now, the agency has not followed up on the community's expectations. The process only stops at checking and surveying. There is no continuation to get out of the waste problem. The department finally raised its hands and there is no news until now. Years later the garbage becomes very high, mountain and very much. Garbage is a problem that has not been resolved until now. The problem then eventually became a problem that was also considered by the kelurahan to be able to solve the problem. The kelurahan had finally gotten a new garbage truck to transport the piled and extensive garbage in the year 2021.

Before the riverbanks were used as garbage dumps, many children played here, like playing anything, playing soccer, playing hide and seek, swimming in the river, and so on. People usually do fishing, take baths, take water, and so on. People usually come here to relax in the old days, or just pass by. In the past, it was still a garden, a forest, the natural ecosystem was still beautiful there, gradually some were bought by people, and some were still state land. The residents have used it like rivers and riverbanks in general.

This choice is a rational choice or an action that is carried out intentionally and consciously that leads to a goal (Andreou 2022). The people of Loji sub-district, West Bogor sub-district live side by side with their natural surroundings, namely the banks of the Cisadane River. The Cisadane community still relies on nature for their daily activities, namely throwing away garbage on the riverbank. The riverbanks in Loji Village are land that contains trees and vacant land. The vacant land on the banks of the river which is used as a trash can is land that was previously a landslide, so it was used as a garbage dump by residents of Loji village, West Bogor district.

The people of Loji village do not have land to dispose of garbage, so they make riverbanks to be used as garbage dumps. land in the riverbanks that are used as trash bins by residents is individual ownership but is caused by natural disasters, namely landslides on their land. This landslide was caused by continuous rain and the slope of the land at the location of his property. This action is based on the desire to gain an advantage over the choice (Hunt, Lerner, and Ortiz-Hunt 2022).

Access is defined as the ability to benefit from things, which is explained as the ability of a person to take advantage of these resources (Best et al. 2022). When it comes to access, we too must pay attention to the de jure and de facto aspects of the region. When viewed de facto, the area where the garbage is dumped is on the banks of the Cisadane River is an area that is included in open access, so it is free for anyone to access this land resource. But keep in mind, de jure, this riverbank and land have ownership, namely private land, and state property. For rivers and riverbanks that are not under private ownership but belong to the state, it is stated in Article 33 paragraph (3) of the 1945 Constitution which contains "earth, water, and natural resources contained therein are controlled by the state and used for the greatest prosperity of the people". The case of private land that is used as a trash can to touch the land and rivers belonging to the state could be another thing, another thing is that the state and the land owner have property access and have the right to transfer the function of the area.

This change in access is due to a change in the purpose of resource ownership in the form of land on the banks of the river. Private land owned by individuals along the river was originally private property. It is based on ownership of land certificates and community acknowledgment that the land is private property that can only be managed in the name of the individual as activities in private land must ask permission from the land owner in advance. Then in 2018, there was a landslide on the land which caused a change in the shape of the land according to the land owner that the land cannot be used for financial gain, so the land is not written in writing given to the surrounding community for free use as long as it can be useful for society. Access is defined as the ability to benefit from things, which is explained as the ability of a person to take advantage of these resources (Pichler, Schmid, and Gingrich 2022).

When this private land is conveyed orally to the community for free to use for anything because it can no longer be used for commercial purposes, the land turns into the land that is common property, namely joint ownership. Change from private property to open access.

In this case, residents who are located close to the land are free to access the land without the need for permission from the owner because the owner has permitted anyone who wants to take advantage of the land.

Residents benefit from the land by turning it into a garbage dump. This causes the banks of rivers and streams to be over-exploited. Garbage is piled up and rivers are polluted. The community is then encouraged to maximize the land on the banks of rivers and rivers to dispose of garbage without thinking about the bad consequences of garbage piling up and being thrown into the river.

Open access to rivers and riverbanks makes residents feel that rivers and riverbanks are shared property and can be used for anything, such as fishing, washing clothes, bathing, taking river water, and so on. The riverbanks are opened as wide as possible, unsupervised, without fences, and have been given permission, making them wide open for use by anyone as well as rivers and riverbank areas that belong to the state. Without any supervision the resource becomes open access and as residents say. Nature is considered as a communal property that is shared property. While the kelurahan has control of access due to a bundle of power related to the river and part of the riverbank, control of access is also owned by private land owners whose land is partly located along the riverbank. Because we feel that this is empty land, it is no longer used because of a landslide, so we just throw garbage there, the river too, because we feel that people often throw garbage in the river, we people are joining in to throw garbage in the river. After all, the garbage was carried away somewhere according to the people who dumped the garbage in the river.

The types of waste that are disposed of on the land along the river consist of various kinds of daily household waste. There is a lot of food, drink, plastic, and so on that can be decomposed and cannot be decomposed by soil. As the results of my interviews with residents of the Loji village. That the waste that is disposed of is household and daily waste such as food scraps, plastic, leftover drinks, and so on. According to him, residents throw their garbage into the land along the river because it is easy and close to their house compared to having to take it to a garbage dump outside the village which is located quite far away and makes it difficult. In addition to solid waste, there is also a lot of liquid waste



that is thrown away by residents on the banks of rivers and streams which are natural around people's homes.

The development of common property or private property depends on ecological resilience (Vaccaro and Beltran 2019). The development of private property stems from scarce resources that deserve to be maintained. Unused land on the banks of rivers and streams is a scarce resource. Residents of the Loji village have difficulty finding land that can be used as a place to live waste disposal. Land that was formerly private property because it is private land that is maintained is simply released by access to become common property. When the cost of exclusion is very high relative to the value of the resource, open access is likely to occur. Resources need to be relatively scarce and people must be able to tackle the problem of collective action. Residents in terms of managing riverbank resources and rivers that are used as landfills act collectively or together so that everything is shared.

We all know that sooner or later this waste will become very piled up and can no longer be accommodated, so that's why we, as citizens, have been trying to find the right solution to deal with the problem of piling up waste like it is today.

The impact of the accumulated garbage is that if they are on the banks of the river, they feel a very strong smell. The smell bothers them so much that they have to keep their distance from the trash can if they want to move or throw garbage on the riverbank. Even from a considerable distance from the location of the garbage, there was an unpleasant smell. Another impact of the accumulated garbage is the destruction of the riverbank ecosystem so that only garbage accumulates. Rivers are polluted and damaged as well as ecosystems on the banks of the river.

The resident wished there was no trash there because it smells really bad when he passes through here, it's a shame that the river is polluted because there is garbage and people throw garbage there. The soil must also be polluted because of indecipherable waste. He also thinks that the impact of the waste will be felt by our children and grandchildren later, and the impact will be detrimental to us, but what can I do, it's hard to find a replacement for landfills here, whether it's because of the air, flies that enter the kitchen, polluted soil, river water, groundwater, etc.

Another impact according to the informant is that there is a spring under the garbage dump, but because it is covered by a pile of garbage, the spring cannot be used. According to an informant from the village, the water source can be used for residents' needs such as drinking, bathing, and other things, but it has not been used so that residents are unknowingly covered by heaps of landslides and used as garbage dumps. The garbage has been closed for so long that many residents don't care and don't know the source of the spring.

#### **4. Conclusion**

Riverbanks are ecosystems that are integrated with rivers which are natural resources that can be utilized for the good of mankind. Humans are bestowed by natural resources around them, including the rivers that flow on earth with the ecosystem in it which is no exception is the riverbanks. Riverbanks and rivers can be used in such a way

by humans that the people of the Loji village are used as garbage dumps because of Open Access and common property.

Because the riverbanks are open to access and are shared property, the community utilizes these resources to be used as garbage disposal sites. However, the utilization of these resources gave birth to disasters, namely natural damage in the form of a river, soil, and air pollution. This behavior of throwing garbage is difficult to just throw away because of the difficulty of getting other access to garbage dumps other than on the banks of rivers or rivers. Access to dispose of trash is an important factor in shaping the behavior of disposing of garbage in the Loji village community. This theory of access can be used to see the behavior of throwing garbage on the banks of rivers and streams that have an impact on environmental damage. From public ownership, becomes the private property and then access is opened to residents so that access is used by residents to throw trash on the riverbank.

Disadvantages of this research are time constraints, lack of writers with ethnographic experience, and various shortcomings that are not realized. What cannot be answered in this research to be developed in future research is how long people will continue to behave in disposing of waste that has the impact of polluting and destroying nature?

## 5. Acknowledgments

The author would like to thank the Ministry of Social Affairs and the Ministry of Education, Culture, Research and Technology for the financial assistance that has been distributed for the progress and development of this research.

## 6. References

- Andreou, Chrisoula. 2022. *Commitment and Resoluteness in Rational Choice*. Vol. 4819.
- Best, Krista L., Luc Noreau, Marie-andr Gagnon, Corentin Barthod, Sander L. Hitzig, and François Routhier. 2022. "Housing , Transportation and Quality of Life among People with Mobility Limitations : A Critical Review of Relationships and Issues Related to Access to Home- and Community-Based Services." *Disabilities* 2:204–18.
- Garcés, Pablo. 2022. "Pragmatic Behaviour : Pragmatism as a Philosophy for Behavioural Economics." *The Journal of Philosophical Economics* XV(2022):1–34.
- Garrels, Veerle, Borge Skaland, and Evi Schmid. 2022. "Blurring Boundaries : Balancing between Distance and Proximity in Qualitative Research Studies With Vulnerable Participants." *Sage* 21:1–11. doi: 10.1177/16094069221095655.
- Herfeld, Catherine. 2022. "Revisiting the Criticisms of Rational Choice Theories." *Philosophy Compass* 17(1):1–20. doi: 10.1111/phc3.12774.
- Hinnou, Léonard Cossi, Esdras Abréwa Rêmilokoun Obossou, and Nestor René Ahoyo Adjovi. 2022. "Understanding the Mechanisms of Access and Management of Agricultural Machinery in Benin." *Scientific African* 15:1–13. doi: 10.1016/j.sciaf.2022.e01121.
- Hunt, Richard A., Daniel A. Lerner, and Avery Ortiz-Hunt. 2022. "Lassie Shrugged: The Premise and Importance of Considering Non-Human Entrepreneurial Action."

- Journal of Business Venturing Insights* 17(March):2–19. doi: 10.1016/j.jbvi.2021.e00298.
- Jiang, Ruixue, Dongmei Han, Xianfang Song, and Fandong Zheng. 2022. “Numerical Modeling of Changes in Groundwater Storage and Nitrate Load in the Unconfined Aquifer near a River Receiving Reclaimed Water.” *Environmental Science and Pollution Research* 1–31. doi: 10.1007/s11356-022-18597-1.
- Krstić, Miloš. 2022. “Rational Choice Theory – Alternatives and Criticisms.” *Soc. Ekol. Zagreb* 31(1):9–27. doi: 10.17234/SocEkol.31.1.1.
- Peura, Pekka, Olli Voutilainen, and Jussi Kantola. 2022. “From Garbage to Product and Service Systems: A Longitudinal Finnish Case Study of Waste Management Evolution.” *Waste Management* 140(August 2021):143–53. doi: 10.1016/j.wasman.2022.01.025.
- Pichler, Melanie, Martin Schmid, and Simone Gingrich. 2022. “Mechanisms to Exclude Local People from Forests: Shifting Power Relations in Forest Transitions.” *Ambio* 51(4):849–62. doi: 10.1007/s13280-021-01613-y.
- Rayeni, Ebrahim Babaei, Mohammad Mehdi, Pour Saeed, Mehdi Kazemi, Mehdi Ebrahimi, and Nejad Rafsanjani. 2021. “Prerequisites for Community-Based Disaster Risk Management in Iran.” *Journal of Rescue and Relief* 13(3):187–92. doi: 10.32592/jorar.2021.13.3.3.
- Seele-Dilbat, Carolin, Lena Kretz, and Christian Wirth. 2022. “Vegetation of Natural and Stabilized Riverbanks and Early Effects of Removal of Bank Fixation.” *International Review of Hydrobiology* 107(1–2):88–99. doi: 10.1002/iroh.202102097.
- Singh, Sunil K. 2008. “Erosion and Weathering in the Brahmaputra River System.” *Large Rivers: Geomorphology and Management* 373–93. doi: 10.1002/9780470723722.ch18.
- Tandon, Sampat K., and Rajiv Sinha. 2008. “Geology of Large River Systems.” *Large Rivers: Geomorphology and Management* 7–28. doi: 10.1002/9780470723722.ch2.
- Vaccaro, Ismael, and Oriol Beltran. 2019. “What Do We Mean by ‘the Commons?’ An Examination of Conceptual Blurring Over Time.” *Human Ecology* 47(3):331–40. doi: 10.1007/s10745-019-00081-z.
- Verma, Vishal, Deepali Gupta, Sheifali Gupta, Mudita Uppal, and Divya Anand. 2022. “SS Symmetry A Deep Learning-Based Intelligent Garbage Detection System Using an Unmanned Aerial Vehicle.” *Symmetry* 14(960):1–15.
- Wiprächtiger, Maja, Melanie Haupt, Martina Rapp, Stefanie Hellweg, and Rhythima Shinde. 2022. “Turning Trash into Treasure An Approach to the Environmental Assessment of Waste Prevention and Its Application to Clothing and Furniture in Switzerland.” 1–17. doi: 10.1111/jiec.13275.

## 7. Biographies

### **Ai Nurhayati**

The author has completed his studies from the Masters in Industrial Engineering and Management in 2014 from the Bandung Institute of Technology. The author is currently a

lecturer in Industrial Engineering at the Bandung College of Technology. The author is the editor of the JIMPKS journal. The author is a reviewer from the journal Social Science Studies. The author has won novice lecturer research grants 2 times. The author has won a published textbook grant. The author has won the first Matching Fund grant. The author has published 35 papers. The author has published 16 books, namely: Engineering Economics, Statistical Data Analysis, Strong Tips for Fasting, Waste Management, Optimal Design of Composter Technology (Losedana) and Its Application in Society, Poetry of Indonesian Natural Scenes, Biomimetic Dictionary, The Most Beautiful Gift, Memories, The Process of Patience and the Enjoyment of Gratitude, Remember Me, Various Archipelago Recipes, Biology Dictionary for Class 10 High School, Why Study ?, Industrial Engineering Dictionary, and Fundamentals of Multivariate Analysis. Currently the author is conducting cross-disciplinary research for the development of science that is beneficial to society.

**Guruh Burhanto**

The author is a class of 2018 and a Bachelor's graduate from the Social Anthropology Study Program from the University of Indonesia. The author has received a grant from the Ministry of Social Affairs in the Ministry of Social Republic of Indonesia's Young Warrior Program.



ISCH-15