

# Environment Niche Perspective on Brown Canyon Post-Mining Area in Semarang City

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## Abstract

Post-mining activities are essential to prevent the negative impacts based on the restoration design. Mining issues encourage residents to establish alternative post-mining tourism management slowly. The idea was proposed to respond to the socio-ecological crisis around the left area. This study aims to 1) analyze the socio-ecological crises in the mining area and 2) analyze the post-mining utilization strategies for Brown Canyon as a tourism destination. This research was qualitative. Data collection was done through observation, interviews, and documentation. Data validity was tested by using triangulation. The analytical method was Miles and Huberman's model by conducting the analysis process. The primary components are data collection, reduction, presentation, and conclusion. The results were analyzed using the rational choice theory by James A. Coleman and the environment niche theory by Nugroho Trisnu Brata. The results point out that the mining's in Rowosari Village bring both positive and negative impacts. It is positive as it provides job opportunities for people. At the same time, it is harmful as it threatens the sustainability of socio-ecological life, such as loss of tree landscapes, landslides, noise pollution, and air pollution. The socio-ecological crises gave rise to the idea of carrying out post-mining activities as a strategy to build a tourism destination—a reasonable choice for the government, mine owners, and the community. Until now, the community is still planning a post-mining strategy to take advantage of environmental gaps despite various obstacles, such as illegal levies, inconsistencies in the direction of post-mining, and ongoing illegal mining activities.

## Keywords

Illegal Activity; Environment Niche; Socio-Ecological Crisis; Post-Mining

## INTRODUCTION

Indonesia is an archipelago country with countless natural biological and non-biological resources. Mineral is a part of non-biological resources, a material that can be massively found in Indonesia. Sediments or minerals are generally distributed unevenly in the interior of the earth's crust. These mineral resources include sand, stone, petroleum, coal, gold, silver, tin, and others, and they are commonly taken and utilized to enhance development—especially building construction. According

to Masrukhi (in Brata, 2008), the development ideology changes people's lives drastically. Apart from being urged to explore nature to explore the riches contained therein, development processes are also directed at the level of improving people's lives. In this case, natural resources are the key and basic capital in national development. Therefore, the management must be utilized as much as possible for the people's benefit by paying attention to the preservation of surrounding life. One of the

activities in using natural resources is mining minerals (Prodjosoemanto, 2006).

Various mining phenomena commonly draw the attention of Indonesian people. This is because the earth's belly contains a massive wealth of natural resources that often intersect with their lives (Brata, 2018: 9). However, mining has both negative and positive impacts. Mining is positive as it has a role in development by producing raw materials for industry, absorbing labor, sources of foreign exchange for the country and the region, developing technology, training skilled workers, and incorporating modern management patterns. Meanwhile, it is negative as it causes various harmful impacts, such as deforestation in exploration and exploitation activities, stripping/digging, noise from mining machines, and air pollution.

Two of the famous mining types in Indonesia are rock and sand mining's. Both are primary raw materials for civil construction, such as houses, buildings, roads, bridges, ports, and dams. Among others, rock and sand mines were found in Tembalang, Semarang City. The geographical condition of Semarang City is divided into two, namely lowlands and hills. Entrepreneurs and investors use the empty hilly areas as mining points. Rowosari Village, a full of minerals C area, is one of them.

Rock and sand mining's in Rowosari Village have been running since the nineties. They are operated almost daily, and dozens of trucks can transport the mine minerals in turn. Mine products are transported in the form of mountain sand, solid soil, and gravel. Each Colt Diesel truck can carry 2-3.5 tons of sand. These continuous activities have an impact on the settlements around. Class C mining, currently better known as rock and sand mining, is regarded as a severe threat to the city of Semarang (Nutiarra, 2016).

Multiple government efforts have been made to close the area, but unfortunately, they only resulted in conflicts. Miners thought that the closing policy would eliminate their source of economic income. In the end, an alternative has emerged. The residents initiate to take advantage of the changing landscape due to the mining's. They intend to turn it into a tourism destination offering beautiful panoramas. This way, it might provide economic value if appropriately managed, as well as implementing reclamation and recovery efforts for the environment's sake.

However, there are still some dilemmas, for instance, the active illegal mining's—although they have been warned and banned for times. Competition in getting a substitute job and social conditions is regarded as the reason for this disobedience. In other words, people are forced to return to their old work as miners to stay alive though they sometimes violate social norms (Brata, 2020: 111).

Mining issues encourage residents to slowly establish alternative post-mining tourism management. The idea was proposed to respond to the socio-ecological crisis around the left area. This issue background motivates the researchers to analyze the socio-ecological crises in the mining area and the strategies to transform it into a tourism destination.

## RESEARCH METHOD

This study was qualitative. The qualitative method produces descriptive data and research results in written or spoken words from people and observed behavior. Meanwhile, the sampling technique was snowball. Sugiyono (2008: 219) explains that the snowball sampling technique is for data sources that are initially small in number but get bigger and finally stop until the information is sufficient. This study was conducted in

Rowosari Village, Tembalang Sub-district, Semarang City. It emphasized the socio-ecological crises due to sand and rock mines and the strategies to transform it into a tourism destination. There are primary and secondary data. Primary data were obtained directly through interviews and observations. Meanwhile, the secondary data were collected through documents or photos related to events in the area, namely pictures of mining activities and post-mining land use.

## FINDINGS AND DISCUSSION

### Brief Description of Research Location

Rowosari Village is geographically located in the southern part of Semarang City. Its coordinates are  $-7^{\circ}06'71''S$  and  $110^{\circ}48'24''E$ . Topologically, Rowosari is situated in a lowland area with the village office as its administrative center (approximately 40 meters asl). Several areas consist of hills, which are potential for agriculture, plantations, and excavation of minerals C. The mining and plantation activities in Rowosari can be seen from its concrete roads—traversed by mining vehicles and transportation carrying residents' plantation products. Trees, plantations, and fields dominate the access.

In this area, mining is vital as it is not only a tourism icon that attracts many people but also a source of people's income. Undeniably, excavation C in Rowosari opens up employment opportunities for hundreds/thousands of people. The data validates that most Rowosari people work as laborers/private sector workers. Some probably do not work, just take care of the household or do farming, but it does not change the fact that mining plays a remarkable role as the most dominating job.

Rock and sand mining's in Rowosari have been around since the 90s, meaning that it has been decades until now. The

looked minerals in this area are classified in type C excavation. Agustin and Brata (2019) explain that some minerals C are asbestos, nickel, sand, and rocks, which can be quite easily found in several regions in Indonesia. Rock and sand are two class C minerals widely used for industry and construction. Generally, these materials are taken and processed by two types of mining: large-scale and small-scale. Large-scale mining is typically managed by the State-owned Enterprises (BUMN), while people or community mining's tend to be small-scale mining.

Mining areas are privately owned land or individuals managed by a Limited Company (PT) to extract the natural resources. As there is nothing that can be taken back, the mine owner will buy or rent the land of residents adjacent to the mining site to continue mineral exploration. Initially, mining's in Rowosari were started by Mr. Mudiono and his brother as they found the mining potential. Originally, it was only done using manual stuff and was primarily for leveling the land. However, as time passed, this mine site expanded closer to residential areas and entered Demak Regency.

Mudiono's family has maximized the mining potential in Rowosari. This can be seen from the involvement and influence of this family management on the massive mining there. The family-based mining company is indeed growing massively in Rowosari. The following is a list of mining companies and their ownership:

**Table 1.** List of Mining Companies in Rowosari

No.	Company	Owner
1	PT. Berkah RSV	Mudiono
2	PT. Gunung Mas	Darmo Buwono

3	PT. MJA (Mandiri Jaya Abadi)	Makisoh Maulana Hasanudin
4	PT. AKS (Al- Kausar)	Edi Sukamto Nyoto
5	PT. SJA	Branch of PT. Berkah RSV

Source: primary data, 2021.

The preceding five companies manage the natural resources (excavation C). There are various daily activities, with heavy equipment and production machines to process mining products. The increasing need for development makes mining in this area develop by using modern equipment to increase the amount of production. What is produced positively impacts supporting the needs of regional development and the surrounding community's economy. Brata (2014) states that people carry out mining activities to fulfill their basic needs. Mining activities also support the surrounding community's economy and can create jobs that increase welfare.

### Mining Continuity

Rowosari mining was once seen as illegal and thus became controversial since it gradually changed the landscape and impacted the environmental sustainability of its surroundings. The government has closed the mining area at times (especially in 2015). The decision is under the changes in the authority for mining business licensing in the context of transferring the government affairs. This is a legal basis for implementing the governor's authority to issue mining business permits.

There are differences of interest between the government and the mining parties; the government represents environmental interests, while mining parties represent economic ones. Various efforts made by the policy-makers, ranging from supervision and policies related to mining, have been

ignored by the mining parties and those involved. Mining is still running even though a ban has been issued. This happens because the mining business is up-and-coming and makes some residents not have alternative jobs and other skills as they are already comfortable working there.

Data from the Energy and Mineral Resources (ESDM) Office of Central Java in 2018 noted that previously, there were a permit for IUP (Mining Business Permit) activities with the category of sales permit submitted by Mr. Mudiono on behalf of PT. Berkah Rowosari Indah in 2017. However, no licenses are recorded for other companies operating in the area. This is ironic since Berkah Rowosari Indah is not the only company involved and is actively running in Rowosari. The released data recap also does not mention the validity period of the mining permit that has been submitted.

### Socio-ecological Condition of Rowosari Community

The emergence of rock and sand mining has begun to shift agricultural land in Rowosari. Employment data in Rowosari Village shows that people work more as laborers and private employees. This is related to the emergence of mining which opens up many job opportunities related to the level of education of the Rowosari people. The mining sector has indeed had a positive impact on wide employment. Mining owners own mining businesses, and a building contractor business allows people who own heavy vehicles such as trucks to take advantage of this opportunity. However, this is not always a positive impact considering that working in the mining sector is not listed as a specific skill. This makes the community dependent on this sector. The dependence results in more massive—or even uncontrolled—activities that are hard to stop. Sometimes,

there are even "games" in buying and selling community land to expand mining areas.

Meanwhile, the mine owner and community relationship are relatively spotty. There are various concerns experienced by the community, such as the environmental and social impacts. The community understands that the problems of life they are currently facing are driven by mine owners who continue to exploit and expand their land. However, various community concerns did not surface because of the fear and reluctance of the mine owners. People decide to make peace because they feel they cannot fight against the power of the mine owner and have no idea since the mines have fulfilled their needs. They eventually keep silent—as long as the mining activities positively impact their economic matters.

### **Ecological Issues around Mining Areas**

The need for excavation C products, such as soil, rock, and sand for development matters results in a significant expansion of the mining area. Moreover, many national strategic projects in Central Java are progressing, including the construction of the sea embankment toll road and the reclamation of the northern region of Semarang. Efforts designed to save the ecological situation of other areas seem to sacrifice spaces that produce construction materials. Thus, this program looks like it just transfers ecological damage to new places where natural resources are being exploited.

The bustle of mining vehicles is just typical for Rowosari people. Besides public access, the concrete road also acts as a distribution route for trucks of soil, stone, and sand. Although people enjoy the road construction results, they are also disturbed by the heavy traffic of mining vehicles. The large cars often leave massive dust along the

road and on residents' houses terraces. The evening air will be sweltering and arid due to mining activities—purging the trees away for years. The dry air also exacerbates pollution in Rowosari. Affected residents cannot do anything but accept all because the road is built with donations and by mining companies.

Excavation areas leave not only high cliffs but also fairly deep basins—especially those carried out by dredging the surface of the soil until the base layer of rock and sand. Sukamti and Brata (2020) state that mining activities negatively impact the environment. Mining in the fields, for instance, will cause the pits cannot be covered with soil. When it rains for quite a long time, the excavated areas become ponds because they cannot absorb rainwater infiltration. This also causes the water flow to decrease. Excavations around the hills can also cause landslides.

### **Land Condition of Rowosari Rock and Sand Minings**

The community's dependence on work in the mining sector (especially excavation C) has resulted in broader mining expansion. Decades of mining activities have changed Rowosari's typology. Many lands that were originally hilly and agricultural areas are now low and relatively barren. This difference can be seen from the high cliffs that separate areas that are still well-maintained from the damaged ones.

Mining land has irregular contours. Some are holes and cliffs that have the potential for landslides. Between them, two tall pillars become icons in Rowosari today. The two pillars are referred to as *watu lumbung*, categorized into *Watu Lanang* (Male Stone) and *Watu Wedhok* (Women's Stone). Previously, the two stones were medium for public prayer. The Rowosari community, which farmers once

dominated, often performs rituals to ask for rain as the area is usually dry. However, mining activities have turned the sacred site into a "mere" tourist icon for Rowosari.

The post-mining lands and the barren and dusty surrounding areas make agricultural land less productive. Some residents who own land adjacent to the mine prefer to sell it to avoid losses. Several development activities proved that investors also caught the opportunity for the Rowosari area to be used as a cluster. There are at least three newly built clusters there.

### **Tourism Potential of Mining Area**

Behind the massive process of utilizing natural resources of rock and sand in Rowosari, this area has its own attraction for residents and visitors. The expansive mining area presents a beautiful panorama during sunrise and sunset moments, in which the exotic sky is combined with high cliffs here and there. In mining tourism, the main attractions are generally divided into four categories: natural, man-made designed primarily for excursions, man-made, man-made built for excursions and events. Armis (2019) explains that a destination's typical experience and satisfaction can contribute to the tourists' main motivation and can be an essential attribute for a location to excel in its competition with others.

Mining activities leave not only rows of cliffs and pillars that rise upwards but also deep mining holes. Some holes that open underground water flows and do not have good water absorption will form water puddles that resemble lakes. This lake is often a concern of visitors and the public as it has quite a beautiful view. Besides, the typical lake is also a fishing arena. According to several residents, the mine owner once sowed fish seeds there. The typology of mining areas that have turned

into expanses of rocky soil, puddles, steep mounds, and ex-mining roads has become the main attraction for extreme sports lovers, such as downhill bicycles and motocross. Ex mining areas are often used as playgrounds for them. The vast expanse of mining seems to be a free vehicle for them, even though the activity is classified as dangerous since the area is not intended for it—and thus no safety standards there. According to residents, the mining area has also been visited by various artists and has become a shooting location for tourism/adventure TV programs.

Another option for post-mining land is transforming it into an educational tourism field. Such post-mining activities have been practiced in Europe. Lamparska (2019) explain that mining area can be used as a training ground for the mining and environmental protection department polytechnic students. The area selection can be based on age, suitability for tourism and education, origin, authenticity, and uniqueness.

### **Access for Post-Mining Tourism**

Access to post-mining use in the Rowosari area is entirely in the hands of the company owner. The management of mining activities begins with buying land belonging to the local community, which then results in the transfer of full rights and power to the mining company. The district has no access to use post-mining land because of private ownership. Land use will not occur if there is no permission from the owners.

Post-mining activities in Rowosari Village not only focus on improving the environment but also on improving a tourism attraction. When mining did not run since there was no permit from the local government, the company had time to open access to post-mining land use to help people's economy. The locals welcomed

entrance, and it was used to develop tourism potential. The natural panorama around the mine is a unique attraction that can be highlighted. One of the parties interested in developing tourism here is Pertamina. The company is noted to have carried out a CSR program to build a tourism area in one of the ex-mining lands. In this case, Pertamina cooperated with the mine owner in managing the land.

### **Development and Strategy of Post-Mining Tourism in Rowosari**

The mining landscape resembles the Grand Canyon area in Arizona, United States. The Grand Canyon area consists of a range of canyons formed by erosion around the Colorado River. This resemblance attracts tourists to visit Rowosari. Even the naming is inspired; the ex-mining site in Rowosari is famously called "Brown Canyon". The most similar parts are two high pillars in the middle of a barren mining area surrounded by cliffs.

Brown Canyon was viral and known to many people. It is considered to have an extraordinary and wonderful landscape. According to Pitana (2005), there are always push and pull factors for someone to travel, as well as the driving factors that are generally socio-psychological or person-specific motivation. This uniqueness is enough to make Brown Canyon widely known by the public—taking advantage of online media that distributes information rapidly.

Many stakeholders are related to tourism and its needs, one of which is a destination (DTW) to be visited. Most tourists are generally people who are tired of living life in the middle of the city. They, for example, get tired of hearing traffic noise. Therefore, they choose to travel in quieter and more unique villages than others. Indonesia has many unique villages; all can be developed

into tourism villages with the community, managers, and government collaboration. Such development requires clear guidelines to succeed (Antara, 2015).

Brown Canyon has not been appropriately managed in this study because visitors can only fully enjoy it after the workers have finished mining activities. In addition, its fame that makes the percentage of visitors continue to increase is not matched by strict and transparent regulations—for example, regarding parking. Unclear parking rules even once resulted in disturbance for some residents around the area.

Apart from the problems caused by tourist attractions in Rowosari, the uncertainty of the post-mining direction raises various choices for the community. They are faced with the option to surrender to the former mines as they are or to process them into tourism destinations. This situation can be seen from the perspective of Rational Choice Theory. Two crucial elements in rational choice are actors (rational action actors: individuals) and resources (various things controlled by actors to achieve need fulfillment). Someone acts because of a particular goal, and he will sacrifice the resources he has to accomplish that goal. These resources are material (money, land, physical equipment) and non-material (trust, social relations, labor/business). Ritzer (2016) explains that people with adequate resources, such as mining owners, may quickly achieve goals. However, people with fewer resources are undoubtedly different; they are most likely to have difficulty realizing goals, so their rational actions can be easily affected.

**Table 2.** Classification of Actor and Possessed Resources

Actor	Resources
Mine owners & investor	Authority for granting access to land, funds
Government Head of Neighborhood and community	Fund and policy Ideas and energy

Source: primary data, 2021.

However, although it is difficult to achieve the desired goal, there must always be an opportunity. Only people willing to think hard, diligently, and sensitive to the environment can find or capture the existence of an environment niche. The discovery of environmental gaps as something new that gives people the opportunity to work and earn economically will be massively followed by others (Brata, 2020: 28)

In this case, the community around the mining area continues to pursue post-mining business as a place for tourism. Some people see the environmental gap as a good tourism potential to be developed and can help them as a post-mining activity. This is undoubtedly profitable from an economic point of view. The community leader of Rowosari designs a long-term plan to set the post-mining activity strategy there. The technique used is the improvement of road infrastructure that supports the Brown Canyon area. After it is completed, the site is targeted to become a culinary tourism center which will help the community's MSME activities and impact the quality of the local economy quality.

Although many obstacles and challenges come up in practice, the Rowosari community believes that what they are doing now is to learn to face life after mining activities are over. Empowerment efforts and ideas for post-mining activities keep

coming. Those who depend on mining activities are now slowly considering post-mining actions by looking at the environment niches around. In this case, the community and related parties fully understand their goals and resources that must be sacrificed to determine their rational actions.

## CONCLUSION

Rock and sand mining's in Rowosari Village have both positive and negative impacts. It is positive because it increases job opportunities and sources of economic income for the community. Meanwhile, it is negative as it destroys social and ecological life, specifically changes landscapes, increases the risk of landslides, and causes air and noise pollution. These socio-ecological crises affect closing access to mining in the Rowosari area and make several people lose their jobs. These problems provide two main rational choices for the community: continue mining or open alternative post-mining tourism activities as a new source of economic income.

In this context, the mining companies, the government, and the community are the three actors who exchange roles and resources. The post-mining area was once a tourist attraction, while the mining company had not yet been receiving a business permit. Still, the owner stopped the activity due to illegal levies. This situation is exacerbated by the issuance of mining business permits which triggers uncertain direction of the post-mining area as a tourism destination. Some post-mining businesses carried out by the owners also do not lead to tourism activities. Several mining activities continue even though the period of the related mining business license has expired. Currently, the community can only propose strategies outside the mining area by preparing



supporting infrastructure and activities when mining activities come to an end.

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