

Geotourism Contribution to Sustainable Development in Ranah Minang Silokek Geopark Sijunjung District

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Abstract This paper aims to shed light on the significant contribution of tourism development in the geopark area, particularly through the concept of geotourism. The Ranah Minang Silokek geopark area in Sijunjung Regency is a treasure trove of attractions and developed destinations in geodiversity, biodiversity, and cultural diversity. While tourism, in general, can foster a sustainable life, cultural tourism, and cultural heritage can have a significant positive and negative impact on people's lives. Therefore, it is crucial to understand the extent of the contribution of sustainable tourism development through geotourism in Silokek Geopark. This research, conducted through qualitative methods and a narrative approach, aims to develop the objects in Silokek as geotourism based on sustainable tourism development. Data collection was carried out through interviews with management and the observation of geological objects and FGDs with stakeholders. Data analysis was done through a Stepwise Forward approach. The findings reveal that the development of geotourism can have a profound positive impact, not only supporting economic growth for the local community and government but also serving as a foundation for efforts to preserve and protect landscapes and geology, the main essence of the Silokek geopark. This research aims to shift the perspective that geotourism is the antithesis of mass tourism, and instead, highlight its contribution to the principles of geoparks (Unesco Global Geoparks Network).

Keywords: Geotourism; Sustainable Tourism Development; Silokek Geopark

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1. Introduction

The tourism industry has experienced a very rapid development over the past two decades by penetrating several aspects that make it a tourist destination. These aspects are in the form of natural attractions, build attractions, and cultural attractions as the main attraction of a tourist destination (Yoeti, 2016). This can be seen in the tourism industry agenda in West Sumatra. The vision of tourism

development for the province of West Sumatra for 2014-2025 is "The Realization of West Sumatra as a Tourism Destination in the Western Region of Indonesia with Global Competitiveness and Environmental Insight with Indigenous, Religious, Natural, and Cultural Local Characteristics". From this vision, it is targeted that the number of tourists will continue to increase by reaching 2.5 million domestic tourists and 3.5 million foreign tourists (tourists) in 2027. To achieve this target, the concept of tourism is driven by the concept of local customs, culture, and nature through

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the tourism industry in West Sumatra. One of the three-based tourism potentials is in Sijunjung Regency.

Sijunjung Regency is geographically an area passed by the Bukit Barisan cluster. Therefore, with the geographical conditions of hills and rocks, it has many areas of rocky hills that have existed since 350 million years ago (Pemerintah Kabupaten Sijunjung, 2019). With this potential, it can be used as a new vehicle for regional development in the form of earth parks and tourist attractions. In addition, Sijunjung Regency is designated as a Tourism Service Area or DPP V as a West Sumatra tourist destination or destination with destinations in the form of nature tourism, historical/cultural tourism, and

artificial tourism (Kusuma, 2019). One of the tourist destinations that developed is the Minang Silokek Ranah Geopark. The tourism concept applied to the geopark is natural (geological), biological and cultural wealth owned by Sijunjung Regency. Geopark not only upholds the value of conservation (geo-conservation) but includes tourism (geo-tourism) in order to realize a sustainable development. Therefore, geoparks as geotourism development areas should have the opportunity to create economic value and economic development (balancing economic activity through tourism with conservation efforts). Therefore, geotourism is said to be a new type of environmentally innovative tourism (Dowling, 2013).

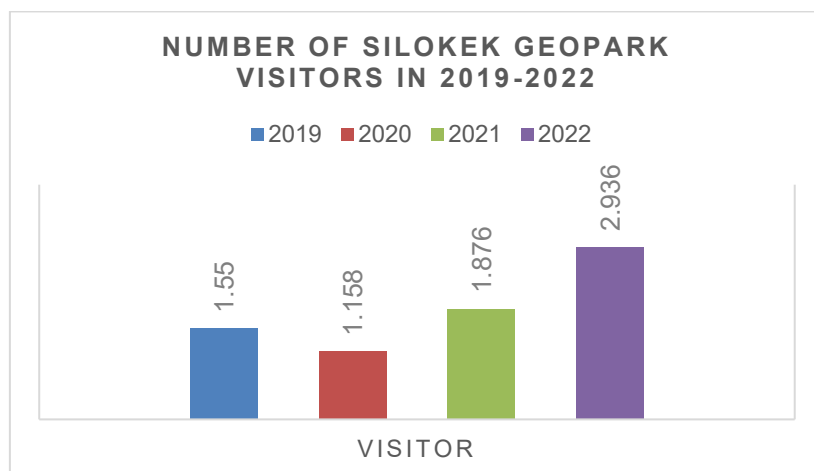


Figure 1. Number of Silokek Geopark Visitor 2019-2022.

Source: *Processed from Silokek Geopark Management Agency Report Data (2022)*

The number of visits to the Ranah Minang Silokek geopark from 2019 to 2020 is quite significant above the 1,000 number of visitors even during the Covid-19 pandemic. However, from 2021 to 2022 there will be a jump of almost 2,000 visitors. Visitors are not only tourists (local and

foreign tours) but visits from government agencies, communities, academics, and study tours (students). The number of visits has increased supported by national and international events held in the Silokek geopark area.

In 2019, an international rafting world championship event was held entitled "Silokek Geofest Rafting World Cup (SGRWC)". The Rafting World Cup is included in the annual calendar of the International Rafting Federation (IFR) and the Indonesian Rafting Federation (FAJI) which is attended by 7 countries with a total of 50 teams (250 athletes) participating. In the same year, a workshop was held by the Association of Indonesian Geologists (IAGI) in collaboration with the Silokek Geopark Management Agency (BPGS) and the Sijunjung government. The workshop was attended by 25 regional administrators (Pengda) throughout Indonesia. In addition, the national event of the Manih Lansek Festival (FLM) IV in 2022 with the theme "Geodiversity and Biodiversity" and FLM V will be held in February 2023 which coincides with the 74th Anniversary of Sijunjung Regency (HJK) with the theme "Through Geopark Ranah Minang Silokek Sijunjung Tourism Develops-Economy Recovers". This festival features various traditional arts (dance, music), UMKM and BUMDes (Village/Nagari Owned Enterprises) expo and a bazaar.

Through the event held at the Silokek Geopark, it aimed to develop and increase community participation in tourism development and conservation education; elevate and develop the potential historical, natural, cultural, and biological wealth values that exist in the Minang Silokek Ranah Geopark area; improve the community's economy through UMKM (Micro, Small, and Medium Enterprises) and creative economy (ERKRAF) products as well as bazaars; as well as making the

tourist village (Silokek geopark area) a symbol of the revival of the national economy.

Therefore, tourism is considered an economic activity that could generate growth and create jobs (Edi Indrizal & Yevita Nurti, 2023). In addition, it contributed to economic and social development and integration with respect to remote rural areas. Tourism growth was also expected to become a new trend to be able to make a positive contribution to the preservation of conservation areas. Tourism is also considered as an instrument in the preservation and increased the awareness of residents and visitors to the environment. So that the relationship between tourism and conservation areas (geoparks) is complex due to the different economic focus of tourism on the one hand and the focus on the conservation of protected areas on the other. The importance of this relationship lies in confrontation, which can increase awareness of the value of nature and lead to ecological behavior and conservation activities (Štrba et al., 2020; Wilson et al., 2009). Tourism could represent a key role in providing information about protected areas and raising awareness among tourists about the environmental consequences of their activities and has the potential to be an important tool for conserving these areas through sustainable tourism development. Therefore, how far is the contribution of sustainable tourism development with the concept of geotourism in the Silokek Geopark area to nature conservation. Also, whether the presence of geotourism in

the geoprak area makes an economic contribution to local government.

2. Methods

This research was conducted at Minang Silokek Ranah Geopark located in Sijunjung Regency, West Sumatra. Geologically, Minang Silokek Ranah Geopark has a very interesting uniqueness because it has passed 3 eras on the geological time scale which is reflected in the arrangement of rocks that make up the area. The oldest rocks in this area were formed in the Permian (299-252 million years ago) and Carboniferous (359-299 million years ago) periods. In addition, the Ranah Minang Silokek Geopark area is also rich in biodiversity where some areas are habitats for rare flora and fauna and some rare trees with large diameters are still found. Minangkabau customs and culture in Sijunjung Regency still exist and form the basis of community life, this is shown by the existence of a traditional village that still adheres to customary norms and this traditional village has been designated as a national heritage cultural heritage in 2018 (Ermayanti et al., 2022; Ermayanti, Indrizal, et al., 2023b, 2023a; Ermayanti, Nurti, et al., 2023; Irwandi & Ermayanti, 2023). Along with this, the government Sijunjung Regency has supported the geopark management and development program as reflected in the Vision and Mission of the Regional Head of the Sijunjung Regency RPJMD for 2021–2026 where the district's development theme is "Integration of the Geopark Ranah Minang Silokek Cross-Sectorally and Regionally in Creating a Prosperous and Just Society".

This study used qualitative research methods and a narrative approach. According to Creswell (2015) the narrative approach seeks to empirically describe the phenomena that occur and look for the 'reasons' behind these phenomena. This effort brings out a pattern behind reality which is sometimes not openly realized but must be interpreted (Denzin & Lincoln, 2017).

Methods of data collection through observation and unstructured interviews as well as Focus Group Discussion (FGD) with the Silokek Geopark Management Agency. The questions asked are questions that explore the potential of the Silokek geopark for tourism development. So far, the development of the Silokek geopark into geotourism has been under way, but to what extent will its contribution to strengthening conservation and protection efforts for natural wealth. Is the basis of community-based development (Community Based Tourism). So that it can be seen that the development of geotourism has become a sustainable tourism development in Sijunjung Regency with the aim of geotourism (conservation and tourism).

To analyze the data using Spradley's (1980) approach, which is a gradual step forward which uses 3 methods of analysis that can help describe the data and validate it and draw conclusions. First, field analysis (domain analysis) is carried out to get the main topics studied. Second, taxonomy analysis determines the relationship between categories contained in one field (domain). Third, component analysis to find out the

smaller components (elements) contained in the classification.

3. Results and Discussion

Tourism is often seen as a form of development that can produce a sustainable life, where cultural tourism and heritage can have both positive and negative impacts on people's lives significantly (Srijuntrapun, 2012). Because, tourism is not one thing, but a complex realm of behavior, representation, and interaction. It includes multiple actors, characteristic practices, and constituent institutions (Naomi & Margaret, 2015).

The development of world tourism began to emerge in the 1990s based on the WTO (World Tourism Organization) report. This trend is moving from mass tourism to one that is oriented toward the natural environment or known as ecotourism (ecological tourism). The antithesis of ecotourism which is more committed to nature conservation and community-based tourism compared to mass tourism which provides space for foreign capital to enter an area and weakens local community participation (Arida, 2017). This trend is also due to the increasing awareness and lifestyle that respects the values of human relations with the natural environment. The attraction of many tourist objects visited by tourists is natural tourism (Ansofino, 2012; Satria et al., 2018). In Indonesia, of course, has prospects and potential for geological, biological, and cultural diversity as the basic capital of ecotourism development. This is also marked by the world's nickname for Indonesia as mega biodiversity. So the need for sustainable tourism

development for areas that are able to increase tourism growth. One of them is the concept of tourism.

Geotourism is indeed a new vocabulary for tourism in Indonesia. However, this term has appeared since the 1990s when it was first mentioned by British geologist Tom Hose in the Geology Society. His paper entitled Geotourism, or Can Tourists Become Casual Rockhounds: Geology on Your Doorstep in 1996. He said that geotourism is based on geology (Brahmantyo, 2014). Therefore, it can be said that geotourism is a sustainable natural tourism activity with the main focus on the geological appearance of the earth's surface in order to encourage understanding of the environment and culture, appreciation and conservation, as well as having concern for the preservation of local wisdom. However, geotourism still follows the rules and principles of ecotourism.

The ecotourism principles to be followed are contained in the 2002 Quebec Agreement. The agreement states that ecotourism that utilizes natural areas that are relatively undisturbed and generally protected must be a tool for conservation and sustainable development for local communities. This means that ecotourism as a rule for the development of alternative nature tourism must have a nature conservation style, be educative in nature, provide economic and cultural benefits to the community in a sustainable manner, and of course have a small negative impact on the environment.

Regarding sustainable development, in 1980, the International Union for the Conservation of Nature (IUCN), the United Nations Environment Program (UNEP), and the World Wildlife Fund (WWF) issued a "World Conservation Strategy", a world conservation strategy, to achieve 3 main objectives namely: Maintaining essential ecological processes and their supporting systems, Maintaining genetic diversity, and Ensuring the use of ecosystems and their species in a sustainable manner. The concept of sustainable development was then defined by WCED (The World Commissions for Environmental and Development) in 1987 as development that can guarantee the fulfillment of the needs of the present generation without risking the ability of future generations to meet their own needs.

Basically, the goal of sustainable development combines development with the environment from policy formulation and decision-making to implementation in the field. Based on this global mandate, sustainable tourism development is also pursued (Sutiarso, 2017). The concept of Sustainable Development was later adapted by Burns and Holden (2014) to the tourism sector as a model that integrates the physical environment (place), cultural environment (host community), and tourists (visitors). So that the term Sustainable Tourism Development appears with its relation between tourism and environmental, human, and cultural development.

The principles that become a reference in Sustainable Tourism Development according to Burns and Holden (2014) consist of:

- 1) The environment has an intrinsic value which can also be a tourism asset. Utilization is not only for short-term interests but also for the benefit of future generations.
- 2) Tourism must be introduced as a positive activity by providing mutual benefits to the community, the environment, and the tourists themselves
- 3) Tourism and development activities must be concerned with the scale/size, nature, and character of the place where the activity is carried out.
- 4) In other locations, harmony must be built between the needs of the tourist, the place/environment, and the local community.
- 5) In a dynamic and changing world, being able to always pay dividends. Adaptation to change, however, should not depart from these principles.
- 6) The tourism industry, local governments and environmental non-governmental organizations (NGOs) all have a duty to adhere to the above principles and work together to make them a reality.

This strategic approach to sustainable tourism by France (1997) suggests small-scale, local management, and benefits the community at large. In addition, the Sustainable Tourism Charter emphasizes that tourism must be based on sustainable criteria, the essence of which is that development must be supported ecologically in the long term and at the same time be economically feasible, ethically and socially fair to society. Meanwhile, the Federation of Nature and National Parks

(WTO/UNEP, 1992) provides a limitation that sustainable tourism is all forms of development, management, and tourism activities that maintain the environmental, social, and economic integrity and well-being of existing natural and cultural resources for a long period of time. According to Arida (2017) to fulfill sustainable tourism development, a tour can be considered sustainable if it meets the requirements, namely:

- 1) Ecologically sustainable, that is, does not cause negative effects on the ecosystem.
- 2) Socially acceptable, which refers to the ability of local communities to absorb tourism activities and not cause conflict.
- 3) Culturally acceptable, that is, local people are able to adapt to different tourist cultures.
- 4) Economically profitable to improve the welfare of local communities.



Figure 2. Relationship between Geotourism and other forms of tourism.
Source: abstracted from Newsome & Dowling (2010)

Based on geopark concept initiated by UNESCO in 2001, it is possible to achieve sustainable tourism development in the Silokek geopark with the title of geotourism development. Meanwhile, geopark itself has 3 blends of diversity namely geological diversity, biodiversity, and cultural diversity. With this, geotourism can play a role in increasing the function of the geopark area not only as a conservation but as a tourism area that can improve the local community's economy.

In addition, Silokek geopark as a national geopark will be proposed as a candidate for the UNESCO Global Geopark (UGG) (Kusuma, 2019). So in

Law No. 32 of 2009 concerning the Protection and Management of the Environment, it is said that sustainable development is a conscious and planned effort that integrates environmental, social, and economic aspects into a development strategy to ensure the integrity of the environment as well as the safety, capability, welfare, and quality of life of the present and future generations. front. On the basis of this Law, the development of the Silokek geopark area must be based on sustainable development, and if it has tourism potential then of course also with the concept of sustainable tourism development. In line with the principles that must be upheld by

geotourism, geological tourism (geotourism) can be used as a medium for the socialization of natural science, environmental education, and nature conservation which in the end is expected to realize the development of sustainable geological tourism.

Principles that must be considered in developing geotourism include:

1) *Geologically Based*

Based on geology, it means that destinations and tourist attractions that are used for geotourism are really the result of geological processes. In this case, geotourism requires natural landscapes, not man-made or artificial ones. Authenticity in nature-based attractions has been alluded to in the tourist attraction criteria previously presented. Whereas the criteria for natural tourist attraction must have a value of authenticity (original and authentic). The physical aspects that are used as tourist attractions can be in the form of soil conditions, mineral content, rock types and others that are still related to geology.

2) *Sustainable*

Sustainable means that the development and management of geotourism must be sustainable so that its sustainability can be maintained. Not only in tourism, in any business long-term sustainability is a major consideration in its management. The concept of sustainable development is development to meet the needs of the present without destroying or reducing the ability of future generations to meet their needs (WTO/UNEP, 1992). Sustainable tourism development has

been defined as tourism development that maximizes the potential of tourism to eradicate poverty by developing appropriate strategies in cooperation with all major groups, indigenous peoples and local communities (IUCN, 1980).

A more specific formulation in sustainable tourism is to meet current tourism needs while protecting and increasing opportunities to meet future tourism needs, as well as preserving nature, and being fair to the economy and socio-culture of the community. This is considered managerially to manage all resources in such a way that economic, social, and aesthetic needs can be met while maintaining cultural wisdom values, important ecological protection, diversity of biological elements, and other life support systems (Berno & Bricker, 2001).

3) *Geologically Informative*

Geotourism (geotourism) is a special interest tourism by utilizing all the potential of natural resources, so it is necessary to increase the enrichment of insights and understanding of the processes of natural physical phenomena (Nainggolan, 2016). Geotourism destinations should be equipped with clear and easy-to-understand information systems. With a good information system about the history of the formation of geological formations, it is hoped that tourists will understand the natural processes that occur. With this information, it is hoped that the public will be aware not to damage the beauty of the environment around geotourism. This means that

geological tourism involves aspects of education.

Educational aspects or tourism education are elements that are the main characteristics of natural tourism products, both ecotourism and geotourism. Dowling (2011) states that knowledge-based activities (geologically informative) are the basic principles of geotourism development. Earth science knowledge and interpretation of appearance forms and earth processes is very important in satisfying the curiosity of visitors.

Education Tour (educational tourism), is a form of tour packaging that is suitable for geotourism. Education Tour is a tour trip that is intended to provide an overview, comparative study or knowledge about the field of education visited. This education tour is carried out to develop insight and knowledge for the perpetrators. Actors who travel on educational tours are usually not too concerned with excessive luxuries in traveling activities. However, it demands more self-enrichment, in the form of new knowledge and experience.

4) *Locally beneficial*

The existence of geotourism is expected to be able to provide benefits to the community/community around it. These benefits can be in the form of positive impacts that can be enjoyed such as economic growth, the progress of socio-cultural values, improvement of environmental quality, or others (Hermawan, 2016). With geotourism it is hoped that the development process in the area will increase.

One management model that is suitable for geotourism is by adopting

community-based tourism or known as Community Based Tourism (CBT). Where in CBT tourism is initiated with the local community itself, local communities are developed, and the benefits from tourism are expected to be enjoyed by the community. Tourist satisfaction (Tourist Satisfaction). Realizing tourist satisfaction means that geotourism management can provide physical and spiritual satisfaction for tourists who visit it. Tourist satisfaction can be obtained with good tourism management, at least being able to present beautiful, unique and original tourist attractions; able to guarantee security and safety for tourists; and supported by excellent service (Hermawan & Brahmanto, 2018).

Ranah Minang Silokek Geopark: (Tourism) Geology and (Conservation) Landscapes

Based on regional administrative boundaries, the Ranah Minang Silokek Geopark - Sijunjung Regency is included in the fault zone of the Sumatran Fault (Semangko Fault). The Sumatran fault is a fault which one day can be reactivated (reactivated) which makes the valleys of the Barisan Hills cluster. The Silokek Karst Valley is becoming popular today and is a mainstay tourist attraction in Sijunjung Regency. The tourist object is a Karst Panorama that stretches with the large Kuantan river flowing with exposed granite basement stones. Sijunjung is also known for its rich culture and history. Therefore, Silokek, Sijunjung Regency wants to raise the Aspiring Geosite with the theme: "Traces of Appointment of Ancient Aged Karst Above the Bedrock of the Ombilin

Basin" including natural components in it (geology, biology and culture). As one of the areas that has beautiful natural potential with rows of rocks and cliffs, the concept of an earth park or geopark can be developed. The Silokek Geopark area is an area located in Sijunjung Regency, located in two sub-districts, namely Sijunjung District and Sumpur Kudus District with an area of approximately 1300 km² which includes 20 villages.

Silokek Geopark has been designated as a national geopark since November 30 2018 with 25 geodiversity sites, 12 biodiversity sites and 17 cultural diversity sites (Kusuma, 2019). The potential of the Silokek area is to have a unique geological diversity supported by interesting flora and fauna as well as local culture. This area is the result of the collision of two different plates, namely: the Eurasian Plate (continental plate) which is composed of granite (acidic), and the Indo-Australian plate (oceanic plate) which is composed of basalt (alkaline), which produces a deep trough, a place where deep sea sedimentary rocks (pelagic sediment), metamorphic rocks (altered rocks) and deposited alkaline to ultra alkaline rocks.

Some of the geodiversity in the Silokek geopark area include;

1) Taman Ngalau Basurek

Ngalau Basurek is a wet cave, because there is a river that still flows from the inside up to 20 meters in front of the mouth of the cave. At the beginning of the formation of the Basurek Ngalau with the river flowing in it, it occurred as a result of the process of dissolving by rainwater that fell on the limestone area seeping through gaps or cracks called

diaklas, eroding the area through which the crack or gap will become wider and bigger if cracks or fissures form holes that are interconnected and there is a flow of water, forming an underground river.

2) Ngalau Saribu

The Ngalau Seribu karst area in the form of a vertical cliff >150m. This location is the appearance of geological evidence (geo-evidence) in the form of a panorama (landscape) as evidence of a geological structure in the form of a normal fault which produces a large avalanche associated with human activity in ancient times in the form of mining history and Japanese hole making activities.

3) Ngalau Talago

The Ngalau Talago Karst area is in the form of underground caves and rivers.

4) Bedrock Enchantment

In the Silokek Geopark area, the basement of the Ombilin Basin is exposed in the form of a waterfall.

5) Batang Tano Waterfall

The Batang Tano Waterfall, which is still clear and natural, originates from the Mambul Hill which flows to fill the slopes around the hills. This waterfall area is part of the Silokek Geopark area, this area has a stretch of dense tropical rain forest with various types of flora and fauna.

6) Sangkiamo Bridge

There are many karst hills in this area with steep conditions with ridges or elongated/ellipsoidal hills, measuring an average length of 400 – 600 meters.

7) Palukahan Waterfall

Palukahan Waterfall which is still clear and natural comes from Mambul Hill which flows to fill the slopes around the hills.

8) Pasir Putih Area

The Pasir Putih area is an area where the banks of the Batang Kuantan river have widened as a result of natural processes that have occurred over the years.

For the biodiversity aspect in the Silokek geopark area, it has diversity. This is based on the area is still in the form of forest. The forest in the Silokek Geopark area is part of the Sumatran forest which is classified as tropical forest. In this forest area there are many animals and plants whose status is protected. Among them, (a) the types of flora that exist in the Silokek geopark area are Carrion Flowers (*Amorphophallus titanum*), Raflesia Flowers (*Rafflesia amoldii*) and Shining Stem Mushrooms (*Mycena lucentips*), (b) types of fauna in the form of Forest Goats (*Capricornis sumatraensis*), Siamang (*Symphalangus syndactylus*) and Forest cat (*Prionailurus bengalensis*).

But in this case, the potential that threatens the Silokek geopark area is certainly in sight. A small portion of the area is production forest, protected forest and illegal gold mining area. This mining area has the potential for metal mining materials, namely in the form of gold mineral indication stones. Seeing the potential for minerals, this does not rule out the possibility of exploration activities being carried out either by private parties who officially have mining business permits (IUP) or by local people who do not have permits (PETI).

Deforestation on production land that is not controlled will be a threat to forest degradation resulting in

landslides during the rainy season. Illegal mining carried out in the Silokek Geopark area greatly affects the condition of the rivers that flow to the Silokek area. So that during the rainy season, the critical lands will be eroded by rainwater, bringing huge amounts of mud and sedimentation to the rivers that flow downstream from Siokek. This causes the color of the river water to turn brown. So that changes in land use that are not controlled in the future could potentially suppress environmental sustainability. The potential threat that might occur is landslides. During the rainy season, uncontrolled logging on production land will be a threat to forest degradation resulting in landslides during the rainy season. So if there are people who do not understand the environment clear land and do not protect the area, this can trigger a disaster.

There are several factors that have the potential to hinder the development of the Silokek Geopark area in terms of bio-diversity, including:

- 1) Forest encroachment that eliminates individual/populations of flora and or fauna.
- 2) Noise makes fauna move.
- 3) Burning smoke kills insect eggs or pupae.
- 4) Mining waste and household waste or other waste enters the river destroying the population/killing aquatic animals in the river.
- 5) Dispose of plant waste containing seeds brought by visitors from outside so that these seeds can grow in the geopark location which will later become invasive species.

Table 1. Potential Benefits of Tourism in the Ranah Minang Silokek Geopark Area.

Potensi	Benefit
Improving the Economy	Increase employment opportunities for local people
	Increase revenue
	Unlock new tourism and diversify the local economy
	Produce local products
	New market creation
	Improve quality of life
Protecting Natural and Cultural Heritage	Local tax revenue
	Increase protected area funding
	Protecting the ecology and streams of rivers
	Preserving biodiversity

However, there is a great opportunity to turn this area into a conservation area. Geopark makes a location later as a conservation area that must be preserved, so that this very rare geological area is automatically protected by the existence of Nature Reserves and conservation which are legal entities and have legality as local and world heritage areas. Therefore, conservation, education and empowerment efforts are needed as well as good management of the geological, biological and cultural potential in the Silokek geopark area.

Geotourism: Enforcement of the Ecotourism Pillar of Ranah Minang Silokek Geopark

As a derivative of the concept of sustainable tourism development, one form of tourism product is the concept of ecotourism development (Murdana, 2019). Ecotourism is not a group of dedicated nature lovers, but a combination of diverse interests that arise from concern for social, economic and environmental issues.

Ecotourism is a sustainable tourism concept, designed to protect the natural and cultural environment through conservation and education

activities about the environment as well as empowering local communities and the sustainability of ecotourism must continue when (1) the community is actively involved in the design and development of ecotourism projects, (2) the government develops and support programs on environmental preservation and (3) the importance of promoting and publicizing the potential economic benefits as a result of developing community ecotourism, (4) the practice of participation in community-based natural resource management (Hannan & Rahmawati, 2020; Mulyana, 2001; Munajat et al., 2022). Ecotourism provides a unified tourism value that combines a balance between enjoying the beauty of nature and efforts to preserve it.

Ecotourism can play an active role in solving problems that may arise in the process of developing tourist destinations. The main direction of developing the ecotourism model is based on the basic potential of tourism which prioritizes natural and cultural preservation, and is sustainable with the aim that natural resources and human resources can be used in the long term (Normaneli et al., 2022). Furthermore, according to Raharjo, et al (2018) the development and

development of natural tourism (ecotourism) has two main objectives, namely increasing people's income and protecting the surrounding natural environment.

Geopark is a solution in an effort to maintain diversity and sustainability by making the location a nature reserve area that has geological heritage values, is managed by a zoning system and can be utilized for educational, research, cultivation development, recreation and tourism activities that benefit the surrounding community (Labib et al., 2021).

Eco-geotourism emerged around 2000 due to the global phenomenon of shifting tourist interest in sustainable tourism based on natural resources (Aguilo & Juaneda, 2000; Dowling, 2011; Wibowo et al., 2019). Eco-geotourism which is a form of sustainable tourism based on geological resources or known as geological tourism, with three main objectives, namely the development of education and research, and development of the local economy in terms of developing education, research and development of the local economy designed through educational activities and conservation efforts instill knowledge in the community about the value of geological, cultural and biological heritage, building an informed society in Indonesia requires the synergy of various parties, the government, the private sector, the community itself including students (Fonseca Filho, 2020; Hendriques & Brilha, 2017; Nasruddin & Efendi, 2021; Ruban, 2016; Said et al., 2019).

In order to realize sustainable geotourism development, every tourism

actor must uphold the principles or pillars of ecotourism, namely the pillars of sustainable development (ecology, economy, and socio-culture), and the pillars of fulfilling the basic needs of travel (satisfaction, experiences and memories) (Munajat et al., 2022).

Geotourism: Protection and Sustainable Tourism

In line with the principles of sustainable tourism that are applied throughout the world, geo-education, geo-conservation, and local economic value growth through tourism must continue to be improved and realized in accordance with the goals and objectives of building a geopark. The purpose of establishing a geopark is prioritized for economic development, education and nature conservation. UNESCO itself has a goal to stimulate economic sustainability within the framework of sustainable development.

Geotourism is projected to become a means of extracting, growing and developing economic value in a sustainable manner. On that basis, the Silokek geopark as a container for its development is conservative. However, exploitation of economic values in the form of directly changing the landscape, or other efforts which, if carried out excessively, will reduce the function of protecting resources, is of course impossible to do in that area. Thus a clear delineation of geopark boundaries becomes important. Through the concept of sustainable tourism and based on the development of local community resources, the tourism business is the only support for the local economic development function of the Silokek geopark. Empowering local

communities to support economic development with geotourism can be done by:

- 1) Creation of creative economic zones such as craft areas and art markets.
- 2) Strengthening the capacity of youth organizations and traders by providing training in foreign languages, organizations, tourism and entrepreneurship.
- 3) Strengthening local culture such as dance and music so that it can be packaged into performances for tourists;
- 4) Provision of knowledge about sustainable tourism and nature protection so that the area can be preserved.
- 5) Increasing the local economy through agro-industry.

Regarding positive socio-cultural perceptions related to the impact of tourism activities such as employment, poverty alleviation, preservation of customs and culture, regional arts and increasing insight and association. In addition to the positive socio-cultural impacts, many criticisms have been given by tourism experts on the negative socio-cultural impacts of tourism activities. Pitana and Gayatri (2005) state that the negative socio-cultural impacts that often arise in tourism activities are cultural erosion, security disturbances to the influence of moral decadence due to imitating the liberal lifestyle of tourists.

Dowling (2011) states that the basic principles in geotourism practice include implementing the principle of

sustainability and contributing to locality (locally useful). Geotourism activities as far as possible have a very small negative impact on the preservation of natural resources and on the other hand must contribute and benefit the local population, both economic benefits and social benefits. Furthermore, to obtain direct benefits from geotourism development, local residents must be actively involved in the form of cooperation and empowerment in all geotourism activities.

Regulations (Perpres 9 of 2019) and technical guidelines (Permenesdm, 2021)), related to geological heritage and the development of earth parks (geoparks) as tourist destinations are guidelines for sustainable development in the region through the geopark concept. In line with the definition of geotourism as tourism that focuses on the geology and landscape of an area as a basis for fostering sustainable tourism development (Dowling, 2013).

Management and utilization of geological heritage (Geotourism or Geoconservation) in the Geopark Area can increase state revenue from the tourism sector with local economic and cultural development, as well as spatial planning harmony in an effort to achieve sustainable development. In the end, geotourism must be defined as tourism that sustains and enhances the identity of a region by taking into account the geology and environment, culture, aesthetics, heritage and well-being of its inhabitants (local communities).

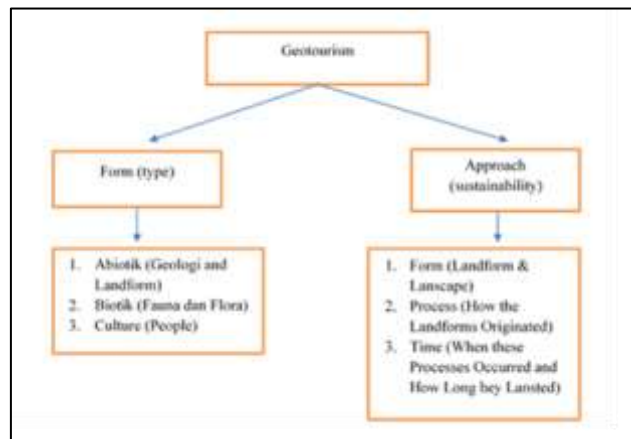


Figure 3. Geotourism Structure.

Geotourism is defined as 'tourism that focuses on the geology and landscape of an area as a basis for sustainable tourism development' (Dowling, 2000). This tourism development generates benefits for conservation (especially geoconservation), appreciation (through geoheritage interpretation), and economy. Important for the development of geotourism is an understanding of the identity or character of a region or region. To achieve this, geotourism is seen as something based on the idea that the environment is formed by abiotic (A), biotic (C) and cultural (C) components. This 'ABC' approach consists of abiotic elements of geology and climate, namely biotic elements of animals (fauna) and plants (flora), and cultural or human components, both past and present. Geotourism argues that to fully understand and appreciate the environment, we must first know about the abiotic elements of geology and climate because these determine the biotic elements of the animals and plants that live there. Furthermore, the combination of abiotic and biotic

environmental components determines the cultural landscape of how people lived in the area in the past, as well as how they live there today, today. This is the essence of geotourism which starts from an understanding of geology which is interpreted through its components form (landscape and landscape), process (how land forms originate) and time (when did this process occur and how long did it last). This forms the basis of a more holistic understanding of the environment and its component parts and thus, gives residents or tourists a greater connection with the environment in which they live or visit.

Therefore, geotourism is a new form of sustainable tourism with a primary focus on experiencing the geological features of the earth in a way that fosters environmental and cultural understanding, appreciation and conservation, and is locally beneficial. The sustainable nature of geotourism is founded on the promotion of geoconservation (conservation of the earth's geological features), which promotes appreciation and understanding of our Earth's heritage

through proper interpretation, and the benefits to local communities through the resulting economic benefits. Through geotourism it is related to ecotourism and cultural tourism, but is not synonymous with either of these forms of tourism as well as creating geotourism products that embed geoconservation, communicate and promote geological heritage, and help build sustainable communities through appropriate economic benefits.

The UNESCO geopark concept provides several benefits. First, it offers the opportunity to recognize, protect and develop Earth's heritage sites on a global level. Second, geopark will also recognize the relationship between humans and geology, in addition to recognizing the ability of the site as a center for economic development. Third, the concept of geopark is very close to the paradigm of unifying science and culture, namely through the introduction of important and unique natural physical conditions.

As an area, a geopark must have clear and real boundaries. The area of the geopark must be sufficient, in the sense that it can support the implementation of the development action plan. Geopark as a means of identifying earth heritage, must contain a number of geological sites (geosite) which have meaning in terms of science, scarcity, beauty (aesthetics), and education. However, activities in a geopark are not limited to geological aspects, but also other aspects such as archeology, ecology, history and culture. As a geotourism development area, earth heritage objects in geoparks have the opportunity to create economic value and develop local

economies through the implementation of nature-based tourism (geology) or geotourism. Sustainable geopark management will balance economic activities within the area (through tourism) with conservation efforts. This certainly has a good impact on the people who are inside the geopark. As a means of cooperation with the local community, however, the development of a geopark in an area must have a direct effect on the people who are in it and the environment around it. The geopark concept allows local people to remain in the area and can actively participate in the revitalization of the area as a whole. In addition, the geopark is a testing ground for science and technology. In the activity of protecting natural heritage objects from damage or environmental degradation, geopark areas become places for experiments and improvement of the applied protection methods.

4. Conclusions

In principle, geopark is an area development concept that can be synergized with the principles of conservation, education, local economic growth through geotourism. Geoparks must also be integrated with existing regional spatial plans in built-up areas as the legalization of guarantor for the values mentioned above. Currently, the geopark concept is an excellent geological conservation concept because it can cover all existing spatial components. With a thorough shared understanding of the wealth of geological resources owned by the Indonesian nation and a strong commitment from stakeholders, the utilization of geological resources for

sustainable development can become a reality that will lead this nation to independent prosperity.

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