The Concept of Development of Ex-Mining C Mine in Wonosobo Regency

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Abstract

The development of ex-mining land needs to be carried out to preserve the environment and make an alternative to sustainable, beneficial, and efficient use of ex-mining land. This study aims to provide an alternative concept for the development of ex-mining C excavation in Kertek District and Mojotengah District in Wonosobo Regency so that ex-mining land can still have economic value but is sustainable from the physical and environmental aspects. This research used a SWOT analysis technique. Data analysis was carried out from the results of collecting field facts and secondary data to identify existing conditions and ideal conditions to be achieved, as well as through alternative studies by identifying and analyzing segmentation based on land use, location, and existing conditions. The results of the study resulted in the concept of Eco-community Highland Tourism. This concept is to develop an area with high environmental quality and human resources, driven by the tourism sector as a priority. This concept contains the principles of improving environmental quality, economic sustainability, community empowerment, and the development of the tourism sector by the upland agricultural sector.

Keywords

C Mine; Development Concept; Wonosobo Regency

1. INTRODUCTION

Wonosobo Regency is one of Central Java Province with great potential for natural resources, one of which is sand and rock mining. That is inseparable from the natural topography of the area in the form of mountains. Wonosobo Regency has two volcanoes on the east side, namely Mount Sindoro with a height of 3,136 meters and Mount Sumbing with an altitude of 3,371 meters. In addition, there is also Mount Prau, the peak of the Dieng Plateau with a height of 2,565 meters, located on the north side (Nugroho, 2020). With these topographical conditions, Wonosobo Regency is also rich in springs and fertile land used for agricultural activities.

The role of mining activities in supporting the economy can create new job opportunities, but it can also impact social unrest and environmental sustainability. In 2017, the Wonosobo Regency Government issued Regional Regulation Number 12 of 2017 concerning the revocation of Wonosobo Regency Regional Regulation Number 6 of 2007 concerning Group C Mining Business. That is a follow-up to the Central Java Governor Decree Number 180/114 of 2016. Aspirations of the local community regarding the impact of mining activities and the sustainability of the local environment accommodate.

Geologically, Wonosobo Regency has abundant minerals from volcanic activities such as andesite lava and tuff. Rock minerals found in Wonosobo Regency include mica schist, marl, sandstone, quartz conglomerate, sand and river stone, pumice breccia, and andesite. These rock excavations are in hilly areas, except for sandstone and some marl, often in river valley areas. The excavation material for backfill is not only found in areas with hilly topography but also in flat areas.

Mining activities are closely related to environmental damage. Management of ex-mining lands with excellent and appropriate principles is vital to paying attention to the biotic and abiotic environment and the processes in the land at each level. In addition, managing ex-mining land is very important to overcome
environmental damage from the loss of vegetation, flora, fauna, and soil layers (Patiung, Naik, Suria, & Dudung, 2011; Taqiyuddin & Hidayat, 2020).

Management of ex-mining land has been mandated in Law Number 4 of 2009 concerning Mineral and Coal Mining, Government Regulation Number 22 of 2010 concerning Mining Areas, and Government Regulation Number 78 of 2010 concerning Reclamation and Post Mining. Reclaiming ex-mining land at least it can make the landscape return to its original state, although it may not be able to restore its biodiversity precisely as it used to be. This effort can also reduce the risk of landslides and other disasters caused by the destruction of an ecosystem. The implementation of reclamation is no later than one month after there are no more mining business activities on the land. Meanwhile, the report on the implementation of reclamation is carried out every year to the governor (Octavia, 2017).

Several studies show that post-mining land management results need sustainable development-based use (As'ari, Mulyanie, & Rohmat, 2019; Kurniawan, 2013). Post-mining land management, especially in using ex-sand mining land, is recommended following the criteria for utilization and management, one of which is in the nature-based tourism sector. The activities in developing nature-based tourism include educational forests, recreational parks, artificial lakes, resorts, beaches, and museums. Through the development of nature-based tourism, the land will have economic value. However, it needs to be encouraged through community participation and requires government institutions and policies (Haridjaja, Haryanti, & Oktaviani, 2013).

Therefore, to achieve sustainable, valuable, and efficient use of ex-mining land, it is necessary to conduct a study on the use of ex-mining land in the Wonosobo Regency. This study aims to provide an alternative concept for the development of ex-mining land. Especially in the use of ex-sand mining land (excavation C) in Wonosobo Regency. So that the ex-mining land can still be of economic value but sustainable from the physical and environmental aspects.

2. METHOD

This study aims to provide alternatives related to the development of ex-mining areas c so that ex-mining areas can still have economic value but are sustainable from the physical and environmental aspects. The research location is in Kertek District and Mojotengah District, Wonosobo Regency. This area consists of 7 villages: Candiyasan Village, Pagerejo Village, Tlogomulyo Village, Damarkasian Village, Tlogojati Village, Sojopuro Village, and Keseneng Village, with a total area of 570 hectares.

This research used SWOT (Strength, Weakness, Opportunity, Threat) analysis. SWOT is a strategic planning method used to evaluate the factors that become strengths, weaknesses, opportunities, and threats that may occur in achieving goals in an organizational activity project on a broader scale. For this purpose, it is necessary to study environmental aspects, both the internal and external environments, that affect the pattern of organizational strategy in achieving goals (Rangkuti, 2008).

Previous studies have shown that a similar research approach can formulate alternative regional and urban development strategies. The study's SWOT analysis technique is to formulate urban planning, city development, and regional development strategies (Adriansyah, 2013; Masrurun, 2020; Siregar, Hariani, & Widowati, 2013).

SWOT analysis is a powerful instrument for conducting a strategic analysis. This efficacy lies in the ability of strategy makers to maximize the role of strength factors and take advantage of opportunities to simultaneously act as a tool to minimize weaknesses and reduce the impact of threats that arise and must be faced (Apriandes, Raniu, & Syakti, 2013). SWOT analysis has several advantages. Namely, the SWOT analysis model can detect every weakness and strength so that it helps minimize the impact or consequences that will occur in the future. Analysis of internal and external factors is a SWOT analysis method that can identify existing internal and external factors. Furthermore, it can be known internal and external factors that will affect it (Subakttilah & Kuswardani, 2018).
The research stages are through observation, review of previous planning documents in the area, regulatory review, and normative review, then elaborated on the aspirations of stakeholders regarding the use and development of the area. Data analysis was carried out from the results of collecting field facts and some secondary data to identify existing conditions and ideal conditions to be achieved, as well as through alternative studies by identifying and analyzing segmentation based on land use, location, and existing conditions. The formulation of the development concept has based on an analysis of the area’s potential and SWOT analysis. The development concept is then detailed in the design principles to support and simplify the description of the development concept.

3. RESULT AND DISCUSSION
3.1 Overview of The Research Area

The ex-mining area is under the administration of Kertek District and Mojotengah District, Wonosobo. This area is mountainous, with an average altitude of 700 - 1,400 meters above sea level. In general, the planning area has a dominant land use in the form of fields and tea plantations that are fertile and productive. In addition, there are natural tourism activities and non-metallic mineral and rock type mining activities of sand and stone, which are massive.

The total population in the area is 17,408 people. The mining sector is a side job for farmers as mining workers or renting out their land. In the area, several tourist destinations attract visitors, as well as residents, who take advantage of these tourist visits by building selling stalls. This area includes seven villages with an area of approximately 570 hectares. The seven villages include Candiyan Village, Pagerejo Village, Tlogomulyo Village, Damarkasian Village, Tlogojati Village, Sojopuro Village, and Keseneng Village. This area has a slope dominated by flat slopes (0-8) % and gentle slopes (8-15) %. The regional slope reference is classified into five types, namely as follows:

<table>
<thead>
<tr>
<th>Class</th>
<th>Slope (%)</th>
<th>Classification</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>0 – 8</td>
<td>Flat</td>
<td>20</td>
</tr>
<tr>
<td>II</td>
<td>8 – 15</td>
<td>Sloping</td>
<td>40</td>
</tr>
<tr>
<td>III</td>
<td>15 – 25</td>
<td>Slightly Steep</td>
<td>60</td>
</tr>
<tr>
<td>IV</td>
<td>25 – 45</td>
<td>Steep</td>
<td>80</td>
</tr>
</tbody>
</table>
### 3.2 Area Condition Analysis

The dominance of land use in the area is agriculture and plantations. In addition, there are mines excavated C, settlements, and the use of the area as a tourist attraction at several points. The utilization and development of tourist attraction objects also affect the community's economic activity by utilizing the land to open roadside stalls around developing tourist attractions. That can be around the tourist attraction of Mount Cilik and Mount Kembang climbing basecamp. The private sector has also begun to develop the use of existing land in the area by building tourism supports such as rest areas at strategic points.

![Figure 2. Land Use](image)

Based on the existing conditions in the area, the tourism sector is one of great potential in the area to direct the use and conversion of land to productive economic sectors other than mining. The development of the tourism sector can also improve the supply chain in the agricultural and plantation sectors in the region in a sustainable manner through sustainable tourism. The World Tourism Organization (UNWTO) states that Sustainable Tourism is tourism that takes complete account of the current and future economic, social and environmental impacts and can meet the needs of visitors, industry, the environment, and communities in tourism destinations (Kemenparekraf, 2012).

So that it is reviewed based on the potential for development in the scope of the area, the development of ex-excavated C land in the sustainable tourism sector is needed as the utilization and conversion of land in other productive economic sectors that can replace the current sand mining. In addition, tourist attractions have developed in the area, such as Bedakah tea gardens, Bedakah Lake, Mount Kembangan climbing, Mount Cilik tourism, and Sikembang Valley tourism, which can support, integrate, and provide economic, social, and environmental impacts on the area.

### 3.3 SWOT Analysis

A SWOT analysis evaluates the strengths, weaknesses, challenges, and opportunities that exist through four strategic approaches that can respond to field conditions.
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Table 2. SWOT Analysis

<table>
<thead>
<tr>
<th>Internal</th>
<th>Strengths (S)</th>
<th>Weaknesses (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Strategic location to be developed into a tourist destination and economic potential</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Has a diversity of landscapes that can be optimized as a natural tourist attraction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Has an existing tourist attraction Mount Bunga, Tambi tea plantation, and a small mountain, Bedakah Lake</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Most of the existing road infrastructure is paved and concrete</td>
<td></td>
</tr>
<tr>
<td>External</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities (O)</th>
<th>S-O Strategy</th>
<th>W-O Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The area connects the activity poles (Kertek and Dieng tourism alternative roads)</td>
<td>1. Development of existing geographic and natural resource potential by looking at opportunities from new economic sectors</td>
<td></td>
</tr>
<tr>
<td>2. Mining land and activities can be converted into commercial and tourism potential.</td>
<td>2. Development of transportation facilities to support various interests (public, tourism, and distribution of agriculture and plantations)</td>
<td></td>
</tr>
<tr>
<td>3. Close to existing tourist areas (Posong, Kledung, Lengkong)</td>
<td>3. Development of existing tourist attractions by maximizing tourism attractiveness around the area</td>
<td></td>
</tr>
<tr>
<td>4. There is the development of the Candiyasan - Keseneng road corridor</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Threats (T)</th>
<th>S-T strategy</th>
<th>W-T Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Investors who will develop land around the ring road have an impact on the sustainability of plantations and fields, the risk of landslides, and scenic views</td>
<td>1. Control of land use and activities in the planning area and its surroundings</td>
<td></td>
</tr>
<tr>
<td>2. Uncontrolled expansion of non-agricultural activities</td>
<td>2. Maintaining natural sustainability while minimizing uncontrolled development</td>
<td></td>
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</tbody>
</table>

The strategy was determined by matching the area's internal and external conditions (SWOT). Based on the SWOT matrix above, four development strategies, including the SO strategy, namely: strategies that use strengths to take advantage of opportunities, the ST strategy is strategies that use strength to overcome threats,
the WO strategy is strategies that minimize weaknesses to take advantage of opportunities, and the WT strategy strategies that minimize weaknesses and avoid threats (Rangkuti, 2008).

a. SO (Strength-Opportunity) Strategy

With the combination of existing strengths and opportunities, it is necessary to develop the potential of existing natural resources in new economic sectors other than mining, such as tourism, and maximize existing tourist attractions by maximizing opportunities from visits to tourist attractions around the area. It is essential to develop transportation facilities to support the development of tourism activities. Study (Islamic & Umiyati, 2020) in the former mining area, and become a tourist attraction in the Breksi Cliff, Yogyakarta, can be used as a reference for the conversion of ex-mining land with good management. As a result, from the economic aspect, there are excellent job and business opportunities, increased community income, community-based management, and accelerated infrastructure development. Meanwhile, the social aspect is the emergence of new livelihood structures in the tourism sector.

b. WO (Weakness-Opportunity) Strategy

With a combination of existing weaknesses and opportunities, the strategy needed is the conversion of ex-mining C excavated lands to productive economic activities that pay attention to the environment and the provision of supporting facilities to maximize the area’s attractiveness. Study (Kurniawan, 2013) related to the eco-friendly community mine reclamation model located in the Green Valley. This research is one of the locations of ex-mining land in the Ijobalit area, which is a model for reclamation that is environmentally sound and provides benefits to the surrounding community. In its development, the design of the new reclamation model made the former pumice mining area into a motocross arena as an alternative to development.

c. ST Strategy (Strength-Threat)

By using force and facing challenges, it is necessary to control land use by considering the area's sustainability to minimize uncontrolled development. A study (As’ari, Mulyanie, & Rohmat, 2019) related to zoning of post-sand mining land use on the coast of Cipatujah is one of the benchmarks for implementing this strategy. The study classified the area into three main zones based on the characteristics of community activities and the potential of each post-iron sand mining area. The research shows that the post-iron pair mining land reclamation into three zones: Zone I: a zone for Vanna Mei shrimp cultivation; zone II: Tourism Zone; and Zone III: a conservation area zone.

d. WT Strategy (Weakness-Threat)

By anticipating weaknesses and avoiding challenges, it is necessary to provide assistance strategies to the community regarding environmental sustainability and improvement of existing environmental conditions, as well as mitigation efforts related to disasters that may arise due to environmental degradation. Study (Hilda, 2020) illustrates that assistance to the community is critical to changing perspectives for environmental sustainability. The research shows that the policy of closing mining land and developing tourism innovation through the transfer of functions at Breksi Cliff initially caused problems in the community. The transition period is the most challenging. This research is related to changing perspectives and behavior. So it requires all parties' involvement and the community's participation.

3.4 Development Concept

This area concept to identify regional potentials and problems. In addition, the identification of regional potentials and problems does not only include current concerns. Nevertheless, also potential problems that will arise in the future. Identifying these potentials and problems requires communication between the planner and the community who will be affected by the plan (Sirait, 2009).

Ex-excavation area C aims to increase environmental quality with innovative approaches, pay attention to natural diversity, minimize waste and waste (zero-waste), and refreshments. The concept formulated aims to
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strengthen economic values for sustainability through responsible investment and empowering local communities while simultaneously exploring and increasing the potential or opportunities of the agricultural sector to encourage sustainable tourism. Based on this identification, there are four critical values in the concept of developing ex-excavated area C, namely environmental sustainability (ecology), economy (economy), community (community), and tourism (tourism).

The incorporation of several values in the concept of environmental sustainability (ecology), economic sustainability (economy), community (community), and the character of tourism in highland areas (tourism) is embodied in the concept of Eco-community Highland Tourism, as a concept in which the aspects aimed at developing an area with high environmental quality and human resources are encouraged through the tourism sector as a leading sector. The development model for the ex-excavated C area integrates the high tourism potential of the area with a focus on preserving and improving the quality of natural resources and the environment, as well as with the local community.

The Eco-community Highland Tourism concept is a solution for regional development based on regional strategic issues. This concept is also one of the development models for achieving a more sustainable area. The utilization and conversion of land can be directed at the productive economic sector to replace mining. The full potential development encourages alternative land management on other ex-mining C excavated lands.

In addition, tourist attraction objects that develop at several points need to be encouraged for their development potential as a strong tourist attraction and support and complement each other in this area. Optimizing the potential of the positive impact of the corridor road construction plan on the region, not only facilitating connectivity but also generating new economic zones and the potential for the emergence of local brands. Regional development needs to optimize land functions to be sustainable and efficient (Lutfi, 2007).

In addition, the concept of developing this area is emphasized through the proximity of the planning site to other tourist attractions and making the area accessible between points and affordable in terms of distance and road infrastructure or high proximity. Proximity can be interpreted as affordability from one place to another (Talen, 2009) The proximity concept is to create an area that is accessible between points and reasonable distances and road infrastructure to increase the value and potential of tourist visits. The following figure shows the principle of high proximity in the regional development concept.
Development is also on the principle of seeking balance and sustainability of natural ecosystems by maintaining green space and existing agricultural activities in the area (preserve nature and agriculture sustainability). This principle is a step to seeking balance and sustainability of natural ecosystems and maintaining green space and agricultural activities in the area. The phenomenon of climate change and the importance of environmental conservation are problems that need adaptation to regional development. It has been proven that the air temperature under trees is lower than in open areas (Zhou, Huang, & Cadenasso, 2011). The following image shows the regional development concept's principle of preserving nature and agriculture sustainability.
Regional development planning is an accumulation of economic development that sees opportunities and supply side, namely from the ability or potential of the region to develop, and in terms of demand as an opportunity (demand side - market opportunity) to develop (Harun, 2010).

Regional development needs to create a variety of activities in the area (various activities). This principle so that the activities created to make the planning area have a market with a more inclusive reach. Thus, the diversity of activities at the points of regional development is needed to encourage the development of regional attractiveness, both existing and potential. The following figure shows the principles of various activities in the regional development concept.

![Figure 6. Various Activities Principle](image)

Regional development is one of the regional or regional development efforts and resources (natural, human, artificial, and technology) in an optimal, efficient, and effective manner. Regional development is an effort to develop and improve the interdependence and interaction between the economic system, society, environment, and natural resources. Regional development is carried out by driving economic activities and accumulating certain investment activities that can trigger sustainable development (Soedarso, 2001).

Thus, regional development needs to create a diversity of economic activities that are mutually supportive and integrated with a management system or involvement by the local community/community (generate economy). Thus, regional development will encourage economic growth due to guaranteed sources of raw materials and markets. Economic growth will result from an increase in all economic capital. Economic growth will occur due to changes in economic activity that apply yearly and experience higher growth than what can get in the last time (Sulaeman & Silvia, 2019). Figure 7 below shows the principle of generating an economy in the regional development concept.
4. CONCLUSION

Based on the study results, the development of ex-mining areas of C excavation in Kertek District and Mojotengah District in Wonosobo Regency to direct the concept of Eco-community Highland Tourism. This concept aims to develop an area with high environmental quality and human resources, driven by the tourism sector as a priority. Eco-community Highland Tourism has aspects aimed at improving environmental quality, economic sustainability, community empowerment, and tourism sector development, a typical highland agricultural sector.

The development land in the ex-mining area C can serve as a conceptual guide for alternative management of excavated C land in the context of efforts to utilize and convert mining land to other productive sectors. This research is to encourage the development of regional attractiveness and to optimize the positive impact of the strategic plan for constructing the Candiyasan-Keseneng corridor that passes through the area, considering the rapidly changing existing conditions such as developments on land and tourism support by the private sector.

5. REFERENCE

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