

Contents lists available at ScienceDirect

International Journal of Geoh heritage and Parks

journal homepage: <http://www.keaipublishing.com/en/journals/international-journal-of-geoh heritage-and-parks/>

Research Paper

Creative strategies of local resources in managing geotourism in the Ijen Geopark Bondowoso, East Java, Indonesia

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ARTICLE INFO

Article history:

Received 12 October 2022

Received in revised form 3 January 2023

Accepted 3 January 2023

Available online 7 January 2023

Keywords:

resource-based view
geotourism
geopark

ABSTRACT

This paper aims to explain the process of developing creative strategies for empowering community capabilities and local resources in managing geotourism in the Ijen Geopark development area of the Bondowoso region. The location is in the Ijen District as a depiction area for developing the Ijen Geopark. The perspective used in this study is a resource-based view with valuable, rare, imitable, non-substitutable (VRIN) analysis to identify the effectiveness of the performance of local geotourism resources. The results showed that the daily management of geoparks has collaborated with institutions in rural areas in building sustainable competitive advantages to manage geotourism oriented to VRIN criteria in the delineation area of the development of the Ijen Geopark.

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1. Introduction

Bondowoso Regency is one of the areas that is very rich in natural resource potential in the form of active and non-active mountain ranges. To the west lies the Argopuro mountains, in the north lies the Alas Lemongrass, Biser, and Bendusa mountains, and to the east lies the Raung and Ijen mountains. Mount Raung and Mount Ijen are still active volcanoes. Ijen Crater is one of the international tourist attractions with attractions of folk sulfur miners and the charm of blue fire at night. Local people on the slopes of the Ijen mountains take advantage of Ijen's geological wealth to grow Arabica-type coffee with the distinctive aroma of Ijen coffee. The peculiarity of Ijen coffee then has a patent as Biosite located in Kluncing Village, Ijen District. In the Bondowoso area, many megalithic sites are relics from the megalithic period. Ijen Sub-district is one of the sub-districts in Bondowoso Regency, which is the entrance to the Ijen tourist area. Ijen Sub-district is in the middle of a giant circle surrounded by mountains of the former ancient caldera of Mount Ijen. Ijen Sub-district has a wealth of tourist attractions, such as Para Layang Megasari Hill, Plalangan Lava Flow, Gentongan Waterfall, Blawan Lava, Blawan Hot Spring, Wurung Crater, and others. Accessibility to the Ijen Bondowoso Geopark tourist area is easy to reach, from the west through the city of Surabaya (Downtown East Java), east through Banyuwangi Regency, and from the island of Bali, which is very famous as a world tourist destination (Table 1).

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Table 1

Area can be reached through various modes of transportation to Ijen Geopark.

From Jakarta	From Surabaya	From Denpasar
Plane: 1.5 h	Plane: 50 min	Plane: 50 min
Train: 23 h	Train: 9 h	N/A
Car: 17 h	Car: 6 h	Car: 7 h

Source: Dossier Ijen Geopark, 2018.

The geological processes that occur in the Ijen Geopark include activities about volcanism and include various combinations of volcanism, magmatism, limestone sedimentation, clastic sedimentation, erosion, and geomorphological formations that are very related. Such volcanic activity is a process that produces extraordinary geodiversity. The process is complex and makes it worthy of geological heritage and must be preserved (Dossier Ijen Geopark, 2018).

Based on the richness of geodiversity, and also provides natural wealth in the form of biodiversity arising from geological processes resulting in soil fertility on the slopes of the Ijen mountains. Biodiversity conditions are used for the welfare of the surrounding community, especially the cultivation of Arabica coffee. In addition to geodiversity and biodiversity, in the Bondowoso Regency area, many relics of the megalithic era are found in the form of megalithic sites made of stone. The diversity of the potential of the Bondowoso Regency area in the form of aspects of geodiversity, biodiversity, and cultural diversity, encourages the Bondowoso Regency Government to make the Ijen mountain area into a geopark area. The formation of the Ijen Geopark in addition to the purpose of preserving natural and cultural resources also encourages the improvement of the welfare of the community around the Ijen area (as seen in Figs. 1 and 2).

The Ijen Geopark area is an area that includes 14 sub-districts spread across the slopes of the Ijen Mountain Range. The Ijen Geopark area, as a geotourism development area, has nine geological sites, two biological sites, and five cultural sites. The existence of these historical sites, realizing the importance of maintaining and making these assets have value, both historically and culturally, must also increase social value so that people know the meaning of ancestral relics. Geobioculture sites also have a very high economic value in promoting the welfare of local people. The Bondowoso Regency Government establishes an

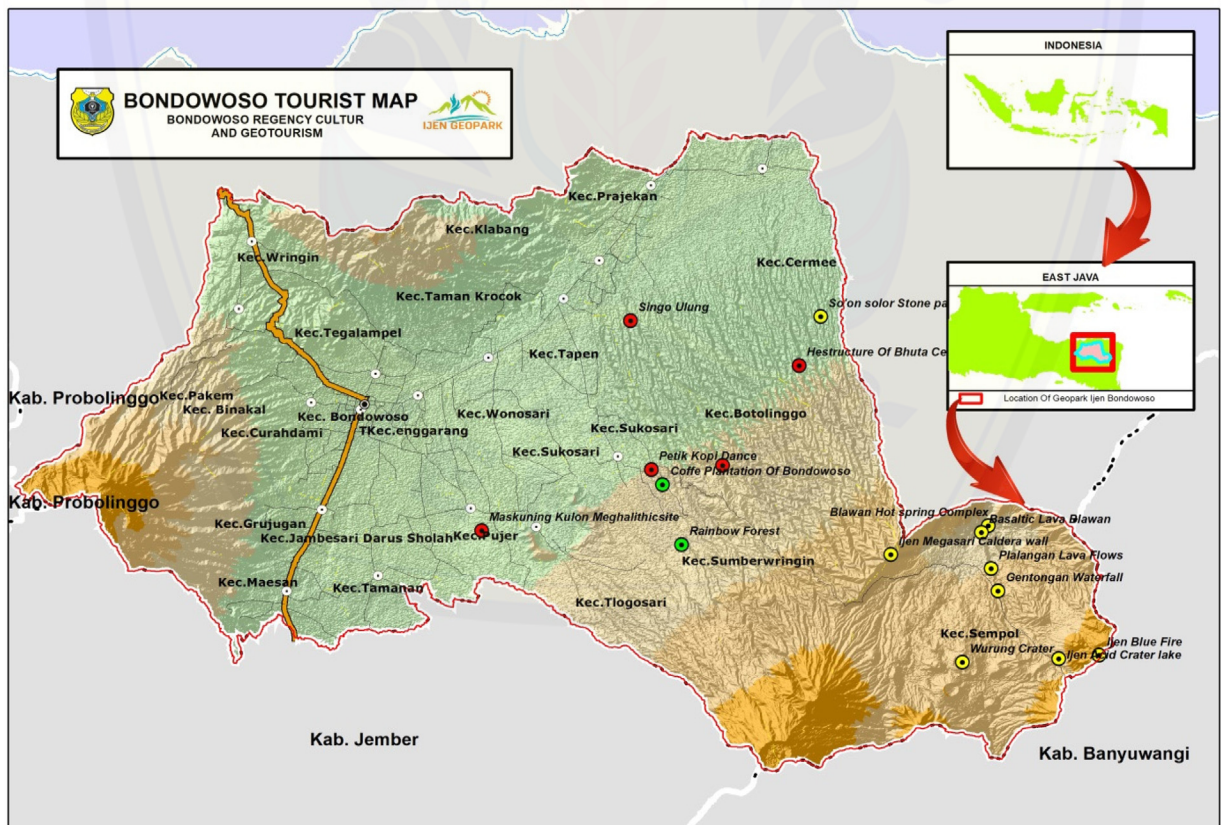


Fig. 1. Location of Ijen Geopark in Indonesia.

Source: Bondowoso Tourism Youth and Sport Office.

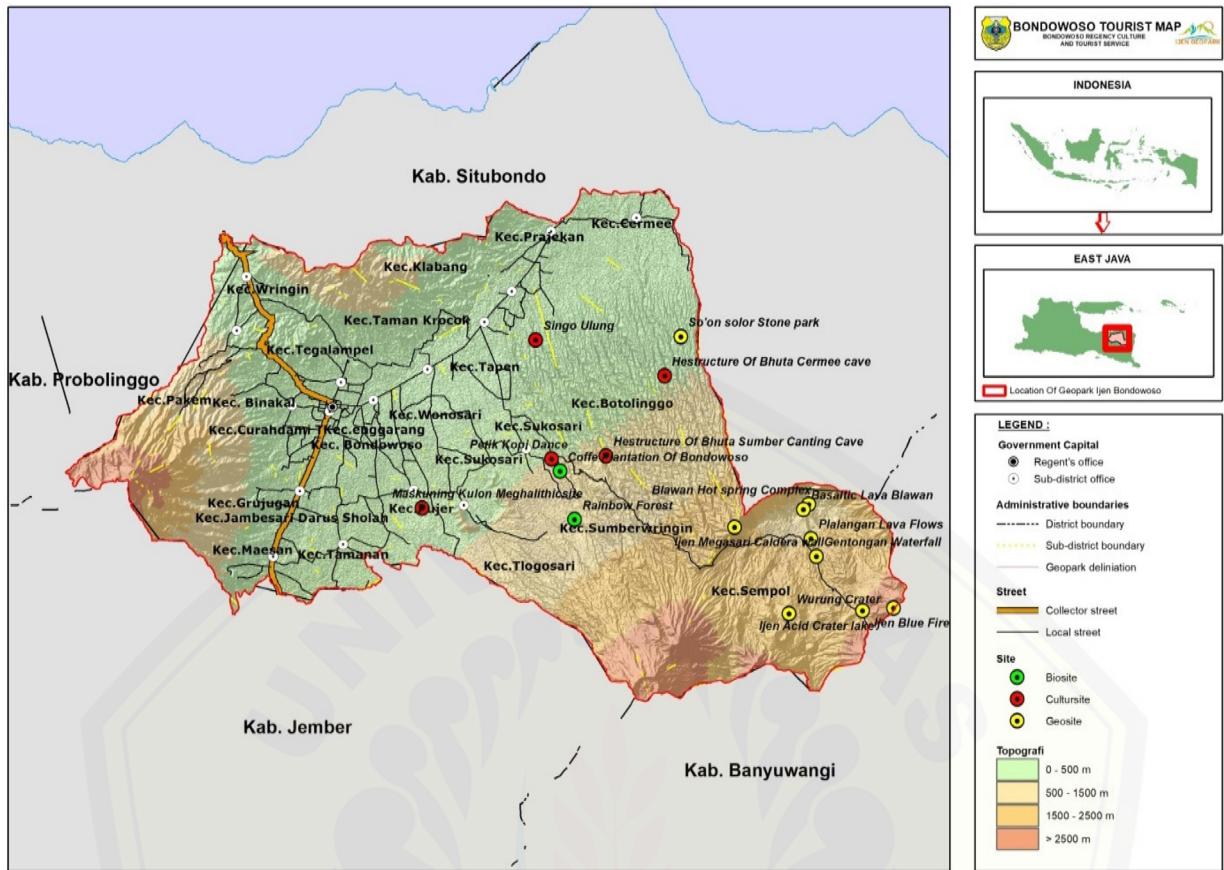


Fig. 2. Biosite, cultursite, geosite scatter map of Ijen Geopark, Bondowoso, Indonesia. Source: Bondowoso Tourism Map, 2018.

Table 2
Potential residents in Ijen Geopark.

No.	Sub-district	Total population in 2020
1	Ijen	47,343
2	Sumberwringin	31,875
4	Cermee	12,875
Total population		92,092

Source: Processed data (2022).

area zone or delineation,¹ covering 14 sub-districts. From 14 sub-districts, the author has chosen three sub-districts that are the priority for the development of the Ijen Geopark area, namely the distribution area of the geopark site, including sub-districts: Ijen, Sumberwringin, and Cermee. The focus of this foundation is the development of tourism activities in 3 sub-districts, which are the entrance to the Ijen Geopark area. This research focuses and the locus in Ijen Bondowoso District.

The potential of human resources in the three sub-districts has a population of 92,092 people spread across the three sub-districts. The largest population is in Ijen District, second in Sumberwringin District, and smallest in Cermee District (Table 2). These three districts are the entrance to the Ijen Geopark area of the Bondowoso region. Table 2 shows the distribution of population in three sub-districts in Ijen Geopark.

¹ Decree of the Regent of Bondowoso, Indonesia, No. 188.45/941/430.4.2/2020. About the determination of delineation of Ijen Geopark Bondowoso region. <https://drive.google.com/file/d/15rqMMSqKn2ImBBAlshXPdntBq5G5R1Q/view?usp=sharing>

Table 3
Number of villages in Sub-district of Ijen, Sumberwringin and Cermee.

No.	Sub-district	Village	BUMDes (village-owned enterprises)	Pokdarwis (tourism-awareness groups)
1	Ijen	6	6	2
2	Sumberwringin	6	6	4
3	Cermee	15	15	1

Source: Processed data (2022).

Table 4
Population age 15 years and over by educational attainment and type of activity during the previous week in Bondowoso Regency, 2021.

No.	Highest completed education	Workforce			Percentage of work against the labor force
		Work	Unemployment	Number of the labor force	
1	≥ Elementary school	299,310	9,285	308,595	96,99
2	Junior high school	58,845	3,957	62,802	93,70
3	Senior high school	63,176	5,690	68,866	91,74
4	University	25,322	1,903	27,225	93,01
Total		446,653	20,835	467,488	95,94

Source: Processed data (2022).

Ijen Sub-district has the highest population and is also the entrance of tourists to the Ijen Crater tour. Therefore, the focus and locus of coaching and empowering local communities to have an understanding of geotourism are very relevant. The following Table 3 shows the total number of villages in three sub-districts, which means it is the potential in developing collaborative management between Triple Helix Village components.

In addition to an assessment of the quality of natural resources, it is also very important to pay attention to the social and cultural aspects of the community as recipients of tourists. Local governments with their ranks need to pay attention to the quality of human resources through improving character building in accordance with the demands of superior tourism and business culture.

In Table 4, the percentage of people aged 15 years and over who work is depicted compared to the number of the labor force. The majority of the workforce is educated in elementary school, but the population working with higher education which reaches 25,322 can be driven as a driver of community participation in the development of geotourism.

Table 5 shows the level of availability of formal education facilities in three sub-districts of 249 schools. In accordance with the importance of educational aspects in the development of geoparks, the education sector plays an important role. The function of the education sector is to educate students in schools, in the community, and in geopark locations.

Providing education and literacy to the surrounding community to understand knowledge about volcanoes is very important for reducing hazards and utilizing natural wealth for the welfare of local communities. The process of magmatism began millions of years ago, with a complete, interrelated, and interesting story. It is very important for the community to understand the process of volcanic magmatism through the education system and its empowerment through the development of community-based geotourism.

Activities in volcanic areas can include a wide variety of actions packaged in various tour packages. For dedicated volcano travelers, this experience remains a very memorable and unforgettable travel memory. Erfurt-Cooper (2014) states that some volcanic tourism activities include three groups, namely: (1) day trips that often include visits to volcanic environments only; (2) field trips and visits of longer duration as special packages offered worldwide on the internet for special interest groups; and (3) exploratory trips or expeditions to more extreme destinations for participants seeking unusual but safe experiences. The following are the list of geosites of Ijen Geopark and some pictures that show the geological and geomorphic potential of Ijen Geopark which is the most important and interesting part of Ijen Geopark (Figs. 3-14).

Table 5
Number of schools and students in sub-district of Ijen, Sumberwringin and Cermee in 2022.

No.	Sub-district	Level of school (children's park, elementary school, religion school, junior high school, senior high school, vocation high school)	Student
1	Ijen	41	2,356
2	Sumberwringin	82	5,584
3	Cermee	126	6,787
	Total student		14,727

Source: Processed data (2022).

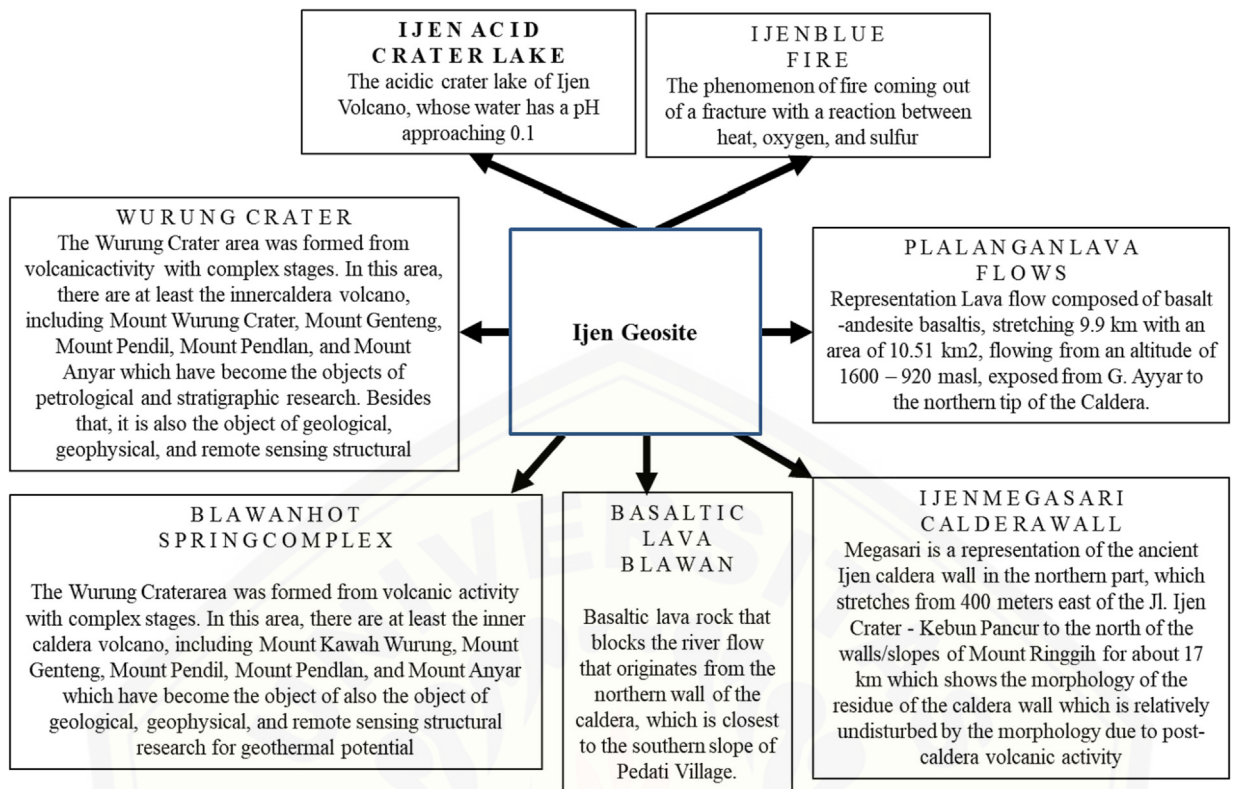


Fig. 3. Some Ijen Geosite attractions.
Source: Dossier Ijen Geopark, 2018.

The geological heritage of the UNESCO Global Geoparks (aUGGP), Ijen area, has a close relationship with natural heritage. This area is a suitable habitat specifically for biodiversity. List of biosite of Ijen Geoparkis show in Fig. 8.

The Bondowoso Government has pioneered and sought to make the Mount Ijen area a world geopark by submitting a dossier to the UNESCO Global Geoparks (aUGGP). In 2021, it received approval for developing the Ijen Geopark, and a team of assessors



Fig. 4. Ijen blue fire of Bondowoso area.
Source: Dossier Ijen Geopark, 2018.



Fig. 5. Ijen Acid Crater Lake of Bondowoso area.
Source: Dossier Ijen Geopark, 2018.

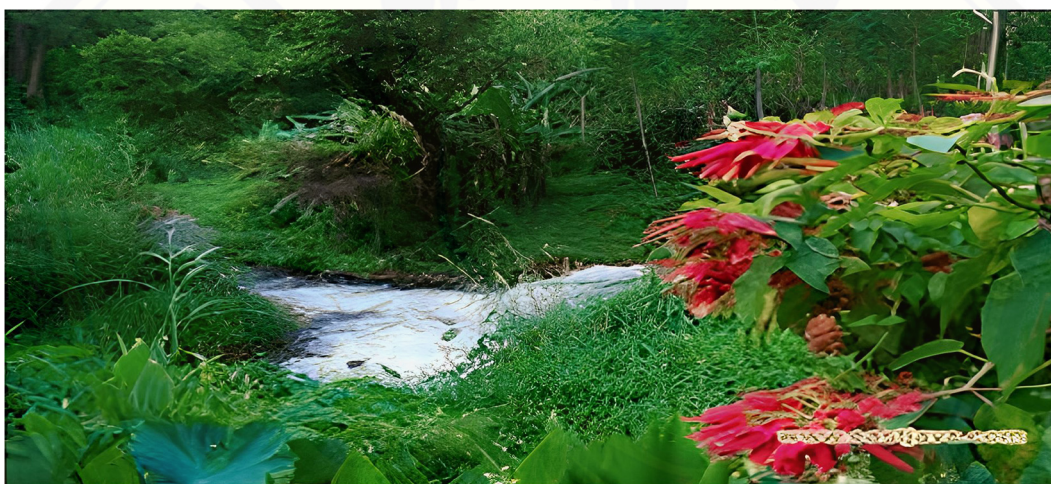


Fig. 6. Blawan Hot Spring Complex of Bondowoso.
Source: Dossier Ijen Geopark, 2018.

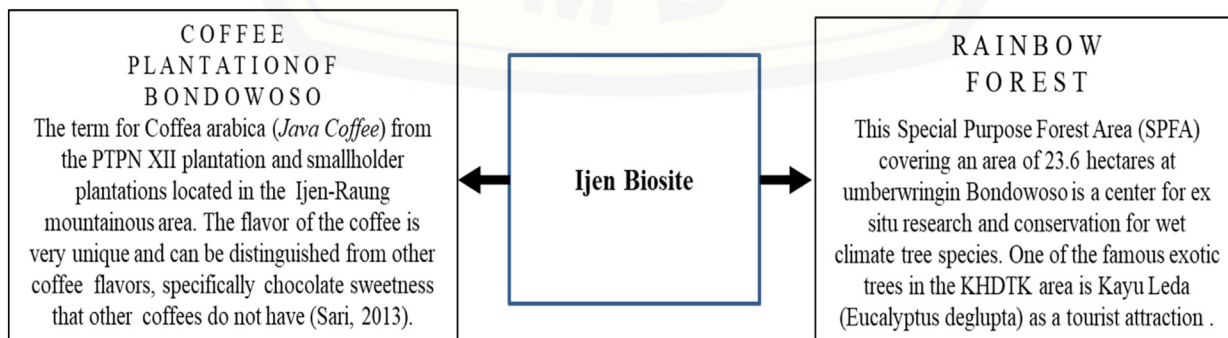


Fig. 7. A list of bioste in Ijen Geopark of Bondowoso area.
Source: Dossier Ijen Geopark, 2018.



Fig. 8. Coffee plantation of Bondowoso.

Source: Dossier Ijen Geopark, 2018.

from UNESCO carried out an assessment. The strategy for developing tourist areas in Bondowoso is carried out by determining the Regency Tourism Strategic Area (RTSA), including RTSA Raung Ijen: RTSA Solor; RTSA Argopuro, and RTSA Magalitikum.²

The Bondowoso Government formed a technical team tasked with supporting the development of the Ijen Geopark by the duties and functions of each Regional Apparatus Organization (RAO) through the Decree of the Regent of Bondowoso, No. 188.45/940/430.4.2/20.³ In addition to forming a technical team, the Bondowoso Government also created the Daily Management of Ijen Geopark (Decree of the Regent of Bondowoso, Indonesia, No. 188.45/200/430.4.2/2022).⁴ Challenges in managing the geopark as an integrated area include aspects of protection, the use of geological heritage in a sustainable way, promoting the economic welfare of the people there, the number of types of geoheritage, accessibility, vulnerability, the need for interpretation, and scientific, educational, and tourist interests, as well as aesthetics (Ruban, Mikhailenko, & Ermolaev, 2022). Therefore, in developing the potential of the Ijen Geopark area, the committee strengthens its focus on three pillars: (1) geological aspects, (2) biological aspects, and (3) cultural aspects. The implementation of the benefits of these three pillars through a vital aspect strengthening program includes: (a) conservation of nature and culture, (2) education, (3) community empowerment, and (4) tourism. Based on these four aspects, it is the focus of the strategic creative study of geotourism resources with valuable, rare, imitable, non-substitutable (VRIN) analysis.

The three pillars and four aspects of geopark development are carried out in an integrated manner through the involvement of Triple Helix Village, building infrastructure networks, drafting necessary regulations, and strengthening commitment and mutual trust in the community (Fig. 15). Development of integrated management through collaboration between community components is to be able to utilize and manage local areas and potentials through the development of geotourism that is able to build local community participation in Ijen Geopark activities.

Geopark development must be able to carry out sustainable development goals, namely improving the economic welfare of local communities in a sustainable manner. Therefore, efforts to improve the quality of human resources will be the key to the success of geopark development. Geoparks and surrounding communities have mutualistic symbiotic correlations and relationships. Sustainable nature prosperous society. What efforts can be made by local communities, village governments, and local

² Bondowoso Regency Regional Regulation, No. 3 of 2019

³ Decree of the Regent of Bondowoso, Indonesia, No. 188.45/940/430.4.2/2020. About the technical team for the development of Ijen Geopark Bondowoso region. <https://drive.google.com/file/d/1b4vy0wymZmAdGMumCaARihhXfWU8RGZ/view?usp=sharing>

⁴ Decree of the Regent of Bondowoso, Indonesia, No. 188.45/200/430.4.2/2022. About the daily management of the Ijen Geopark Bondowoso region. <https://drive.google.com/file/d/1zZcBhtZAWfc2mjEvl79s2gwrX0l3bsdA/view?usp=sharing>



Fig. 9. Rainbow forest of Bondowoso.
Source: Dossier Ijen Geopark, 2018.

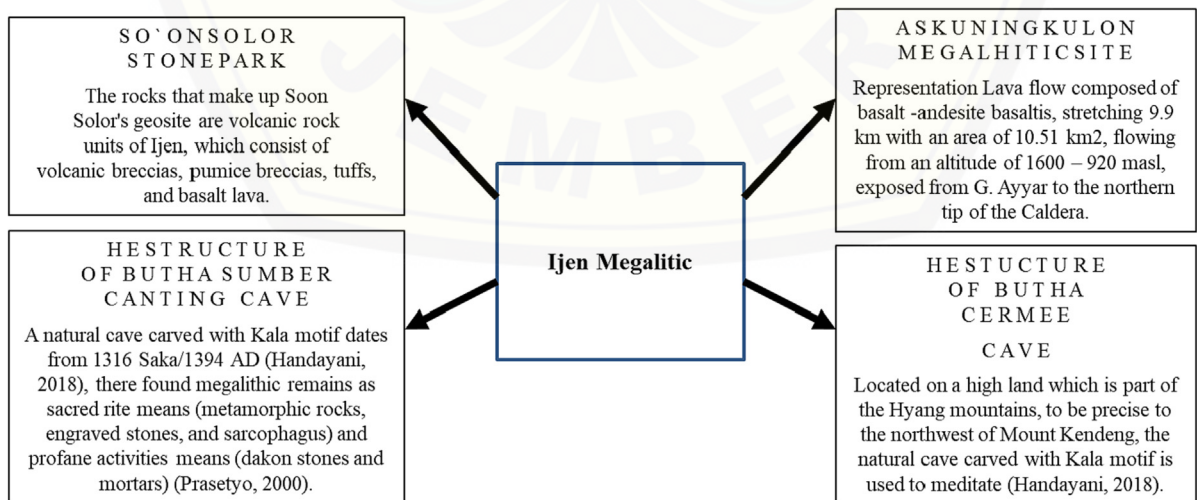


Fig. 10. Magalitic heritage of Bondowoso.
Source: Dossier Ijen Geopark, 2018.



Fig. 11. So'on Solor Stone Park of Bondowoso.
Source: Dossier Ijen Geopark, 2018.

governments, focusing on creative strategies in encouraging the development of local resources, in order to be able to manage geotourism with VRIN specification. This is the fundamental question in this study. Institutional potential in the village is a challenge as well as an opportunity in developing creative strategies and strengthening the competence of local resources to manage geotourism that can support the development of Ijen Geopark.

Potentially, rural areas have village governments with the authority in managing local areas and resources. Other institutions that are the strength of development in villages are formal, informal, and non-formal education systems in villages, as well as the existence of industry systems in rural areas that have relevant economic leverage. The collaboration of the three components of



Fig. 12. So'on Solor Stone Park of Bondowoso.
Source: Dossier Ijen Geopark, 2018.



Fig. 13. The Structure of Butha Sumber Canting Cave of Bondowoso.
Source: Dossier Ijen Geopark, 2018.

Triple Helix Village can be mobilized and work together in improving the quality of local resources. In addition to the Triple Helix, other stakeholders who are also involved in the collaboration in the development of Ijen Geopark are the pentahelix components, namely government, business, mass media, academicians, and NGOs. Collaboration between Triple Helix Village and Penta Helix, and local communities is needed in managing the potential of the Ijen Geopark which includes geodiversity, biodiversity, and cultural diversity.

Collaboration between stakeholders in the development of local resources requires the packaging of a creative strategy so that the community is able to manage geotourism activities that have diverse potentials, such as aspects of geobiocultur aspects in the



Fig. 14. The structure of Butha Cermee Cave of Bondowoso.
Source: Dossier Ijen Geopark, 2018.

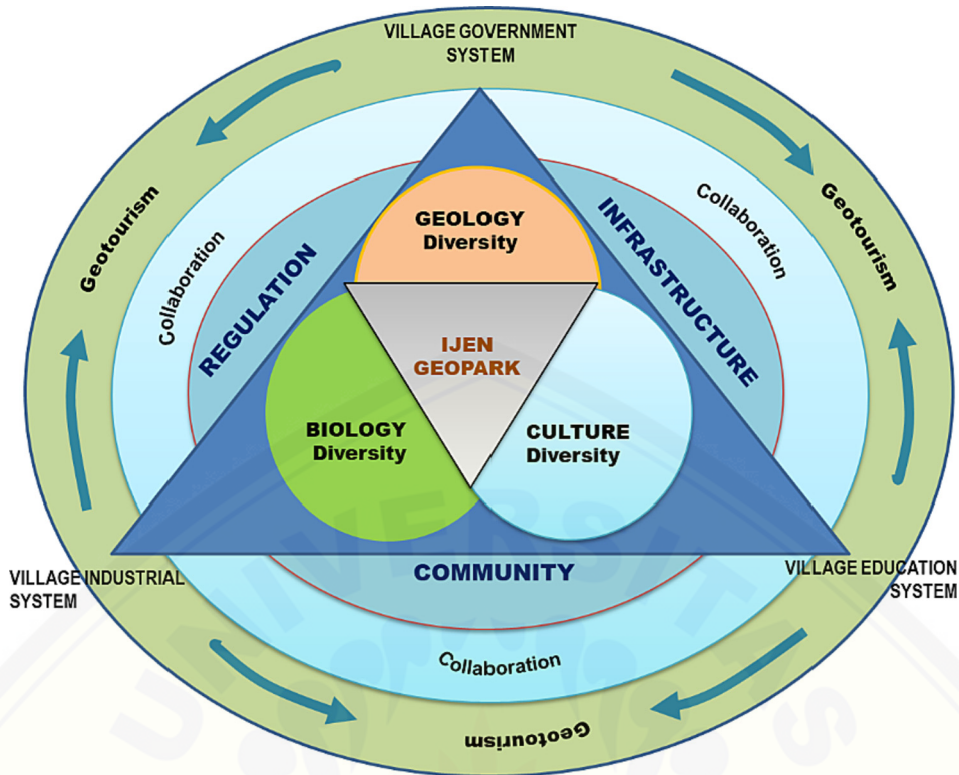


Fig. 15. Ijen Geopark development collaboration.
Source: Data modification.

Ijen Geopark delineation area. The development of creative strategies must be able to achieve competitive advantages and create higher economic value compared to other competitors in the industry. Business orientation no longer rests on tangible assets but has switched to intangible assets.

Building its own resources and maintaining its superiority, can only be maintained if it has a unique pool of resources owned and controlled in order to achieve and maintain sustainable superior performance. Unique resources intended are resources that have valuable, rare, inimitable, and non-substitutable properties. This is a resource-based view (RBV) perspective.

Based on the presentation of the importance of RBV-based local resource development, as well as the ability of the Bondowoso Government through the Youth and Sports Tourism Office together with the Ijen Geopark Daily Management, building stakeholder collaboration is the focus of this study, which also explores how the collaboration between stakeholders, such as the Triple Helix Village, Penta Helix, and local communities, is built through the implementation of RBV-based creative strategies so that local communities have the knowledge and ability to manage geotourism that is able to support the development of the Ijen Geopark in the Bondowoso region.

2. Literature review

2.1. Geopark and sustainable tourism

Geopark is a leading geological area that requires the involvement of local communities to play an essential role in protecting natural heritage. Thus, geopark is a button-up aspect, namely an approach to community involvement in conservation, education, and economic empowerment of local communities. Geopark development opens up opportunities for cooperation between local communities and geopark managers to develop nature and culture-based geotourism attractions, supporting infrastructure for sustainable development around geotourism attractions (Briggs, Dowling, & Newsome, 2021). The existence of geopark as a geological heritage and its ecological wealth provides space for local communities to utilize this geological and environmental wealth in a mutualistic symbiotic manner and with the spirit to preserve nature for the next generation. This context is very relevant to sustainable development, which includes two main elements. First, development with an orientation always develops the available potential to be better and sustainable. Second, it represents the meaning of resilience and sustainability (Duran, Gogan, Artene, & Duran, 2015). Heritage resource requirements include diversity, attraction, the influence of heritage resources, uniqueness, preciousness, and wonder of heritage resources (Awad, Arar, Jung, & Boudiaf, 2022). Observing aspects of sustainable development will give rise to a dimension of awareness which includes its relation to the size of time, namely regarding what is

happening in the present and the future, and the interaction dimension, which includes the economic and environmental systems. It is essential because human needs are always related to the availability of natural resources (Heal in Fauzi & Octavianus, 2014). However, it is necessary to realize that sustainable development is rhetoric through trade-offs between aspects (Drew & van den Bergh, 2017).

In developing Ijen Geopark in the Bondowoso Regency area, the Daily Management always approaches the local community. It is packaged in the geotourism model to attract local communities to participate in maintaining and preserving geological assets. Geotourism is a critical tool to protect the environment and alternative solutions for overcoming mass tourism, providing better relationships, reducing damage to nature, creating local work, and fostering development. The appearance of the natural texture of the mountain is so stunning and beautiful, and all the unique forms of its geology are all forms of raw potential (Hermawan & Brahmanto, 2018). Geotourism is a sustainable tourism model with natural areas and cultural environments, providing economic benefits for the community, focusing on the geological aspects and components of the natural landscape as the basis for tourism. Geopark area with geological characteristics, internationally relevant, aims at the development of sustainability and the allocation of natural resources, including education in geological sciences, biodiversity, geological mines, historical relics, tourism, conservation, technical development, and research at every level of education (Herrera-Franco, Montalván-Burbano, Carrión-Mero, Jaya-Montalvo and Gurumendi-Noriega, 2021).

The trend that is developing now is sustainable tourism development. In essence, sustainable tourism development is related to efforts to ensure that natural, social, and cultural resources utilized for tourism development in this generation, can continue to be enjoyed by future generations. The three aspects of sustainable tourism are economic, environmental, and socio-cultural. The basis of this aspect is through four elements of particularity: landmarks, uniqueness, specific characters, and differences in perception (Ginting, Lathersia, Putri, Munazirah Yazib, & Salsabilla, 2020). The development of sustainable tourism issues has touched the level of indigenous people and empowerment (Sutawa, 2012; Dwijayanthi, Jones, & Satyawati, 2017).

2.2. Creative strategies for local resources in managing geotourism

Human resources have a dominant position and role in development, so they must be encouraged to develop creative strategies to gain and maintain competitive advantages. The difference in uniqueness and ownership of resources between organizations is noticeable and is a strategic model approach known as the resource-based view (Rengkung, 2015). Resource based-view (RVB) is an organizational strategy approach that assumes that an organization is a collection of assets, resources, and competencies, which have a tangible and intangible nature. Competitors will be challenging to replicate in the market so it will be a competitive advantage. These resources can be valuable, rare, imperfectly imitable, and non-substitutable (VRIN) as superior performance (Barney, 2001; Giriati, 2021; Miraza & Hafas, 2015; Rahadian, 2017; Sugiono, 2018). Maintaining competition on an ongoing basis requires an effort to identify potential internal sub-powers. One of them is through the identification of core competencies such as the following: (1) whether core competencies can provide potential access to various markets; (2) whether core competencies can make such meaningful contributions to customers; (3) whether the core competencies possessed can make it difficult for competitors to imitate (Prahalad & Hamel, 1990).

Intellectual capital, as an element of the resource-based view, is the total value of an organization that shows intangible assets derived from three pillars, namely human capital, structure, and customers (Ikhsan, 2008). Intellectual capital includes all expenses of employees, organizations, and their ability to create added value and competitive advantages on an ongoing basis. Intellectual capital is elusive, but once discovered and exploited, it will give the organization a new source base to compete. Intellectual capital also combines intangible assets from the market, intellectual property, infrastructure, and human centers that make the organization capable of functioning. Intellectual capital consists of three dimensions which include human capital based on human resources, structural capital rests on the organization; and relationship capital based on the coordinated relationship between the organization and the surrounding environment (Jardon & Dasilva, 2017).

2.3. Collaborative governance

Collaborative governance is a way of managing “something” that involves all stakeholders both directly and indirectly, is oriented and there is deliberation in the collective decision-making process, in order to achieve common goals (Astuti, Harsono, & Rachim, 2020). Meanwhile, stakeholders are a group of people or individuals who influence each other and are influenced by the achievement of certain goals of the organization (Freeman in Astuti et al., 2020). Furthermore, according to Biset, stakeholders are people with an interest or attention to a problem (Azheri, 2012).

Collaborative governance requires communication practices that occur between members so as to improve the quality of collaboration (Koschmann, Kuhn, & Pfarrer, 2012). There are eight main principles in the application of collaborative governance: (1) citizens must be involved in the production of public goods; (2) the community must be able to mobilize resources and assets to solve public problems; (3) professionals must be involved to empower community members; (4) policy-making must be carried out by deliberation; (5) the policy must contain an ongoing collaborative partnership; (6) the policy must be strategic; (7) policies should change institutions for community empowerment and public problem solving; and (8) policies must contain accountability (Seigler, 2011).

The strong factors that influence collaboration most consist of willingness to compromise, communication, commitment, mutual trust, exchange of information, knowledge sharing, and mutual willingness to take risks, while weak factors are the emergence of potential conflict, coordination, control, partnering, and independence (Schöttle, Haghsheno, & Gehbauer, 2014).

However, in the implementation of collaboration, there are several inhibiting factors that influence the running or not of collaboration. Some factors include cultural factors, institutional factors, and political factors (Government of Canada in Astuti et al., 2020).

2.4. Institutional collaboration through Triple Helix Village

The collaboration of the three components synergizes with each other by Etzkowitz (2012) as an approach to creating cooperation among three actors: academics, business, and government. The Triple Helix function is divided into building well-being, generating knowledge, and normative supervision (Cai & Amaral, 2021; Leydesdorff, 2012). While the Triple Helix Village model includes three components of the system in rural areas (Widjajani, Fajarwati, & Retnaningrum, 2015), namely (1) components that include industries in rural areas can include small village industries or home industries, and the supply chain of these industries, artisans, suppliers of raw materials, and so on; (2) the village government component includes village government agencies as well as related officials, such as village-owned enterprises, tour aware group; and (3) educational institutions in rural areas, formal, informal, and non-formal education, as well as people who can get an education.

Creative strategies in processing and managing existing resources in rural areas for developing tourism villages and geotourism can collaborate Triple Helix Village according to the function, skills, and capabilities in creating tangible and intangible products. The empowerment of the Triple Helix Village component is essential and directed so that the village community can understand the concept and context of the problem in the interaction and collaboration of the Triple Helix (Hamsani & Khairiyansyah, 2018; Herliana, 2015). Attention to the Triple Helix components of the village becomes essential because they will be the subject and object of empowerment and strengthening of resources capable of having the advantage of competitiveness in meeting the VRIN criteria. The research question is how the manager of the Ijen Geopark together with the Triple Helix Village develop a creative strategy to mobilize local resources that are able to manage geotourism in the development of the Ijen Geopark, and what efforts are made in socializing, and encouraging creative participation oriented to the VRIN criteria, so that awareness grows in developing superior geotourism in their area.

3. Methods

The research began with observational studies and secondary data collection related to the characteristics of the geology and geomorphological Geopark Ijen, as well as the potential for geodiversity, biodiversity, and culture diversity. This data is very important as a background for the need to develop creative strategies for the development of local resources in the field of geotourism. The following secondary data is data on the existing condition of the population in the village area in the Ijen Raung RTSA as a research area. Furthermore, secondary data that shows activities in community development and empowerment through collaborative strategies between stakeholders related to the development of the Ijen Geopark. In the social aspect, this research focuses more on social reality in developing creative strategies through collaborative management between the Triple Helix Village component, local communities, Ijen Geopark daily administrators, and the Bondowoso Youth and Sports Tourism Office.

The research uses the constructivism paradigm, so primary data collection is carried out through in-depth interviews with research subjects and informants. All the participants have provided their informed consent to participate in this study. During the research process, confirmation and clarification of existing data and information are carried out on an ongoing basis to ensure the validity of the required data. The parties interviewed were the Head of the Tourism and Sports Office, the Chairman of the Daily Management of the Ijen Geopark as the subject of research and several other actors as additional informants to obtain complete data and information. The results of the interview are written in transcripts and selected to fit the context of the discussion.

Data analysis is carried out from the beginning of the research so that a data reduction process that is not in accordance with reality can be carried out, so it can facilitate data interpretation. Qualitative, narrative, and descriptive analysis are employed to gain an understanding of the social realities of local communities in community empowerment in each Triple Helix Village component institution and Ijen Geopark area management. The implementation of local community-based RBV in geotourism management in their area has been analyzed. Conclusions are made based on interpretative analysis and triangulation so that conclusions can be drawn from both emic and ethical perspectives.

4. Results and discussion

4.1. Implementation of resource-based view as a resource strategy in rural areas

The resource-based view (RVB) as an organizational strategy approach assumes that an organization is a collection of assets, resources, and competencies, which have a tangible and intangible nature. Competitors will be challenging to replicate in the market so it will be a competitive advantage. The critical thing to think about in the management of Ijen Geopark and the rural Triple Helix Ranks must develop collaborative management to answer the challenges and opportunities to win excellence, namely implementing VRIN elements both for tangible and intangible assets. Through a collaborative management model, the implementation of the RVB approach exploits the potential sources of geobioculture as geotourism products, preserves the geological assets of Ijen Geopark, maintains and preserves ecological assets, and utilizes them for the welfare of local communities and tourists. Bingham and O' Leary (2015) interpret collaboration as a form of involvement of several actors who synergize to achieve specific goals, where these actors work not only in one sector but also in several sectors. The socialization stage, the internalization of

VRIN to the community, is carried out on the village's Triple Helix component according to the institutional system's function. The details of the VRIN socialization education system can do it with education, literacy of VRIN values, and direction of practical skills that focus on VRIN. In the sub-components of the industry, the socialization and internalization of VRIN must be the focus of value creation and skills so that the physical products produced are of VRIN value. The sub-components of the village government, through village-owned enterprises and tour-awareness groups, must provide funding support and skills training assistance in creative industries.

Implementing the Triple Helix Village model requires follow-up by adopting a collaborative management pattern. Collaboration discusses the cooperation of two or more stakeholders to manage the same resources that are difficult to achieve when carried out individually. Collaborative management collaborates between Triple Helix Village components in strengthening and synergy between Triple Helix Village institutions, including three interrelated sub-systems between village industrial sub-systems, village government sub-systems, and village education sub-systems in the development of innovative tourism products through village entrepreneurship. In realizing the management of the Triple Helix Village collaboration, several stages were carried out (Ansell & Gash, 2008; Mafaza & Setyowati, 2020).

4.2. Starting condition

Competition conditions are now getting higher, so organizations must anticipate and develop creative strategies to utilize the region's potential and the possibility of local resources. In using the potential of rural local areas and resources, collaborative cooperation between the Triple Helix components of the village becomes very urgent. At the initial stage of the conditions in the relationships between the members of the Triple Helix Village, each actor has a different background that can produce a form of symmetrical ties in the connection. It is the case with the Bondowoso District, as stated by the Chief of Tourism and Creative Economic Division of Department of Youth Culture and Sports Tourism of Bondowoso Regency (in 2022) says:

“... We, the local government, have prepared a work plan whose implementation by all Regional Apparatus Organizations (RAO) according to their respective duties and functions is coordinated by the Regional Development Planning Agency. Regent Bondowoso formed a technical team containing RAO elements working by the main program, in the sense that the development of the Ijen Geopark must determine the work plan and its budget. The tagline for the development of Ijen Geopark is “sustainable nature, prosperous society.”

4.3. Triple Helix Village collaboration

4.3.1. Village education system

One of the components of the Triple Helix Village is an educational institution that handles students in a cognitive, affective, and psychomotor manner. Thus giving through the VRIN values give birth to people with a VRIN mindset, creates knowledge creation in producing innovative products with VRIN value, and creates intangible products in providing services to tourists. Through the sub-system, education is built in collaboration to achieve regional development goals and social changes in society. The opportunity that can be encouraged through the education sub-system in developing the Ijen Geopark is to compile a curriculum of local content and other relevant programs. Such as implementing tourism, education and training programs through three formal, informal, and non-formal education channels. Chief of Tourism and Creative Economic Division of the Department of Youth Culture and Sports Tourism of Bondowoso Regency (in 2022) states:

“... education in the development of geoparks plays a key role, both formal and non-formal education. The application of its educational focus is elementary and secondary students, as well as the community. The function of the education sub-system is essential in internalizing the public's understanding of preserving nature and culture, which can provide feedback for society's welfare to develop its creativity and innovation. Application of education is through cognitive, affective, and psychomotor aspects, such as school goes to geopark and making geopark educational videos.”

The implementation of local government policies makes the education sub-system one of the main pillars of the development of the Ijen Geopark in the Bondowoso region, compiling and implementing a curriculum for local content of nature and cultural conservation, as well as educational programs directly to the community. Chairman of the Daily Management of Ijen Geopark Bondowoso Region (in 2022) states:

“...In practice in the field of education, we do two programs. Programs at primary and secondary education levels, through the School Goes to the Geopark or Geopark Goes to School program (Fig. 16). Output is gained by teachers who publish books and videos about geoparks literacy for their students. Pentahelix elements, such as academics and practitioners, are also involved. Meanwhile, vocational education briefings to make materials for products, materials, tools, and food are typical of Ijen Geopark. Community education is carried out directly by coaching community groups related to geoparks and creating products that refer to the VRIN criteria.”

Direct education to community groups is to understand the benefits of geoparks so that they are motivated to provide support through their skills and competencies.





Activity	Object	Discription	Education	View
Geo Site	Kindergarten School	Geo park and education	Scientific, Education & socialization	
Geo Site	Elementary School	Geo park and conservation education	Scientific, Education & Geotourism	
Geo Site	Senior High School	Student Goes to Geo park	Education & Geotourism	
Geo Site	Traveller	Adventure and Trips Goes to Geo park	Education & Geotourism	

Fig. 16. Geopark Goes to School or School Goes to Geopark program.
Source: Daily Management of Ijen Geopark.

4.3.2. Village industrial system

The existence of a small industrial sub-system in developing tourist villages and geotourism in developing Ijen Geopark is vital in creating innovative products (Fig. 17). Through the RBV approach, solutions can be provided to the organization's efforts to realize and maintain a sustainable competitive advantage. The application of the concept of empowerment provides strength to





Activity	Object	Discription	Education	View
Culture	FGD Culture Community	Workshop of Art and Culture Community	Scientific, Education & socialization	
Home Industry	Local Culinary	Cassava Tape (Fermentation) Home Industry	Scientific, Education & Geotourism	
Bazaar	Local Product	Marketing of local people's creative economy	Education & Geotourism	
Home Industry	Local Residents	The role of local residents in village economic activities	Education & Geotourism	

Fig. 17. Activity of village industrial system.
Source: Daily Management of Ijen Geopark.

small village industries. Empowerment is the process of giving or transferring some of the power, or ability to society so that individuals become more empowered. Applying empowerment aims to stimulate, encourage or motivate individuals to have the knowledge or empowerment to support progress in their region related to geotourism development.

RBV-based empowerment in industries in the Ijen Geopark development area provides opportunities for Arabica coffee plantation managers and village communities with the creative economic potential to be carried out by strengthening soft and hard skills to have VRIN value criteria. Chairman of the Daily Management of Geopark Ijen Bondowoso Region (in 2022) states:

“... Coffee plantations are one of the significant ones as a key in the Ijen Geopark because specific and biological sites based on influence by geological characteristics of Ijen have a distinctive taste. We also open access for people interested in developing accommodation facilities, convection, souvenirs, culinary, and others that characterize Ijen Geopark while still paying attention to uniqueness, scarcity, and sustainable competitiveness.”

Efforts to create tourism businesses to grow and develop in the Ijen Geopark area using the RBV approach are very appropriate to increase the excellence of tangible and intangible products. Tourism business development can be carried out not only by residents but also by private parties who are interested in running certain tourism businesses. Chief of Tourism and Creative Economic Division of the Department of Youth Culture and Sports Tourism of Bondowoso Regency (in 2022) states:

“...The purpose of developing tourism in the Ijen Geopark economy is to make visitors enter the Bondowoso area to stay and spend money. The Bondowoso Regional Government focuses on tourism villages in the Ijen Geopark area, and villages in the Ijen Geopark delineation focus on tourism service businesses and the creative economy. We can implement the system through individuals and groups recommended by the village government and the private sector, because the local government wants to provide the widest possible benefit to the community directly. But the ability has quality, value, rare, difficult to imitate, and non-substitution.”

The community's development of village industries and tourism businesses is inseparable from the village government system, which has the authority to manage its village area and is responsible for advancing its community's welfare.

4.3.3. Village government system

The village government is the party that has the authority to manage rural areas. The village government must implement a strategy for managing regional assets and village potential. The role of the village government in developing tourist villages is significant. Compared to competitors, a scarcity of products will give the town concerned a competitive advantage. According to the concept of subsidiarity, the village-scale local authority is a matter of interest to the local community on the initiative of the village (Silahuddin, 2105).

Village-owned enterprises perform the role of the village government in developing the Ijen Geopark. Its function is for the economic development of rural communities. Meanwhile, the handling of technical operations of tourism businesses by tourism awareness groups of each village. Chief of Tourism and Creative Economic Division of the Department of Youth Culture and Sports Tourism of Bondowoso Regency (in 2022) states:

“...related to the village government system (Fig. 18), which has autonomy in regulating government in its territory through village officials according to the structure in the village government system. As part of the village government system, village-owned enterprises have an important function and role in developing tourism policies and strategies. The objectives of village-owned enterprises, as in Village Ministerial Regulation No. 4/2015, are to improve the village economy and increase community efforts in managing the economic potential of the village. In the field of tourism, the tourism awareness groups always encourages the public to be able to create competitive, creative and innovative products, because they have product characteristics and peculiarities.”

Tourism awareness groups work as a driver of community participation to develop the creative economy and tourism businesses. The village government and local governments cooperate with forest village community groups, women's cooperatives, cadets, etc. Chairman of the Daily Management of Ijen Geopark Bondowoso Region (in 2022) states:

“...Villages in the Ijen Geopark area are spread across 14 sub-districts so that the control of the local potential of villages and regions is very significant to support the development of Ijen Geopark. The village governments in the 14 sub-districts can spearhead supporting the local government program to realize the Ijen Geopark in a mutualistic symbiotic manner. Through formal and non-formal education channels, village industry business groups, and village-owned enterprises businesses with tourism awareness groups and other private sectors.”

The role of village government is dominant because it is a party that has the authority to manage rural areas and the potential of local villages. Growing awareness of rural communities for participation through education and creative economy efforts as an effort to build a dynamic model of excellence, utilize intellectual capital, and operational efficiency.

4.4. Facilitative leadership

The implementation of collaborative management between Triple Helix Village in realizing the creation of products with VRIN value requires the development of a facilitative leadership model that can accommodate aspirations and multi-component





Activity	Object	Discription	Education	View
Tourism Awareness Groups	Village Youth	Character Building	Scientific, Education & socialization	
Workshop	Local Government	Village Government Briefing on Business Licensing	Scientific, Education & Geotourism	
Workshop	Local Government	Village Government Briefing for the importance of reducing air pollution	Education & Geotourism	
Workshop	Local Government	Briefing and improvement of eotourism	Education & Geotourism	

Fig. 18. The activity of the village government system.
Source: Daily Management of Ijen Geopark.

participation. The facilitative leadership style has the characteristic of maximally involving village officials in shaping the vision and mission and building a cohesive team. Facilitative leadership includes (1) adequacy of management aspects in the collaboration process; (2) capacity to carry out technical credibility; (3) ensuring that collaboration runs credibly and convincingly for all actors.

The manifestation of the application of facilitative leadership is in the implementation of the deliberation of the development plan, which is an agenda where residents meet each other discussing the issues they face and decide on short-term development priorities. In the implementation of the deliberations, the development plan begins at the village level, then increases to the sub-district level, and ends at the district level. This process reflects the practice of facilitative leadership. Chief of Tourism and Creative Economic Division of the Department of Youth Culture and Sports Tourism of Bondowoso Regency (in 2022) states:

“...Facilitative leadership is shown the development pattern of development programs in stages of a series of development plan deliberations starting at the village level, increasing at the sub-district level, and then directed in the district. Deliberation, in a tiered manner, gives space to what space is needed by the community. Decisions are no longer top-down but rather pay attention to the needs and information of the community.”

The implementation of facilitative leadership is not only reflected in bottom-up decision-making, but also through the form of attention and presence in the field in facilitating and providing support to the initiation of community initiation in strengthening institutions in rural areas. Such as the request for assistance to the head of the Ijen Geopark Daily Management for the Bondowoso area, it is in the context of increasing human resource capabilities in the coffee center, which is also part of the Ijen Geopark geotourism (Fig. 19).

4.5. Institutional design

Implementation of the institutional design for developing the Ijen Geopark by preparing a proposal to the UNESCO Global Geoparks in 2020, was accepted in 2021. The Head of the Regency Formed a technical team to accommodate the roles and inputs of each regional apparatus organization according to their duties and functions to accelerate the development of the Ijen Geopark. In improving the conservation of sustainable cultural heritage, it is carried out with the aim of increasing the active role of the community in the conservation of sustainable cultural heritage. This activity is carried out by promoting the value of cultural diversity and the urgency of local cultural conservation to increase community awareness. It involves communities/community groups in education and research on cultural diversity in the geopark area for the common good. In strengthening the feotourism institution, the Bondowoso Regency Government also involves the role of stakeholders. For management in the field, it is necessary



Fig. 19. Assistance of geoculinary, geohomestay, geotour, geosouvenir in the framework of geotourism.
Source: Daily Management of Ijen Geopark Bondowoso.

to establish a daily administrator according to the focus and locus. The day-to-day management approaches the Triple Helix institutions to make MoUs and cooperation in disseminating and implementing agreed programs. Monitoring and evaluation activities are carried out jointly and discussed in regular meetings for control and necessary improvements. Chairman of the Daily Management of Ijen Geopark Bondowoso Region (in 2022) states:

“...We focus on developing amenities, human resources, and digitization. We are currently promoting paperless, such as digital magazines, tourist working tools, applications about destinations, booklets are given barcodes, ticket payments using QRIS, and already loading. December's plan for evaluation. Furthermore, in the PIC field, a taking team was formed, which is one hundred percent non-state civil apparatus, so as not to be bumped into working hours, as well as one hundred percent of the age under 35 years so that the acceleration is fast. Its current performance is considered successful for branding the Ijen Geopark, Bondowoso coffee republic. Especially for Google in terms of digital data obtained from Google analytics and has received a resume from Google about digital progress every month, especially in the field of tourism.”

4.6. Collaborative process

Developing a collaboration model is to build collaboration as a stage of development. Three critical stages in the collaboration process are included: (1) problem set, namely determining the problem of Triple Helix Village cooperation in the development of innovative tourism products through village entrepreneurship according to the role of each affiliated institution; (2) direction setting, i.e., goal setting and implementation; and (3) stages of forming a collaborative, which includes face to face dialogue, trust building, commitment to process, understanding sharing, and interim results. Successful collaboration must improve human resource competence to become a source of continuous competitive advantage, but only when the competency is of value.

Collaboration process goes through increasing quantity and quality synergy between sub-components. In addition to policy making at the level of district government leaders, it also thinks and formulates creative strategies, and manages and empowers intellectual capital to create innovations and creations that are different from other competitors' products. Educational materials can be used, such as knowledge, information, intellectual property, and experience, to create wealth. All of this is a force of collective reason as a set of knowledge that is effective for the technical elements at the technical level to coordinate and synergize with the village government, schools, community skills training, and business actors. Chairman of the Daily Management of Ijen Geopark in Bondowoso region (in 2022) states:

“...The village government gets involved in accelerating and strengthening the economic empowerment of rural communities and women in geopark and geoproduct programs much. The function of the village government increasingly has opened

opportunities with the development of the Ijen Geopark with four principles that are collaborative and synergistic through the organization and management of the Ijen Geopark in the Bondowoso region. In education, through the Geopark Goes to School program or vice versa, the school going to geopark makes the interaction of student closeness in understanding the purpose and substance of the construction of a geopark stronger. The establishment of Arabica coffee in the Ijen area as a biogeological site strengthens the branding of Bondowoso coffee in the eyes of the market. The growth of geotourism will further facilitate the collaborative management of Triple Helix in the village due to the demands in providing the best service for tourists and the positive synergy between hosts and guests in achieving the principles of geotourism.”

Collaborative processes are the key to successful cooperation between components and sub-systems in building good, efficient and beneficial partnerships. The collaborative process realizes the implementation of Ijen Geopark, which benefits natural and cultural sustainability and provides feedback for the welfare of the community economically, socially, and environmentally friendly. To achieve this good collaboration, strategic planning and a series of implementations are carried out, creative strategies that can reach the level of output, and outcomes that have VRIN values (value, rare, imperfectly imitable, non-substitution), are expected to superior performance.

5. Conclusion

Implementing the creative strategy for geotourism development resources in the development of Ijen Geopark sets three sub-districts (Ijen, Sumberwringin, and Cermee) as priorities for determining RTSA in Bondowoso Regency. The RTSA is the priority for resource development in the Ijen Raung RTSA. The approach used in resource development and management is the resource-based view (RBV) approach to create tangible and intangible products with VRIN criteria: value, rare, imperfectly imitable, and non-substitution. In particular, the physical potential of geotourism in the Ijen District has an extraordinary VRIN character as a geological and volcanic site with its derivative products, Ijen Arabica coffee which has a particular flavour. Implement the RBV concept by building management collaborative cooperation between Triple Helix sub-systems in villages, including education sub-systems in rural areas, industrial sub-systems in rural areas, and sub-systems of the village government. The Triple Helix Village collaboration has been well established through the Daily Management of Ijen Geopark to accelerate the performance of the cooperation network with related stakeholders. Ijen Geopark has the tagline “sustainable nature, prosperous society. “ Thus, the management and development of local geotourism resources in the Ijen Geopark area through the RBV approach is very potential, has been running, and continues to be improved by the performance of local stakeholders through collaborative management and facilitative leadership, to successfully produce superior and highly competitive resources, which is able to have a sustainable competitive advantage, characterized by the ability to be creative and innovate products with VRIN criteria.

Credit author statement

I Ketut Mastika: Conceptualization, Methodology, Visualization, Writing - original draft, Writing - review & editing. **Soni Sisbudi Harsono:** Resources, Supervision, Writing – review & editing. **Wheny Khristianto :** Supervision, Writing – review & editing, Visualization, Validation. **Panca Oktawirani:** Investigation, Formal analysis, Data curation, Writing – review & editing, Visualization. **Pandu Satriya Hutama:** Investigation, Formal analysis, Data curation.

Limitation and recommendation

This research has limitations since qualitative analysis does not conduct quantitative tests on variables that correlate with the performance of the Ijen Geopark development. Therefore, future research is recommended with a quantitative approach to examine the relationship between the relevant variables.

Ethical statement

Ethical approval was obtained from Ethic Committees of Pemerintah Kabupaten Bondowoso and Pengurus Harian Ijen Geopark. All the participants provided their consent to participate in this study.

Declaration of Competing Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Acknowledgments

The authors are grateful to the editors and reviewers for their suggestions, the Head Department of Tourism, Culture, Youth and Sports Office of Bondowoso Regency, the staff, the Daily Management Chairman, and the team members for their help and

hospitality during this research. The authors also express gratitude to University of Jember for the funding support in this research.

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