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Analysis of Local Economic Development (LED) in Gunung Sewu Geopark (Case Study on Geosite Gunungkidul, DIY Province)

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A B S T R A C T

Indonesia is rich in geological heritage, including the Gunung Sewu Geopark, a significant geotourism site. However, excessive tourism threatens its sustainability, highlighting the need for an effective geotourism development strategy. This study examines local economic development in Gunungkidul Regency, focusing on six dimensions: target groups, location factors, policy focus, sustainable development, governance, and management processes. Using a descriptive quantitative approach, the findings reveal that four dimensions are in excellent condition, while two are in good condition. Despite its commendable state, the geopark requires strategies prioritizing local economic development, as the local economy is key to sustainable geopark management. Addressing the leverage factors in each dimension can enhance the sustainability of Gunungkidul's geotourism, ensuring long-term benefits for the community and the environment.

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INTRODUCTION

Indonesia is home to numerous valuable geological heritage sites. Sustainable development, which aims to preserve nature, can help Indonesia optimize its potential without compromising the needs of future generations. This concept addresses the severe issues of natural resource depletion and environmental degradation (Rani, 2020; Todaro & Smith, 2011). Furthermore, the 2024 EPI analysis highlights the necessity for adequate funding in protected areas through partnership programs with local communities (Block et al., 2024). This supports the argument that Indonesia requires a new economic development paradigm to tackle complex, multifaceted problems. Six aspects of local economic development can serve as components of a sustainable local economic development model (Huda, 2020: 157).

Gunung Sewu UGG is a compelling subject for study due to its status as a geotourism area spanning multiple regions. The selection of Gunungkidul Geosite in the DIY province is particularly motivated by the distribution of geosites, each facing unique challenges. Some managers of the thirteen existing geosites perceive development as uneven. Additionally, the UGG designation attracts more visitors to the geotourism area (Lee et al., 2023). However, excessive tourism can threaten the sustainability of the geopark. Therefore, an effective geotourism development strategy that aligns with the needs and desires of all stakeholders is essential (Abdelmaksoud et al., 2021). Research in various Indonesian geoparks and protected areas shows that high visitor numbers, traffic congestion, and environmental damage from overtourism have negative multiplier effects (Cahyadi & Newsome, 2021).

Given the challenges threatening the sustainability and UGG status of Gunung Sewu, researchers are keen to explore the geological heritage sites in Gunungkidul Regency in the context of local economic development (PEL). The UGG status of Gunung Sewu presents opportunities to enhance the local economy through a genuine geopark. Therefore, it is essential to analyze local economic development to ensure that activities align with the vision of sustainable development.

LITERATURE REVIEW

Sustainable Development

The World Commission on Environment and Development (WCED) defines sustainability as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (WCED, 1990). According to Nonua, as cited in Mohammed and Uraguchi (2018), there are seven indicators of sustainability: (1) Financial management; (2) Legal status; (3) Management and administration of routine activities; (4) Human resource development; (5) Participation and democratic practices; (6) Communication with external bodies; and (7) Long-term goals and policy formulation. Achieving sustainable development is challenging without community involvement. Therefore, community participation is crucial for implementing a sustainable approach (Nurzaman et al., 2020).

The urgency of implementing sustainable development is clear, and strong sustainable development goals are necessary (Bonnedahl et al., 2022). Regional development planning through Local Economic Development (LED) is one method to achieve the Sustainable Development Goals (SDGs) (Putri & Putri, 2022).

Local Economic Development

Local economic development (LED) involves local governments or community-based organizations working to generate and sustain business activities or employment opportunities. The primary goal of LED is to stimulate local employment in specific sectors to enhance community welfare by utilizing human and natural resources (Saragih, 2015). LED is considered an effective strategy for fostering economic development and promoting regional independence. It aims to maximize the use of local resources by engaging various stakeholders, including local governments, businesses, communities, and civil society organizations. The purpose of LED is to develop a region's economy sustainably, accelerating regional economic growth. This process must align with the region's conditions and potential, aiming to achieve welfare goals for local communities (Bappenas, 2006; Putri & Putri, 2022).

According to the ILO (2010) as cited in Saragih (2015), LED is a participatory development process within local administrative areas through partnerships between public and private stakeholders. The LED approach promotes the creation of employment opportunities and sustainable economic growth. Blakely (1994), as cited in Saragih (2015), identifies several factors in LED, including natural resources, labor, investment capital, entrepreneurship, transportation, communication, industrial composition, technology, scale, export markets, international economic conditions, local government capacity, regional and state spending, and development support factors. Ultimately, LED is a form of sustainable development implemented through a participatory process that empowers all stakeholders holistically (Saragih, 2015).

PEL is implemented in five stages: (1) organizing, (2) evaluating previous strategies, (3) developing strategic plans for local economic development, (4) creating a PEL system and implementing strategic plans, and (5) monitoring and evaluation (Gai et al., 2020). For community economic empowerment, it is crucial to develop community economic activities with concrete steps (Syadzali, 2020). In local economic development (PEL), the PEL hexagonal concept formulated by Bappenas can be adopted. The PEL hexagonal is an analytical tool used to describe and measure the condition of PEL in an area. Based on the mapping results, an analysis of the PEL hexagonal components is conducted to identify leverage factors or influential factors in PEL. The PEL hexagonal consists of six dimensions, each with its own components. Systematically, the aspects of the PEL hexagonal can be described as follows:

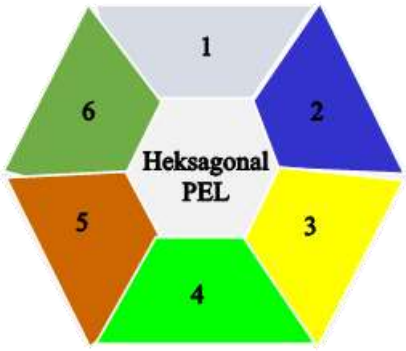

Figure 1. Hexagonal Aspect PEL

Source: Bappenas, 2006 & Budiharsono, 2014, processed by researchers

The primary aspects of local economic development can generally be divided into six parts: (1) target groups, (2) location factors, (3) policy continuity and focus, (4) sustainable development, (5) governance, and (6) management processes (Budiharsono, 2014).

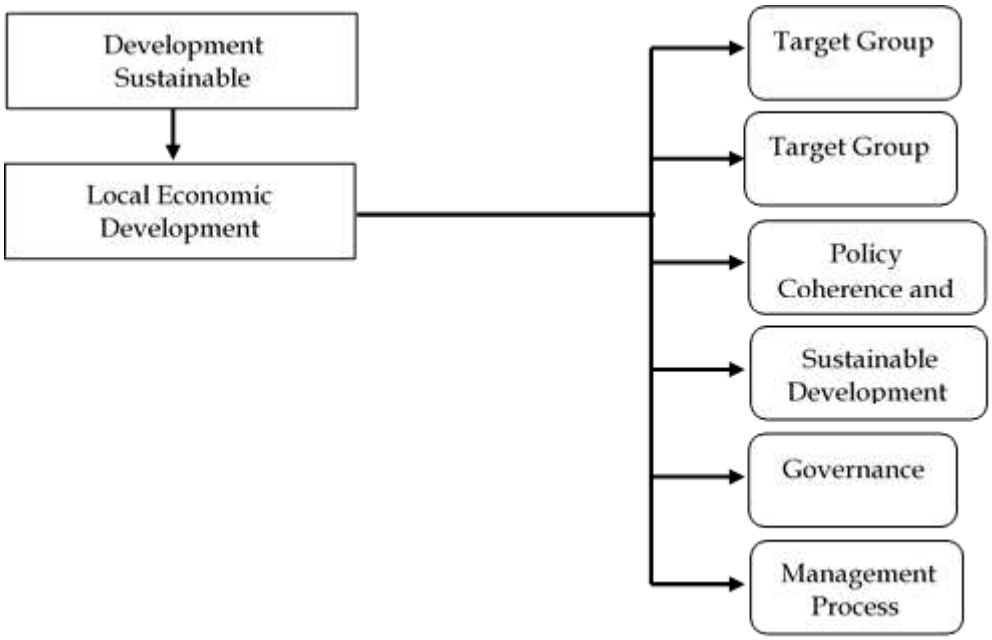

Figure 2. Research Framework

Source: Processed by researchers 2024

The management of Gunung Sewu UGG in the Gunungkidul Geosites case study is anticipated to serve as a reference for effective sustainable development policies, particularly in achieving the eighth and seventeenth Sustainable Development Goals (SDGs). To reach these sustainable development goals, this research employs the Local Economic Development (PEL) approach. PEL is analyzed using the RALED analysis tool and the determination of weights based on the PEL hexagonal foundation.

METHODOLOGY

This study employs a descriptive quantitative approach. The quantitative method is used to substantively address or solve problems, providing objective and measurable insights into the subject matter, specifically the analysis of local economic development (PEL) of Gunung Sewu Geopark in the Gunungkidul region. A journal examining geoparks quantitatively suggests that the economic benefits of geoparks can transform local residents into community guardians and protectors of these earth parks (Abdelmaksoud et al., 2023).

Based on this reference, the research was conducted by distributing questionnaires and analyzing the data using the RALED (Rapfish Assessment Techniques for Local Economic Development) program. The analysis aims to determine the hexagonal condition of local economic development in Gunung Sewu Geopark, which is then described substantively in the discussion. The research was carried out from December 2022 to March 2023. A purposive sampling technique was used to select respondents, targeting individuals who met the research characteristics and needs, including expert respondents and local economic business actors.

Table 1. Respondent Distribution Design

Name of Institution	Total (people)
Bappeda Gunungkidul	2 (Head of Agency and Expert Planner)
Office of Cooperatives, Small and Medium Enterprises	1 (Expert Planner)
Tourism Office	1 (Head of General Affairs)
Gunung Sewu Geopark Agency	1 (Geopark Agency Planner)
Local economic business actors	51 People (Purposive Sampling)
Total	**57**

Source: Researcher's Processed Results, (2022).

RESEARCH RESULT AND DISCUSSION

Status of Local Economic Development in the Hexagonal dimension of Local Economic Development at Gunungkidul Geosite

The RALED analysis results for the target group dimension show an index value of 79.11 for Local Economic Development, placing the local economic development of Gunungkidul Geosite in the very good category. The leverage factors for this dimension include: (1) Facilitation of entrepreneurship training for new business actors, (2) Business opportunity campaigns, and (3) Security. For the location factor dimension, the RALED analysis indicates an index value of 73.52, categorizing the local economic development of Gunungkidul Geosite as good. The leverage factors for this dimension are: (1) Opportunities for cooperation in similar industries, (2) Skilled labor, and (3) Availability of clean water.

The synergy and policy focus dimension has an index value of 86.28, placing the local economic development of Gunungkidul Geosite in the very good category. The leverage factors here include: (1) Community empowerment policies based on partnerships with geoparks, (2) Policies for cooperation between regions/local governments, and (3) Policies for developing business networks between business centers. In the sustainable development dimension, the RALED analysis shows an index value of 94.74, indicating that the local economic development of Gunungkidul Geosite is in the very good category. The leverage factors for this dimension include: (1) Natural resource conservation policies in Local Economic Development in geoparks, (2) Sustainable industrial systems, and (3) Development of supporting industries for the sustainability of local economic systems.

The governance dimension has an index value of 79.55, placing the local economic development of Gunungkidul Geosite in the very good category. The leverage factors for this dimension include: (1) Status of geopark/industry/business forum associations, (2) The role of geopark/industry/business forum associations in improving government policies in the PEL sector, and (3) Benefits of associations/organizations for their members. Finally, the management process dimension has an index value of 65.65, categorizing the local economic development of Gunungkidul Geosite as good. The leverage factors for this dimension include: (1) Number of stakeholders involved in the PEL planning process, (2) Use of diagnosis results as the basis for PEL planning, and (3) Identification of PEL stakeholders.

The results of the RALED analysis on the six dimensions of Local Economic Development at the Gunungkidul Geosite are illustrated in the following flyer diagram.

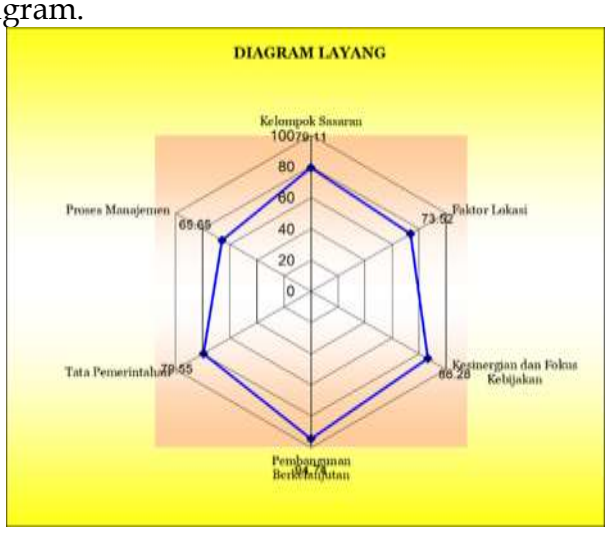

Figure 3. The Flyer Diagram
Source: Processed by Researcher, 2023

Based on the analysis, the statuses of the six dimensions are as follows: (1) The target group dimension has an index value of 79.11, categorized as very good; (2) The location factor dimension has an index value of 73.52, categorized as good; (3) The continuity and policy focus dimension has an index value of 86.28, categorized as very good; (4) The sustainable development dimension has an index value of 94.74, categorized as very good; (5) The governance dimension has an index value of 79.55, categorized as very good; and (6) The management process dimension has an index value of 65.65, categorized as good. In conclusion, out of the six dimensions of Local Economic Development for geosites in Gunungkidul Regency, four dimensions are in the very good category, while the other two are in the good category. The dimensions categorized as good are the location factor and the management process dimensions.

Status of Local Economic Development on the Overall Dimensions of Local Economic Development at Gunungkidul Geosite

The RALED application analysis results can determine the status of each PEL dimension. However, the RALED analysis alone does not determine the overall status, necessitating a weighting analysis (PENBOT). PENBOT, developed by Budiharsono (2014), is a modification of the Analytical Hierarchy Process (AHP) developed by Saaty in 1998. After conducting the PENBOT analysis, the overall status of Local Economic Development for Gunungkidul Geosite can be determined, as shown in the following table:

Table 2. Results of the Status of Local Economic Development of Gunungkidul Geosite

Combined Value	Impacted Value	Led Aspect Value	Total Value
0.4390	0.4461	79.11	35.29
0.2006	0.2039	73.52	14.99
0.1052	0.1069	86.28	9.22
0.0955	0.0970	94.74	9.19
0.0748	0.0760	79.55	6.05
0.0690	0.0701	65.65	4.60
0.9840	1.0000		**79.34**

Source: Processed by Researcher, 2023

Based on these results, it is known that the total value of all aspects of the six dimensions of Local Economic Development (LED) analyzed by PENBOT is 79.34. This result is obtained by calculating the weight value of the LED dimensions from all respondents, using the geometric mean. The value is then multiplied by the index of the LED dimensions from the RALED analysis. The classifications are as follows: (1) if the index value is <50, the status of Local Economic Development is bad; (2) if the index value is 50-75, the status is good; and (3) if the index value is >75, the status is very good. Therefore, the overall status of Local Economic Development in Gunungkidul Geosite, with a value of 79.34, falls into the very good category.

Local Economic Development Strategy at Gunungkidul Geosite

Based on the local economic development status of the Gunungkidul Geosite, the Local Economic Development strategy can be implemented by addressing the leverage factors of each dimension. This strategy prioritizes local economic actors, most of whom are members of each geosite's Pokdarwis (tourism awareness groups). One of the activities of Pokdarwis is to conduct entrepreneurship training, providing members with training and mentoring opportunities. This skill certification is led by inter-sectoral and inter-agency cooperation. Therefore, integrating certified training across the entire geosite is essential and should be carried out continuously. The identification of the Gunungkidul Geosite area is as follows:

Table 3. Identification of the Gunungkidul Geosite

No	Geosite	Development
1	Gunung Api Purba Nglanggeran	Masyarakat
2	Endapan Laut Formasi Sambipitu (Kali Ngalang)	Belum Terkelola
3	Gua Pindul	Masyarakat
4	Kalisuci	Masyarakat
5	Luweng Jomblang	Masyarakat
6	Pantai Siung-Wediombo	Masyarakat
7	Lembah Kering Purba Sadeng	Belum Terkelola
8	Air Terjun Bleberan (Sri Gethuk)	Masyarakat
9	Pantai Baron-Krakal	Masyarakat
10	Luweng Cokro	Masyarakat
11	Gua Ngingrong	Masyarakat
12	Hutan Wanagama-Bunder	Universitas
13	Hutan Turunan	Masyarakat

Source: Bappeda, 2019.

Based on the area identification, two geosite locations remain unmanaged: the Sambipitu Formation Marine Sediment geosite (Kali Ngalang) and the Sadeng Ancient Dry Valley geosite. In contrast, eleven other geosite locations are well managed. Field observations show that all stakeholders involved in the Gunung Sewu UGG, particularly at the Gunungkidul Geosite, have provided training facilities. For instance, at the Kali Suci Geosite, most local economic actors have joined the Kalisuci Pokdarwis and received certification training in rafting or caving. Additionally, the Nglanggeran Geosite offers training facilities for processing snacks and durian products, which are local specialties.

This effort is further supported by an integrated transportation system. One example is the Damri service, which allows tourists to travel directly from the airport to the Baron Beach Geosite. The community is empowered and plays a pioneering role in every geopark program, guided by the Gunung Sewu UGG masterplan. This masterplan provides a framework for all stakeholders, outlining programs and activities to achieve sustainable development. It is designed for a ten-year period, from 2020 to 2029.

However, some road access issues persist. The Watu Payung Geoforest geosite has roads with many potholes and uneven contours, while Jomblang Cave has approximately 600 meters of unpaved, rocky, and muddy roads during the rainy season. Despite these challenges, the geosites in Gunungkidul are generally easy to locate, thanks to clear signage, even for first-time visitors. In conclusion, based on the data and field observations, the following strategies are recommended: (1) Integrating all geosites into ongoing certified training programs; (2) Expanding opportunities for local economic businesses by promoting business opportunities at each geosite; (3) Building and maintaining road infrastructure, communication networks, and clean water treatment facilities; (4) Promoting geosites through digital and online platforms; and (5) Integrating inter-regional cooperation in geopark management to maintain UGG status and ensure sustainable management.

CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis results, it can be concluded that the six dimensions of local economic development (PEL) at the Gunungkidul Geosite show four dimensions in very good condition and two dimensions in good condition. The dimensions of target groups, policy synergy and focus, sustainable development, and governance fall into the very good category. Meanwhile, the dimensions of location factors and management processes are in the good category. These two dimensions can be optimized through the implementation of effective and relevant strategies derived from the leverage factors of each dimension.

The RALED analysis alone does not determine the overall status, so a weighting analysis (PENBOT) is necessary. The total value of all aspects of the six dimensions of Local Economic Development analyzed by PENBOT falls into the very good classification. This aligns with field observations, where every activity in geopark management involves all stakeholders and prioritizes local community involvement. Based on the local economic development status of Gunungkidul Geosite, the Local Economic Development strategy can be implemented by addressing the leverage factors of each dimension. This strategy prioritizes local economic actors, most of whom are members of each geosite's Pokdarwis. Therefore, integrating certified training across all geosites is essential and should be implemented continuously.

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