

The Dynamics of Human and Water Relations: Analysis of the CSR Program Kampung Kreatif Karisma Pertamina (K3P) in the Serayu River Watershed

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Abstract. For some environmentalists, issues such as erosion, flooding, and landslides caused by an abundance of water are considered purely environmental problems. However, multiple case studies conducted in Karangrena Village, specifically in the Serayu Watershed, reveal a different perspective. By examining two interrelated programs the Biodiversity Protection and Reforestation Program of the Serayu Watershed, which has been implemented since 2013, followed by the CSR Program “Kampung Kreatif Karisma Pertamina” (K3P) that began in 2020 and continues to this day valuable reflections and findings have emerged. First, the issue of water as an environmental entity cannot be separated from social, economic, and even cultural aspects of life. Second, an abundance of water does not automatically equate to easy access to water. Third, solutions to water-related problems cannot be resolved through purely environmental efforts. Fourth, among communities living in the Serayu Watershed, perceptions of water are not singular; on one hand, water can be a threat as it is a source of disasters such as erosion, flooding, and landslides. On the other hand, water is a valuable resource, although the abundance of water can sometimes be difficult for them to access. Thus, the two programs facilitated by PT Pertamina Patra Niaga Fuel Terminal Maos, in collaboration with community groups in Karangrena Village, have gradually been able to address social, economic, environmental, and cultural issues in the Serayu Watershed.

Keywords: CSR of K3P Program, Human-Environment, Waterworld.

A. INTRODUCTION

The debate has long persisted, particularly among political ecology thinkers, that environmental issues such as erosion, flooding, and landslides are not merely ecological but are also political (Blaikie, 1995, 2016). This debate has led many scholars to revisit the causes of environmental problems, which are fundamentally not natural but are, in fact, the result of human intervention, including political policies (Blaikie and Brookfield, 2015; Falkenmark, Wang-Erlandsson and Rockström, 2019). Consequently, the proliferation of knowledge that attempts to reunite human-environment relations, addressing both their problems and efforts to improve them, has become inevitable. Therefore, studying a single entity, for example, the environment alone, not only results in an analysis that is not comprehensive but is also potentially dangerous (Sahlins, 2008).

This is why many studies continue to link human-environment relations as a unified whole. For instance, the work of Blaikie and Brookfield, (2015); as Blaikie (2016) connects issues of erosion and environmental degradation with political-economic problems such as the absence of state willingness to address these environmental issues. Similarly, the study by Geheb and Suhardiman (2019) on the political ecology of hydropower in the Mekong Watershed discusses how water has become a source of both collaboration and conflict among various human agencies around the watershed. A somewhat different study by Braun (2015)

specifically links political ecology with anthropocentrism, where the debate between these two concepts not only critiques human-environment relations but also creates numerous experimental adaptations of these relations.

Building on previous studies, this research focuses on the role of communities around the Serayu Watershed, particularly in Karangrena Village, Maos District, Central Java, which faces disaster vulnerabilities such as erosion, flooding, and landslides. Through the CSR Program “Kampung Kreatif Karisma Pertamina” (K3P), implemented by various community groups and facilitated by the CSR division of PT Pertamina Patra Niaga Fuel Terminal Maos, the execution of various activities within the program has managed to address broader daily problems faced by the community, such as environmental, economic, social, and cultural issues. This program has even specifically sparked a deeper identification of the surrounding environmental issues caused by the abundant river water flow and human activities that contribute to erosion, flooding, and landslides. Additionally, the program has helped identify and address the disruption of socio-economic activities, such as agriculture, due to water scarcity. This problem identification has led to the emergence of various solutions that gradually transform the river and water, which previously hindered socio-economic activities, into a resource that can be utilized.

Observing the progression of the program, starting from the implementation of the previous, more ecologically-oriented program namely Program Perlindungan Keanekaragaman Hayati Penghijauan (the Biodiversity Protection and Reforestation Program) of the Serayu Watershed, which has been in place since 2013 the K3P Program, implemented since 2020, has shown how the improvement in human-environment relations achieved by the previous program can be further enhanced through the development of subsequent programs that focus more on “human agency,” such as community groups and corporate facilitators, to address social, economic, and environmental issues around the Serayu Watershed. Through the concept referred to as a web or network within the “waterworld” (Hastrup and Hastrup, 2015; Whiteford *et al.*, 2016), this study explored the methods and perspectives of the human agencies involved in the K3P program regarding how they treat the environment, particularly water, and how their treatment of water can transform their way of life for the better, both socially and economically.

B. METHODS

The approach in this study was qualitative using a multiple case studies model (Gustafsson, 2017). The rationale for choosing multiple case studies lies in the focus of this research on two interrelated programs: the Biodiversity Protection and Reforestation Program of the Serayu Watershed, which has been implemented since 2013, and the Kampung Kreatif Karisma Pertamina (K3P) Program, which began in 2020 and continues to this day. Although this study fundamentally focuses more on the K3P Program, it places the analysis of the Biodiversity Protection and Reforestation Program of the Serayu Watershed as an introductory framework to explain the origins of the K3P Program. This is done to demonstrate that the previous, ecologically-oriented program successfully improved environmental conditions along the Serayu Watershed. However, the earlier program left unresolved issues as it did not intensively consider human agency specifically, the local community and its social and economic impacts.

According to Eisenhardt (2020), in the practice of multiple case studies, studying multiple cases simultaneously also means engaging in theory-building. The use of multiple case studies, which involves examining more than one case, allows researchers to explore research questions or theories more broadly (Eisenhardt and Graebner, 2007). To strengthen this practice, in addition to conducting in-depth interviews with various stakeholders involved

in the program, both group members and company representatives, document analysis was also performed. This analysis included documents related to the two programs, such as Social Mapping Documents, Social Innovation Documents, the Biodiversity Protection and Reforestation Study Report of the Serayu Watershed, and other documents explaining both programs, which further support the analysis in this study.

C. RESULTS AND DISCUSSION

1. Social-Environmental Issues in the Serayu Watershed and Efforts for Improvement

Environmental issues do not exist in isolation. Referring back to Blaikie (2016), environmental problems such as erosion, for instance, are intricately linked with social, economic, and even political issues. This perspective is further substantiated by the recent study by Marks, Bayrak and Connell (2023) which identified a connection between coastal erosion, waste intrusion, and the income of farmers in Thailand. This study reinforces the argument that environmental issues cannot be disentangled from human agency in their degradation. However, in the evolution of this debate, the role of “humanity” has also been recognized as crucial in various experimental efforts to improve human-environment relationships (Braun, 2015). Braun’s (2015) argument is evident in the practices undertaken by PT Pertamina Patra Niaga Fuel Terminal Maos in collaboration with the community of Karangrena Village in the Serayu Watershed.

Reflecting on the Biodiversity Protection and Reforestation Program of the Serayu Watershed, which has been implemented since 2013 by PT Pertamina Patra Niaga Fuel Terminal Maos in partnership with the Karangrena Village community, this program was linearly continued with the Kampung Kreatif Karisma Pertamina (K3P) Program in 2020. The ongoing implementation of these programs demonstrates that the company’s efforts to address environmental issues in the Serayu Watershed, which initially focused primarily on environmental concerns, have now evolved. Through the K3P program, the reintegration of human agency into environmental management efforts reveals a more comprehensive solution from the company. This also shows that the company is capable of framing environmental issues as inseparable from social, economic, cultural, and even political issues.

According to the Study Report on Biodiversity Protection: Reforestation of the Serayu Watershed and Its Impact on Hydrological Conditions conducted by Hendrayanto (2023), the Biodiversity Protection and Reforestation Program of the Serayu Watershed was initiated due to the critical issues of surface erosion and riverbank erosion in the watershed. These significant environmental problems have impacted the social lives of the Serayu Watershed communities, including those in Karangrena Village, resulting in 40 households being forced to abandon their lands. In response to these issues, PT Pertamina Patra Niaga Fuel Terminal Maos, together with the local community, undertook intensive reforestation efforts from 2013 to 2017 as part of the Biodiversity Protection and Reforestation Program of the Serayu Watershed. The reforestation activities involved planting hardwood species such as *Samanea saman*, Albizia (sengon), Acacia, and Mahogany, aimed at preventing and reducing surface runoff, mitigating surface erosion and riverbank erosion, while simultaneously striving to increase infiltration rates and the emergence of springs.

During the implementation of the program, 6,500 trees were successfully planted, equivalent to 1,000 to 1,500 seedlings per year. The success of the reforestation efforts in the Serayu Watershed, according to Hendrayanto (2023), significantly reduced the erosion rate from 35.9 tons/ha/year to 1.4 tons/ha/year. Although, according to him, the reforestation activities that had the potential to generate springs around the green areas have not yet resulted in any new water sources, the reforestation efforts indirectly prevented the adverse effects of

erosion, such as forcing many households to abandon their land around the watershed. The following illustrates the achievements of the reforestation efforts around the Serayu Watershed under the Biodiversity Protection and Reforestation Program of the Serayu Watershed.



Figure 1. Land Cover in the Serayu Watershed, Karangrena Village in 2014, 2017, and 2022

(processed by Hendrayanto, 2023)

In general, the main reforestation activities under the Biodiversity Protection and Reforestation Program of the Serayu Watershed have been indirectly beneficial to the communities living around the watershed, where those previously vulnerable to erosion-related disasters are now safer and better protected. However, on the other hand, a deeper examination of the erosion issues around the Serayu Watershed reveals that human intervention, or what Cremaschi (2014) refers to as anthropogenic control, has also been a driving force behind the rate of erosion. Before the program was initiated, the local community's practice of planting seasonal crops instead of hardwood trees was one of the factors contributing to the erosion rate. Thus, while humans can drive environmental disasters, they also can mitigate them.

This close human-environment relationship is referred to as metabolism (Swyngedouw, 2006). Humans are not just entities that produce social factors but also environmental factors, a concept referred to as socionature (Swyngedouw, 1996). Rivers, as positioned within the socionature framework, according to Boelens *et al.*, (2023) are not merely extended areas that channel water. Rather, rivers are arenas of joint social, material, and symbolic production, or what can be termed a river-as-ecosociety (Boelens *et al.*, 2023). Erosion around the Serayu Watershed, as an example, which is produced by human-environmental factors, does not only impact the environmental condition of the watershed, whether it deteriorates or not. Therefore, solutions to these issues are not solely environmental. Fundamentally, erosion is a disaster that has social consequences for humans.

Recognizing that erosion is not merely a natural disaster (Gould, Garcia and Remes, 2016), but also one that is caused by and impacts humans was not sufficiently addressed by the previous, more ecological-focused program. However, the Biodiversity Protection and Reforestation Program of the Serayu Watershed laid the foundation for the subsequent program that more closely considers the interdependence of the human-environment relationship leading to the emergence of the Kampung Kreatif Karisma Pertamina (K3P) Program. This program, which reintroduces human agency into environmental restoration efforts, even began with a social mapping study that is updated annually. As a result, the most critical issue erosion

has been identified as one that not only impacts the local environment but also has social, economic, and cultural repercussions.

Based on the company's social mapping study in Karangrena Village, erosion has contributed to the increasing scarcity of the toe clam resource. Additionally, despite ongoing tree planting efforts around the Serayu Watershed, erosion continues to occur, leading to the damage of cultural heritage sites. Karangrena Village is indeed home to a cultural heritage site, the historic pavilion of Adipati Penetasan I (Social Mapping Report of Karangrena Village, 2024). This pavilion, classified as a cultural heritage site, remains vulnerable to erosion in the event of severe occurrences. This implies that the reforestation activities of the previous program have indirectly mitigated the erosion rate, which would otherwise pose a threat to the cultural heritage building. On the surface, this means that the reforestation program has had indirect benefits that influence cultural aspects, but how has reforestation impacted the social and economic aspects of the community?

A closer examination of the social mapping study reveals that the community of Karangrena Village, located near the Serayu Watershed, has a strong inclination towards planting, an enthusiasm for horticulture, and largely depends on agriculture for their livelihood. However, these beneficial activities are still hindered by a major factor the difficulty in accessing water. The local community, aware that planting seasonal crops close to the riverbank not only accelerates erosion but also leaves them vulnerable to it, has been motivated to plant hardwood trees to prevent erosion. However, this effort has forced the community to grow crops like horticultural plants on higher ground, where access to water from the Serayu River is limited. This ironic reality, where the community lives near a river abundant with water but cannot access it, underscores the fact that erosion is not merely an environmental issue. It is a socio-environmental problem that requires attention and solutions that are both environmental and social.

Learning from the previous program, which emphasized tree planting on seasonal croplands near the riverbank, indeed succeeded in slowing the erosion rate. However, this solution also had consequences, as the community was forced to plant food crops on higher ground with inadequate water access. It is at this point that the follow-up program, the Kampung Kreatif Karisma Pertamina (K3P) Program, implemented by various community groups in Karangrena Village and supported and facilitated by the CSR division of PT Pertamina Patra Niaga Fuel Terminal Maos, comes into play. This program applies solutions to the socio-economic-environmental issues in the Serayu Watershed while acknowledging the role of human agency. The program reflects a new human responsibility in the face of disasters, striving to plan processes and create effective environmental systems (Whitehead, 2019). Therefore, the solutions offered and implemented are not singular, but are grounded in the interconnectedness of the human-environment relationship (Arias-Maldonado, 2015). The following sections will further explore the role of human agency, particularly the role of groups contributing to the K3P program, which includes various activities that integrate human-environmental solutions to address the socio-environmental issues surrounding the Serayu Watershed.

2. Restoring Human Agency in the Production of Socionature: Exploring the Role of the K3P Group

As previously discussed, the intertwined relationship between humans and the environment implies that humans do not merely produce social elements such as human-to-human relations but also play a role in producing the environment (Swyngedouw, 2006; Kolinjivadi, 2019). Human intervention around the watershed can either accelerate or mitigate erosion. The question, then, is what kind of approach allows humans to regain their role in

shaping their environment without endangering their existence and livelihood. Referring back to the findings from the 2024 social mapping study of Karangrena Village, environmental issues are always intertwined with other issues such as social, economic, and even cultural aspects.

Erosion, which threatens cultural heritage buildings and local art forms, for example, will impede the smooth conduct of local artistic activities in Karangrena Village. Furthermore, this issue also has political implications, as building relationships with the local Cultural Affairs Office is necessary to protect the cultural heritage. Additionally, although erosion has been mitigated in part through reforestation efforts, this solution has driven farming activities to higher, more distant locations from the riverbanks. As a result, access to water has become more challenging, necessitating the development of more sophisticated irrigation systems. The difficulties in farming are also intertwined with other issues, such as high rates of urbanization, where people move from villages to cities. This reality is further exacerbated by middlemen who purchase farmers' crops at very low prices. The diminishing job opportunities in Karangrena Village force many people to seek employment outside the city or even abroad. The complexity of these issues has made many people more inclined to pursue economic opportunities elsewhere.

The various issues identified in Karangrena Village through the social mapping study conducted by the CSR division of PT Pertamina Patra Niaga Fuel Terminal Maos ultimately provided the foundation for the company to initiate and work alongside various community groups in Karangrena Village to seek solutions to this complexity and begin to untangle these issues since 2020. Since then, the company's unique approach to community assistance, especially in Karangrena Village, has become more comprehensive, addressing multiple aspects: social, economic, environmental, and cultural. At this point, the company's efforts to address the community's issues around the Serayu Watershed reflect a shift away from merely focusing on environmental aspects. The company has become motivated to consider that environmental issues are intertwined with other issues, such as social, economic, and even cultural ones. Based on the mapping of various issues and ongoing discussions with the community in Karangrena Village, it is evident that despite the complex problems, there is also significant potential within the village.

The region around the watershed, previously fraught with various issues, has been thoughtfully reactivated as a river-as-ecosociety (Boelens *et al.*, 2023). Facilitated by the company's CSR initiatives, the Program Kampung Kreatif Karisma Pertamina (K3P) was launched in 2020 by various community groups in Karangrena Village. Conceptually, K3P is an educational tourism program focusing on cultural and agricultural aspects. The choice of a tourism concept stems from a deeper understanding of economic challenges in Karangrena Village, such as limited employment opportunities and difficult access to water for agriculture, which are traced back to the increasingly disconnected relationship between humans and the environment. Environmental issues like water access, difficulties in agricultural management, and challenges in maximizing the potential of cattle farming and honey cultivation have hindered the community's ability to manage their environment effectively, leading to economic problems such as job scarcity and low income (Social Mapping Report, 2024). This situation mirrors an enduring economic principle that remains relevant: environmental problems are equivalent to economic problems (Sagoff, 1980).

Thus, it is with reason that K3P was conceptually designed as a cultural and agricultural educational tourism initiative. Under this program, various activities aim to address problems while harnessing potential. First, the Petani Hortikultur Cilacap (PHC) Group implemented horticultural farming activities. In Karangrena Village, there is significant potential as the community has a strong interest in planting, particularly horticultural crops. However, this

potential has been hampered by limited water access. It is a somewhat ironic situation, as the community lives alongside the Serayu River, abundant with water, yet still struggles to access it for farming. The presence of the CSR division of PT Pertamina Patra Niaga Fuel Terminal Maos has sparked and facilitated the development of an innovative irrigation system known as the Serayu Smart System Water Irrigation (Saraswati innovation). This effort has greatly alleviated the difficulties farmers have faced in accessing water.

In some higher-contour areas along the riverbank, for example, these locations often experience drought despite their proximity to the river. Farmers in these areas, who have attempted farming there, have relied on fuel-powered pumps. Now, thanks to Saraswati innovation, farmers no longer depend on these pumps. Inovasi Saraswati is an automated irrigation system that requires minimal human labor to operate. Farmers now find it much easier to access water for cultivating various crops, including horticulture. The abundance of water from the Serayu River, which was previously merely a “property,” is now accessible (Myers and Hansen, 2020).

This achievement is not a trivial one, as natural resources like water, though physically present, are not always readily accessible. The Serayu River, while not privatized, offers an abundance of water that cannot automatically be accessed by those who need it. Thus, restoring access to the abundant water of the Serayu River for farmers who cultivate the land and plant crops signifies the restoration of human agency specifically the farmers’ role in the production of socionature (Kolinjivadi, 2019; Boelens *et al.*, 2023). This reciprocal relationship allows the environment to be nurtured through human intervention, while humans, in turn, gain economic benefits from the care and management of this environment.



Figure 2. A Member of PHC Engaged in Educational Tourism Activities

Source: CSR of PT Pertamina Patra Niaga Fuel Terminal Maos (2024)

The successful implementation of the Inovasi Saraswati irrigation system has revitalized the role of farmers in Karangrena Village. Previously, these farmers struggled to access water from the Serayu River, but now they can efficiently cultivate both paddy and horticultural crops. At least six paddy farmer groups and one horticultural farmer group have benefited from this innovative irrigation development (Social Innovation Document, 2024). This success has had a positive impact on other activities running concurrently under the K3P Program, including educational tourism. This second initiative, which focuses on educational tourism, naturally hinges on the successful cultivation of horticultural and paddy crops, as well as the success of cattle farming also managed by PHC. Practically, these activities are interconnected and mutually dependent. However, their interdependence has a positive effect,

as the success of these activities has also stimulated the emergence of other initiatives, such as the “Sekolah Sungai.”

The third initiative, the “Sekolah Sungai,” reflects at least two significant points: firstly, the river is no longer perceived as a threat to the people of Karangrena Village. On the contrary, the Serayu River has become a source of livelihood and knowledge for the local community and the broader public. Through the “Sekolah Sungai,” knowledge about climate mitigation and adaptation is disseminated, including education on the dangers and myriad benefits of the river, which is also shared with visiting tourists. In 2023, the K3P group recorded 1,214 visits from students across districts in the Cilacap Regency (Social Innovation Document, 2024). Below is an image of students visiting the educational tourism site and participating in the “Sekolah Sungai,” accompanied by K3P members who serve as guides and knowledge disseminators regarding the Serayu River:



Figure 3. Students with K3P Group Members in the “Sekolah Sungai”

Source: CSR of PT Pertamina Patra Niaga Fuel Terminal Maos (2024)

The increasingly diverse activities under the K3P Program highlight the equivalence between successful environmental management and economic success. This is consistent with the various developments involving broader community participation, including women’s groups. The Kelompok Wanita Tani (KWT) Sekar Arum is one of the groups contributing significantly to the success of various activities within the K3P program. This group focuses on the cultivation and breeding of *Trigona sp.* honeybees. Numerous studies have shown that this species of bee is highly beneficial to farmers, as it enhances economic income and promotes human and environmental well-being (Fadiah, 2023; Ramdiawan, Herdiana and Rosadi, 2023). According to the 2023 Social Innovation Document, the *Trigona sp.* honeybee breeding and cultivation activities have involved 30 female members. In addition to being responsible for the honey production process, these women are also engaged in educational tourism, specifically providing knowledge to visitors about *Trigona sp.* bees and their cultivation at the Rumah Bibit Lebah, which has been developed as an educational facility.

At this point, the K3P program, which initially began with the establishment of an irrigation facility named Inovasi Saraswati that benefited farmers, has now entered its fourth year and expanded to involve a wider community. The program now encompasses not only groups focused on environmental, economic, and social work but has also sparked the activation of culturally significant activities. Karangrena Village is known for its community’s strong social ties and rich local arts, such as traditional dance and music. Within the K3P program, the artistic community of Karangrena Village is supported through these activities. The Sanggar Sarakerta has become a hub for these artistic and cultural activities. It also serves

as an educational tourism site for visitors and students in the surrounding area. At Sanggar Sarakerta, students can learn various forms of traditional arts, such as dance, gamelan music, ketoprak (traditional Javanese theater), and other traditional arts. Below is a snapshot of one of the cultural and artistic activities in Karangrena Village carried out by cultural activists:



Figure 4. Snapshot of Cultural and Artistic Activities in Karangrena Village

Source: CSR of PT Pertamina Patra Niaga Fuel Terminal Maos (2024)

Originally, the K3P Program began with the construction of an automatic irrigation facility called Inovasi Saraswati, which had a direct impact on the fate of farmers struggling to access water. Once the farmers were able to easily access water, they could manage their land and crops more efficiently. This ease of access benefited not only the environment but also the economy. Consequently, over the years, the program has witnessed the emergence of many activities that indicate significant program development. The environmental improvements that have positively impacted the economic conditions of the community, especially the farmers, have motivated them to participate in cultural activities, not merely for economic gain. The emergence of cultural and artistic activities at Sanggar Sarakerta, along with involvement in various educational tourism initiatives such as the Sekolah Sungai, shows that group members are also eager to disseminate knowledge on agriculture, livestock farming, climate mitigation and adaptation, erosion, and flood prevention, as well as arts and culture to a broader audience.

This has fostered a sense of responsibility among group members to pass down this knowledge to the next generation. It is, therefore, unsurprising that the educational tourism activities conducted so far have primarily targeted visitors from various schools across Cilacap Regency. Such cultural rather than economic motivations (Sahlins, 2013), have been evident from the outset among cultural activists, particularly those who are elderly. Of the 40 members, 8 are categorized as elderly (Social Innovation Document, 2024). A study by Cao and Cao (2019) on the condition of the elderly in rural areas, where migration of children or family members is common, found that migration has led to a decline in the social status of the elderly and created emotional crises. Given that Karangrena Village shares similar characteristics, with many people migrating to cities for economic opportunities, an emotional crisis among the elderly is a likely and unavoidable outcome.

That is why, in the K3P program activities, particularly in arts and culture, the reason why 8 elderly individuals are involved is to keep them occupied and active. These elderly participants actively train at Sanggar Sarakerta, assist in teaching the arts, disseminate cultural knowledge during educational tourism events, and are directly involved in art performances that are frequently held. Despite the age difference between these senior cultural activists and the younger members, they share the same enthusiasm as the other participants. This enthusiasm is mirrored in the female members of KWT Sekar Arum, consisting of 30 women from Karangrena Village. Previously, many of them spent their time at home or helped their

husbands with farming, but through the K3P Program, KWT Sekar Arum members now have additional activities and income through the cultivation of *Trigona sp.* honey and their involvement in educational tourism management.

The additional income from the K3P Program has also benefited other group members classified as impoverished. According to a study conducted by the company, referencing the 2024 Integrated Social Welfare Data (Data Terpadu Kesejahteraan Sosial/DTKS) from the Ministry of Social Affairs of the Republic of Indonesia, there are still 3,200 residents of Karangrena Village categorized as poor. Of this significant number, 24 are members actively participating in the K3P Program. Their active involvement in various program activities can be seen as an effort to improve their economic conditions and gradually escape the grip of poverty. Unlike many others who choose to seek fortune elsewhere, these 24 members remain in the village, consistently managing tourism activities to earn additional income beyond their primary occupations as farmers or day laborers. Now, environmental improvements that consider other aspects and impact social, economic, and cultural conditions are more likely to develop and be sustainable. This rationale will be elaborated upon in the following section.

3. Waterworld: Understanding the Importance of Human-Environment Relationships and Solutions

Referring to the study by Whiteford et al., (2016) titled “Water, Environment, and Health: The Political Ecology of Water”, water issues across various parts of the world are highly diverse. In some areas, the water that is essential for sustaining human life is increasingly disappearing or, if not, its quality is drastically changing. In some places, water has become a scarce resource. However, in other locations where water is abundant, this resource is often undervalued. Specifically, in Karangrena Village, one of the villages located within the Serayu Watershed, water resources from the river are visibly abundant. However, this abundance is not always beneficial and can sometimes lead to disasters such as erosion, floods, and landslides.

This situation reflects two crucial but ironic realities. In certain specific areas, water is extremely plentiful. Moreover, this water is not a privatized resource controlled by various entities, preventing the community from utilizing it. On the other hand, the presence of river water can sometimes become a disaster. The abundant water slowly erodes low-contour riverbanks or river cliffs, causing landslides that force riverside residents to relocate. Such disasters, as previously explained, do not occur naturally (Gould, Garcia and Remes, 2016), because humans, particularly those engaging in intercropping, contribute to riverbank erosion. However, in other locations along the river with higher ground and farther from the river’s edge, safe land for farmers to cultivate, whether for rice paddies or horticultural crops, often suffers from drought. Additionally, these farmers struggle to access water because their land is situated at a higher elevation than the river.

Given this complex issue, water from the Serayu River is no longer merely a question of importance for the people of Karangrena Village; rather, their lives are closely intertwined and shaped by water. A more in-depth exploration, using what Hastrup and Hastrup (2015) describe as a “waterworld,” can help understand how water shapes human life and, conversely, how humans determine whether or not water impacts their lives. This reciprocal relationship is not separate but rather a unified whole (Havsteen-Mikkelsen, 2016). This section will specifically highlight how the relationship between the Serayu River water and the community of Karangrena Village manifests, considering that issues such as erosion, floods, landslides, and difficulties in accessing water are deeply embedded in the community’s relationship with water within the Serayu Watershed, as observed through hydrological studies and the company’s social mapping studies.

Based on these issues, the existence of two programs the Serayu Watershed Reforestation and Biodiversity Protection Program initiated in 2013 and the K3P Program launched in 2020 both offer solutions to various problems faced by Karangrena Village, which has a complex relationship with the Serayu River. However, it is important not to overlook the successes of the Serayu Watershed Reforestation and Biodiversity Protection Program, which has achieved the reforestation of 6,500 trees and continues to grow year by year. Nevertheless, this practice has left the company with valuable lessons and unfinished tasks, particularly that solutions focusing solely on environmental improvements, such as addressing erosion through reforestation alone, can have unintended consequences. For instance, farmers who relied on growing staple crops in the areas targeted for reforestation found themselves unable to continue farming there, resulting in a loss of income and agricultural land.

This is why, learning from these conditions and about discussions on “Waterworld,” it becomes clear that water cannot be viewed in isolation. For example, while water abundance can lead to disasters such as erosion, handling this issue through reforestation alone may inadvertently reduce the livelihood opportunities for residents who depend on planting staple crops. Understanding water through the lens of “Waterworld” means recognizing it as a substance that connects various social lives (Orlove and Caton, 2010). At this point, addressing erosion caused by the interplay of human actions and environmental conditions requires a comprehensive and integrated approach. Effective and sustainable management of the Serayu River ecosystem, particularly its water resources, can only be achieved by involving human agencies, such as the community groups in Karangrena Village.

This is where this study captures the shared responsibility of the company and the broader Karangrena Village community in continuing the Serayu Watershed Reforestation and Biodiversity Protection Program through the implementation of the K3P Program. As a result, when the program initially began with the construction of an irrigation system called the Inovasi Saraswati, which aided the livelihoods of the community, particularly farmers, their economic conditions improved. Farmers who previously could no longer cultivate crops in the vulnerable and erosion-prone areas near the riverbanks could, with the new irrigation system, resume planting in higher, safer areas without fearing water scarcity. This outcome reflects how the K3P program’s activities, which are environmentally beneficial and economically advantageous for the farmers, have been more readily accepted and sustained. This is because the program operates with consideration for environmental improvements while also addressing the socio-economic consequences for the community.

Such practices are significant because the company’s involvement in the program, from planning to implementation, monitoring, and periodic evaluation, positions it as both an external party and an engaged participant. The company’s role as an external entity, yet one that is intensively involved in the program, can sometimes lead to differing perceptions, as seen when the company conducted hydrological studies. Through these studies, the company viewed the abundance of water, which could cause erosion and floods, as highly dangerous. To address this, the company, along with the local community, promoted reforestation by planting hardwood trees. However, the company did not fully consider the consequences of this practice, particularly for the farmers. This oversight highlights that the perceptions and assumptions about water between the company and the community can differ on several levels.

This reality mirrors the argument by Andersen (2014) that water can be valued differently by various actors. This is why, in the initial program facilitated by the company, the perception of disasters caused by water abundance such as erosion, floods, and landslides was a dominant concern for the company at that time. Erosion due to water abundance, the absence of hardwood trees in the riparian zone due to the cultivation of staple crops, and steep riverbanks all contributed to the company’s view that the Serayu River water was dangerous.

However, for the people of Karangrena Village, who have lived for years in the Serayu Watershed, water holds a different meaning. The community perceives water as highly beneficial. This is why the introduction of the K3P Program alongside the Serayu Watershed Reforestation and Biodiversity Protection Program, which focuses on riverbank reforestation, can be seen as a reflection, improvement, and development by the company to avoid proposing singular environmental solutions. Instead, the K3P Program, which involves broader community groups in Karangrena Village, signals that the environmental solutions offered by the company's involvement are accompanied by other solutions that address social, economic, and even cultural aspects sustainably.

D. CONCLUSION

Since 2013, PT Pertamina Patra Niaga Fuel Terminal Maos has been promoting a program called the Serayu Watershed Reforestation and Biodiversity Protection Program. This initiative was driven by environmental issues occurring in the Serayu Watershed, specifically in Karangrena Village, including surface erosion, riverbank erosion, flooding, and landslides. These disasters, caused by the abundance of river water, have forced at least 40 households to relocate and abandon their lands. In response to these challenges, the company sought to address the issues by involving the Karangrena Village community in reforestation efforts along the riverbanks. However, one of the consequences of this reforestation program was that staple crop farmers could no longer plant food crops in the areas reforested with hardwood trees.

It was at this point, in 2020, that the company reflected on its approach and initiated a program with broader community involvement from Karangrena Village. This new initiative aimed to improve the environment without neglecting other aspects such as social, economic, and even cultural dimensions, embodied in the CSR program called Kampung Kreatif Karisma Pertamina (K3P). The program was not intended to critique the earlier, more singularly focused environmental program, but rather to demonstrate that the company continues to make improvements, both theoretically and practically, to contribute to environmental and community betterment around its operational areas without causing additional harmful impacts.

As a result, first, human agency, represented by broader community groups that previously had limited involvement in environmental programs, is now actively participating in K3P. Members from various sectors, including agriculture, honey cultivation, educational tourism, and cultural arts, are now engaged in environmental improvements that align with their social and economic betterment. This is why the K3P program, which has already positively impacted the local economy, is expected to grow and be sustainable. Second, with the implementation of the K3P program, staple crop farmers who previously had to cultivate in higher, water-scarce areas can now safely grow food crops, thanks to improved water access facilitated by the Serayu Smart System Water Irrigation (Inovasi Saraswati), a project supported by the CSR of PT Pertamina Patra Niaga Fuel Terminal Maos.

Third, the Inovasi Saraswati irrigation system marked the initial breakthrough of the K3P program. This system allows farmers in the Serayu Watershed, who are geographically close to abundant water but have difficulty accessing it, to now easily access water. The automatic irrigation system has been particularly beneficial for the PHC group involved in horticulture farming. Farmers no longer need to spend money on fuel for water pumps. Moreover, water, which was previously merely a "property," has now become truly accessible. Fourth, the environmental improvements, particularly in water access, have been the starting point for better social and economic conditions for farmers in Karangrena Village. This demonstrates that environmental improvements are equivalent to economic improvements.

On the other hand, this also proves, fifth, that the abundance of water for the Karangrena Village community, who have lived for decades in the Serayu Watershed, does not merely bring disasters such as erosion, floods, and landslides that threaten their lives. Instead, water from the Serayu River, according to the Karangrena Village community, is a valuable and beneficial resource for them. Although their relationship with water has not always been smooth, the Inovasi Saraswati has shown that their previously strained and limited connection with water can now be restored. The restoration of their access to water also signifies the restoration of the Karangrena Village community's capability as human agents to produce their socio-environmental reality.

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