

# Evolving sustainability Ciletuh's Global Geopark

S. H. Hengky

Department of Management, Bina Darma University

Palembang, Indonesia

E-mail: hengky\_halim@binadarma.ac.id

Received: May 24, 2022    Accepted: July 20, 2022    Published: X, 2022

doi:10.5296/ber.v12i3.20107

URL: <https://doi.org/10.5296/ber.v12i3.20107>

## Abstract

The development of the geopark performance in Ciletuh is very rapid, from the performance of the national geopark to the global geopark predicate from UNESCO. In the course of its operations, problems arise out of the management and development of sustainable tourism. This occurs because of the use of natural resources do not pay attention to its natural management. Global geopark management in Ciletuh faces challenges to the form of dirty geopark environment due to tourism activities. This is a challenge to geopark managers based on sustainable tourism. This study created to assist geopark managers in overcoming these challenges. In addition, this study also provides information on the current performance of the Ciletuh global-geopark. Overcoming these obstacles is of course aim at strengthening the global performance of the geopark in UNESCO's future reassessment. To improve this performance, this study also seeks to find alternative strategies to utilize local culture that support tourism activities in Ciletuh global-geopark.

**Keywords:** Sustainable tourism, Ciletuh, Global-geopark

## 1. Introduction

Ciletuh Geopark is located in a remote area in Ciwaru Village, Ciemas District. Ciemas District is a rural area located in the southern part of Sukabumi Regency, West Java Province, which is directly adjacent to the Indian Ocean. Ciemas sub-district has the potential for natural resources to be utilizing properly and human resources to support the development of this area. The potential natural resources owned by the rural area of Ciemas District are fertile agricultural land, plantation land, and natural tourism objects. Geopark Ciletuh (CG), which stretches out Ciwaru Village in the circle of Ciletuh Bay, is a potential natural tourism object that has the opportunity to be developed. CG is a geological site that has a unique and distinct natural character as a feature of a tourist attraction.

According to Inskeep, this tourist attraction is the most important element of a tourism

product. The development of the tourism sector continues to be accelerating. It is expecting to increase regional income and local communities. To achieve this, the choice of tourism development with an inclusive approach that involves the community in an area that is almost hiding is a challenge to itself. This inclusive development paradigm encourages the achievement of forms of cooperation in the development process of efforts to involve the community as a whole. Many community-based developments models or concepts had been developing. Community Economic Development (CED) as a community-based development model has been practicing since the 1970s.

CED offers a role to develop many alternative economic activities as well as the power of local communities to have greater control over the process of their social and economic activities. Implicitly there is community participation work. In relation to tourism development, the concept of Community Based Tourism (CBT) is knowing, which is almost similar to the concept of CED. The essence is that local communities own manage and control substantially tourism activities and most importantly, a large proportion of profits remain of the community.

One of the studies before going to CG discussed the problem of environmental cleanliness (garbage). The problem of waste in various tourist objects, especially the Ciletuh Palabuhanratu Geopark, can be handle by collaborating with businesses, communities, investors and other institutions. To handle waste, especially plastic, this cannot be done for only a few days, but must be done regularly (Sapitri, 2020).

Efforts to accelerate waste liberation that have been complaining of by domestic and foreign tourists are continuing. Moreover, it feared that garbage complaints will reduce the interest in visits to the mainstay natural tourism areas of the Sukabumi Regency Government (Rayadie, 2020).

The key to the success of the development and management of a Geopark lies in the role and participation in local communities that are active and understand the meaning of the geopark itself. Unfortunately, there are still a few peoples did not understand about the meaning of a global-geopark. They are still carrying out rock mining and forest logging which is contrary to the geopark principle in the CG area. Research in the field of geology involves various related aspects such as the identification of potential mineral resources and economic studies as well as its relation to environmental management aspects. In addition, there are ornamental fishing activities using potassium. On the other hand, there are gold mining activities around CG.

There are several records of accomplishment of research in recent years, in the field of Geology and its applications. Research in the field of geology involves various related aspects such as aspects of identification of mineral resource potential and economic studies as well as its relation to aspects of environmental management with the topics:

- Efforts to change the mindset of the community, Endang continued, currently his party is focusing on educating elementary school-age children about coral reef conservation, ornamental fish and hygiene from the simplest things. (CNN Indonesia, 2018).

- Other research covers issues of conservation management and community human resources. In addition, it has also researched that the problem of transportation access to the geopark location is still difficult. For that, it is necessary to build road access, ports, docks, cable cars, trains, and airports. Furthermore, the problem of local economic development had not been fully activating, such as the provision of homestays, local culinary delights that utilize local organic food sources, and exclusive souvenirs, aka only available in the geopark area. As a result, the community has not been optimal in directly accepting the multiplier effect of tourism. Bearing in mind, previously it is necessary to make training activities for residents, so that they can manage their potential more professionally, hygienically and sustainably. Furthermore, geopark management is currently not coordinated, making it difficult to develop according to international standards and deserve to become the UNESCO Global Geopark. (Sari, 2016).

This study is going to find-out the performance of Ciletuh global-geopark. Moreover, it explored the performance that supported sustainable tourism of CG.

## **2. Literature Review**

Local community expectations that geoparks help them met several sustainable development goals (SDGs). The importance of the contribution to geoparks in general to sustainable development. Geological heritage is one of the important requirements of any geopark. Geo-conservation has a special interest in the park management, which requires experts as geopark's staff. Likewise, the management structure can effectively ensure integrated area development, linking the park staffs, communities, and stakeholders. Furthermore, it needed teamwork from managers with protected area management. While, park managers have extensive experience in implementing nature conservation measures and environmental education. Global-Geoparks contribute to sustainable regional development with geo-conservation, geo-education and geo-tourism, in collaboration with local communities. The impact on geo-tourism in addition to creating jobs, sustainable development, reducing inequality and preserving the environment (Brilha, 2016; Canesin, Brilha, & D'áz-Martínez, 2020; Palacio-Prieto et al., 2016; Palos-sanchez, 2020; Emmaline M. Rosado-González, Palacio-Prieto, & Sá 2020; Emmaline Montserrat Rosado-González, Sá & Palacio-Prieto, 2020).

Moreover, geo-education is environmental, educational and social services; and undertake geography and related environmental education to prepare people to make the important decisions they will face in their future lives (Brocx & Semeniuk, 2019; Neda Torabi Farsani, Mortazavi, Bahrami, Kalantary, & Bizhaem, 2017; Sang, Xue, Leng, Li, & Zhou, 2020; Sebillio, Vitiello, & Di Gregorio, 2020). This agenda affects tourism policy becomes a policy recommendation for the achievement of the SDGs. It needed to legitimate and actions to solve the problem of sustainable tourism (Brocx & Semeniuk, 2020; Hall, 2019).

Geo-diversity provides benefits to the community, namely scientific, cultural, and educational and tourism services. In a cultural context, it transfers scientific insights into social practices and vice versa, and becomes an effective pathway to achieve global sustainability. In addition, it also meet the social needs of low-income communities and provide positive social impacts

for communities that inspire initiatives for other parks (Henriques, Castro, Félix, & Carvalho, 2020; Mandić & Petrić, 2020).

The welfare related to support long-term economic development. The attitude of the community towards the Geopark informs future tourism development efforts including the management of environmental resources (Brocx & Semeniuk, 2020; Powell et al., 2018).

The economic impact on a protected natural area has implications for public and private sector organizations that involved in nature-based tourism development. The link between environmental attributes and hotel rates has an impact on price premiums, while further distance from the area reduces the positive impact. Protected areas are a constituent of integrated tourism products, affecting the price of tourism services, visitor satisfaction, and destination competitiveness. Policies that promote sustainable use have significant potential for the design of hotel pricing systems and accommodation service providers, the development of governance and fiscal policies for the marketing of tourism destinations (Henriques et al., 2020; Mandić & Petrić, 2020).

The karst area in Indonesia covering an area of 154,000 Km squares has the potential for the extractive industry creates Geopark areas tourism. Management of architecture empowered of land and biological resources has benefit from an economic but also environmental aspect in a sustainable manner. While, geo-ecotourism increases social-entrepreneurial. Community-based geo-ecotourism develops with cave landscape architecture. The area has unique natural architecture of the form of stalactites and stalagmites, becoming new geo-eco-tourism objects that attract tourists. Managing a hilltop landscaped architecture of expansive and fresh views of the universe, views of sunsets and sunrises, and clouds. Furthermore, people can empower natural resources to harmonize economic, environmental and socio-cultural aspects, without destroying them with the concept of Geo-ecotourism. (Cahyanti & Agus, 2017).

Geo-tourism in a Geopark as an innovation tourism activity that protected against natural heritage and geology plays an important role in the development. It includes activities that are in line with conservation and education. The park's Network focuses its activities on the areas of meetings, conferences, knowledge exchange, and tourism marketing development. Ecotourism is a normative concept that creates livelihoods in local communities and conserves the natural and cultural environment. Normative dogmas guided about how ecotourism practiced with the understanding, motivation, and capacities of ecotourism entrepreneurs that vary in the governance system. The development of sustainable ecotourism management must be carrying on the promotion mechanism for the implementation of the tourism system, the embodiment of the characteristics of the system, the way of participation, and the way of achieving system of an appreciation. The strategy of optimizing the management of sustainable tourism area development provides a reference to the development of tourism areas in a sustainable manner (Neda T. Farsani, Coelho, & Costa, 2014; Halim, 2017; Wong & Zhou, 2020).

Nevertheless, Geopark is areas defined by rare landscapes, and protected by sustainable economic development strategies. It has five essential characteristics: geological,

environmentally friendly, informative, useful and satisfying for tourists. However, the sustainability of tourism derived from sustainable tourism has a positive impact on the relationships to *prepare sustainable development* and interactions between economic-natural, environmental-economics, socio-cultural and sub-system variables in a sustainable manner (Halim, 2017; Hall, 2019; Mandić & Petrić, 2020).

Transfer of economics resources between people became Economy-natural both rights according to law and according to traditional customs. Conversely, the role of money is not significant in allocating resources (Blume & Easley, 1993; Jiang, Sun, Wang, & Zheng, 2018; Singh, 1975; Wang, Wang, Geng, Wang, & Zhang, 2016).

Learning process on the way local people collectively, organizational and cultural groups is main socio-cultural activities that more focuses on an understanding of community learning processed. It's a cultural development through social mediation and cultural thoughts (Chiesura & de Groot, 2003; Halim, 2017).

Utilizing natural resources outcomes of environmental economics of human behaviors or activities in. So that, the function or role of natural resources and the environment can be maintaining and even their utilization can be increasing in the future. These activities require business actors or activity implementers to include the cost of pollution or environmental damage in the calculation of production costs or business costs (Carlier, & Treich, 2020; Hamhami, Amrani, & Smahi, 2020; Ruth, 2020; Thompson, Gillen, & Friess, 2018).

### **3. Methodology**

This mixed mode research conducted from January 2019 to February 2020 in Ciletuh Global Geopark (Figure 1). The questionnaires distributed among 180 respondents. 150 of them return them consistently. We wrote it in two languages (Indonesian and English). The respondent (Table1) divided by three groups of developing focus grouped discussion (Caretta & Vacchelli, 2015; Nyumba, Wilson, Derrick, & Mukherjee, 2018).



Figure 1. Ciletuh Global Geopark (Admin, 2020)

Table 1. The list of respondent

No	The respondent	Number of respondent
1	Ministry of Tourism staffs	16
2	Tourism operator	15
3	Tour Guide	17
4	Tourists	15
5	Taxi Driver	17
6	Tourism Bus Drver	14
7	Restaurant	13
8	Handicraft owner	12
9	Department of infrastructure	15
10	Ciletuh Goepark's Receptionist	12
11	Department of Social	16
12	Ciletuh local community member	18

We collect information about their opinion based on their level of consent. The magnitude of the statement has assessed on a 5-level Likert scale (Stratton, 2018). A scale of 1 means disagreed, and 5 = strongly agrees (Shin et al., 2018; Sullivan & Artino, 2013). All questionnaires conducted five times (Collins et al., 2018).

The collected data was processed using content analysis. The tabulation results will produce a

Kappa (K) valued, which if the value is above 0.6 means that it meets the requirements of content analysis (Cavazos-Rehg et al., 2016; Eisenberg, Carlson-McGuire, Gollust, & Neumark-Sztainer, 2015; Ruhanen, Weiler, Moyle, & McLennan, 2015). We tabulated respondents' opinions by using SAS / STAT software (SAS Institute, 2016).

We divided respondents into two groups (Abdel-Latif, Boswell, Broom, Smith, & Davis, 2015). First, 75 respondents discussed aspects of the Global Geopark. Second, 75 respondents discussed tips and preparations for implementing sustainable development (Hengky, 2014; Hengky & Kikvidze, 2018; Hopwood, Mellor, & O'Brien, 2005). Besides, this study compared the assessment of the respondent about the weakness for CG's performance.

#### 4. Result

To meet global-geopark requirements in the context of CG sustainable development (Table 1). We found that CG met the global-geopark requirements ( $K > 0.6$ ). However, the element of geo-conservation is the lowest of the three factors. Likewise, geo-education needs to be improved. Given geo-tourism that is too dominant.

Tabel 1. CG tabulation in a global-geopark context

<b>Global-Geopark Factors</b>	<b>Value</b>	<b>% Freq</b>
Geo-conservation	30	0,226
Geo-education	41	0,308
Geo-tourism	62	0,466
K= Kappa Value	0,739	

In the context of geo-conservation, CG, a small part of which is in the administrative area of Ciwaru Village, is a very special geological site. It has a diversity of the oldest ancient rock compositions of West Java. These rock outcrops were forming into the limestone era of 50-60 million years ago after being deposited in the oceanic trenches from the submergence of the oceanic plates that lie beneath the continental plates. From a geological aspect, this CG area is a tectonic fossil showing the existence of the coexistence of two zones composed of rocks originating from the oceanic plate, namely the Indo-Australian Plate and the continental plate, namely the Eurasian plate. These two pieces of the earth's crust are very different. They formed due to the subduction (collision) of the two plates. The Indo-Australian plate has an alkaline basalt composition. Meanwhile, the Eurasian Plate has an acidic granite composition.

This geological condition can be saying to be very rare and unique. All rocks are exposing to a large valley that opens with the Indian Ocean so that they resemble an amphitheater. Various types of rock that are mixing and lifting on the surface are called mixing rocks. It known as mđange. It included in the rock type of the Pre-Tertiary rock category, namely rocks the oldest. Then, the exposed Pre-Tertiary rocks can be divided into three (3). They namely ophiolites, metamorphic rocks and sediments. it consists of peridotite, gabbro, and covered with lava. Metamorphic rocks consist of blue / glaucophane schist, phyllite, and serpentinite. Sedimentary rocks consist of deep-sea sediments, namely red shale and chert,

and continental sediments, namely graywacke sandstones and limestone. Thus, this CG holds history and extraordinary natural wealth is invaluable.

Furthermore, the geological objects inherited and designated as protection and conservation areas in terms of geo-education, Biodiversity and Cultural Diversity. They are involving the communities living around the conservation area. Where the area around the conservation area is developing as an object of education and geo-tourism that can foster economic activities in the community around the conservation area. Geo-conservation and geo-education activities should be prioritizing as options in developing tourism activities in Ciletuh. Geopark can be a place for testing science and technology and as a place for experimentation and improvement of protection methods from environmental damage or degradation.

Geo-education efforts are carrying out by disseminating material about geoparks (geo, bio, culture) for teachers and students at the elementary, junior high, high school levels at least in schools within the geopark area, as well as making mulok and extra-curricular materials related to CG. Create a geopark to school program. Making geopark publication materials in the form of books, booklets, leaflets, postcards, bookmarks and videos. Creating easy-to-understand information panels for each site (geosite) that describes the scientific aspects of the site. In addition, training is also make for local communities to increase their knowledge. So that, they can act as tour guides, producers of local products. There are many geo-tourism potentials for Ciletuh that are interesting from a historical and educational perspective. CG has cultural tourism in the Ciptagelar Traditional Village, geo-biodiversity, conservation areas, Rafflesia Patma, and turtles.

The arrangement and maintenance of tourist destinations in the CG area must continue to be monitoring by all parties, especially in providing education to the people in the area. Public education, either formal or informal, consists of environmental management of the geo-park. In addition, the management consists of two parts: socialization, and understanding the geopark that embraces the local community.

Furthermore, there is a private company called PT Japindo, which facilitates horticultural cultivation training for a hydroponic system for members of the Ciletuh Homestay Association, Sukabumi Jawa Bara Regency. This program is giving to add value of homestays in the CG area. They said that they also provide training for homestay owners to acquire additional skills. So that, it can provide different services for tourists that stay.

Furthermore, a number of lecturers from the University of Indonesia - Vocational Education Program provided financial and business training for 60 SME entrepreneurs in the tourism sector in the CG tourist area, West Java. These UKM players include homestays, amenities, craftsmen and tour guides from 5 villages in Ciemas Sukabumi sub-district. He hopes that through Community Service efforts carried out by vocational lecturers of UI, it can help develop the potential for community-based tourism and increase the number of tourists in CG.

The homestay and culinary management training that was attending by 40 participants came



from three sub-districts, namely Simpenan District, Waluran District and Ciemas District, Sukabumi Regency. Various processed foods are ready to be enjoying and become souvenirs of tourists visiting CG. During the training, making cakes, such as cookies and learning to make batik roll cakes were filling with local mango jam, mango dodol, guava and papaya. This preparation will be a priority in future production, including making cakes that are characteristic, by utilizing the existing potential in the CG area (Gilang, 2018).

Meanwhile, the Imperial Japanese government, through the management of the Izu Peninsula UNESCO Global Geopark, was finally willing to sign a memorandum of understanding on geopark management cooperation with GC managers. The manager's willingness was realizing after going through various stages and a series of intensive discussions about the two parties. The points stated in the memorandum of understanding included cooperation in the field of promotion and education. In addition, the parties share knowledge in practice to strengthen each other's joint initiatives. These initiatives are carrying out in the form of activities, including a geopark exhibition, building a joint museum or visitor center, as well as supporting geopark's area of school initiatives for internet-based learning with the aim of promoting mutual promotion. (Firdaus, 2019).

However, CG has many locations that are worth visiting by tourists, especially outdoor lovers in the context of geo-tourism. This area has a unique and rare landscape, in the form of a plateau with a horseshoe-shaped valley that opens out to the sea. Another interesting thing is there are rare rocks and fossils. It has nine stunning waterfalls (Kamajaya, 2019).

Geologically, this area is a very rare geological heritage area that has been recognizing both nationally and internationally. In this area, you can find the only mélange rock group consisting of oceanic crust rocks (ophiolites), metamorphic rocks, continental crust rocks which are all tectonically present side by side, and are the oldest in Java (Pre-Tertiary) to Middle Eocene (> 50 million years ago). Where the rocks are tectonically mixing due to the collision of the Eurasian Continent plate and the Indo-Australian Ocean plate, which is thinking to have occurred in the Pre-Tertiary era. In addition, the Ciletuh area has a spectacular and rare landscape, in the form of a giant natural amphitheater that opens up to the Indo-Australian Ocean with a diameter of more than 15 kilometers. This amphitheater is thought to have been formed due to a geological structure in the form of a large landslide (mega slump) caused by tectonic forces that occurred in the Tertiary era (> 20 million years ago). The result of this mega slump has been in formation of several waterfalls that are quite high and very beautiful. Due to its geological diversity and geological heritage, this area was choosing to be appointing as the CG area, Sukabumi as the first National Geopark area in West Java.

This CG has panoramic views of beautiful landscapes. There are several destinations. It had scenic waterfalls, cliffs, beaches, islands in one eye view, which geomorphological form a natural amphitheater. This beautiful CG landscape has many waterfalls that have different uniqueness, namely that there are multiple, single or lined up. This waterfall can be seen both from far and close. Description of a waterfall / waterfall. Some of the names of special waterfalls are "Curug Cimarjung, Curug Sodong" which has twin waterfall, Curug Awang,

which has a height of about 40 m with a width of about 60 m.

Apart from waterfalls, there are many large rock clusters named with animal names, such as "Munding Rock, Batu Kodok, Batu Komodo" because of their similarity to the animal's shape. There are also caves and small islands complementing the beauty of the Ciletuh landscape. Ciletuh's geological potential can be a natural tourist attraction. UNESCO recognition is certainly a prestige for Indonesia and West Java Province. However, there is hope that this recognition can become a selling power and encourage the realization of tourism activities. Geopark is a new concept in the tourism industry. Ciwaru Village is located in Ciletuh Bay, which is surrounded by geological rock clusters and a series of waterfalls.

Geological landscapes with various uniqueness - history can be a potential geo-tourism, which is included in the classification of special interest tourism. Geotourism can be defining as sustainable tourism whose focus is about the evolution of the earth and geological features that encourage understanding of the environment, culture, appreciation and conservation and benefit local communities. Geological features such as landscapes, rock outcrops, sediment types form a sense of place for each geo-site, which can create a variety of geological tourism activities, including: geo-site sightseeing, geo-sport, geo-study, geo-conservation, geo-education, and geo-festival.

Karangsambung Geo-tourism can be use as an example that offers tourism activities with a limited offer of attractions. The most importantly, CG is an area that must be protecting. The principle of protection or conservation and the concept of eco-tourism must be an option. Prevention activities require the ability to manage various elements of environmental management. It not only natural science is need but also social science. The main challenge in managing geo-tourism are to prioritize the integrity of the ecological or socio-cultural aspects of the area that must be protecting. In other words, geo-tourism does not have negative socio-cultural consequences but must instead get the support of the local community. For example, the implementation of geo-tourism, the role of culture is one of the factors that has led to the success of conservation and preservation programs, especially marine ecosystems. Customary institutions are community socio-cultural institutions that have the power to implementing rules and enforce customary sanctions for various activities and programs of their indigenous peoples.

At the same time, our research finds that CG meets the requirements of sustainable tourism ( $K > 0.6$ ) in the context of sustainable tourism (Table 2). However, the use of natural resources (SDA) are not optimal. This means that so far the use of natural resources have not paid attention to negative environmental impacts. Furthermore, local community learning programs still need to be improving on managing organization and culture.

Table 2. CG tabulation in the context of sustainable tourism

<b>Sustainability Factors</b>	<b>Value</b>	<b>% Freq</b>
Transfer of economic resources between people	48	0,400
Learning process - local people collectively, organizational and cultural	40	0,333
Utilizing natural resources	32	0,267
K= Kappa Value	0,667	

In terms of the transfer of economic resources between people, the CG Palabuhan Ratu Management Agency said that the geopark potential is very large which has an impact on the local economy. Its natural beauty is complete. Landscapes, mountains, waterfalls, rice fields, fields, ending at the mouth of a river to the sea, must be developing quickly in order to revive the community's economy. A small portion of CG is located in the administrative area of Ciwaru Village, which is a very special geological site. From a geological aspect, this CG area is a tectonic fossil showing the existence of the coexistence of two zones composed of rocks originating from the oceanic plate.

This geological condition can be said to be very rare and unique. All rocks are exposed to a large horseshoe-shaped valley that opens with the Indian Ocean. So that, it resembles an amphitheater, various rock types that are mixing and lifted on the surface is called mixed rocks or known as melange, which entered into rock types of the Pre-Tertiary rock category, namely the oldest rock.

Activities in CG are based on pre-made missions. The mission of conservation, education and sustainable development to improve the welfare of the surrounding community has been implemented with the concept of synergy between tourism and nature. The aim is to provide education to the surrounding community and tourists about natural knowledge, the importance of protecting nature, utilizing or processing natural potential properly and correctly. It is empowering the surrounding community that acts as a driver of tourism, as well as a driving force for the regional economy. We can feel the harmony between nature and humans in the CG area.

The presence of a geopark can be a solution to Indonesia's economic development in a sustainable manner, said the Deputy for Human Resources, Science Technology and Maritime Culture. The Indonesian government are promoting geoparks as a breakthrough solution or breakthroughs in sustainable economic development. The President of the Republic of Indonesia has issued Presidential Regulation No. 9 of 2019. It is concerning the development of Indonesian geoparks. It regulates the existence of the Indonesian National Geopark Committee and the management of Indonesian geoparks. The issuance of this Presidential Regulation is expected to accelerate the development of geoparks in Indonesia to become world geoparks.

Geopark development is a priority to Indonesia's development. Because, the presence of a geopark has a significant impact on several areas that have obtained the status of a National Geopark and UNESCO Global Geopark (UGG), starting from education, conservation, and

sustainable economic growth. One of the most important things in developing a geopark is the realization of a sustainable economic improvement based on the local community. Some of these achievements have been seen in several fields, both in areas where the area is a National Geopark and included in the UNESCO Global Geopark.

The increase in regional income was marked by a decrease in the number of poverty and an increase in other economic values after Mount Sewu declared a national geopark and UGG. The number of homestays also increased to Ciletuh-Pelabuhan Ratu UGG. Indonesia is the largest archipelago in the world and one of the richest countries in the world in terms of culture and biodiversity. With more than 300 recognized ethnic groups or tribes in Indonesia living side-by-side, and more than 700 languages. It is located on three main tectonic plates that provide valuable geological diversity.

Geopark is a comprehensive and integrated concept in the preservation and utilization of natural heritage (both geological and biological) as well as cultural wealth of sustainable development that can accelerate economic growth, enabling collaboration with all policies on conservation, education, research and community development. Geopark is a great solution and alternative to economic revival along with social empowerment. Geopark development in Indonesia contributes to achieving the target of sustainable development goals. Indonesia already has four UNESCO Global Geopark Areas, namely Batur (established in 2012 and certified in 2017), Gunung Sewu (founded in 2015), Rinjani, and Ciletuh-Palabuhanratu (established in 2018).

Discussing about Indonesia's development, of course, cannot be separate from the relations and circumstances of the country itself. It is from this situation that we can see to what extent this development can proceed properly, Indonesia itself is often disturbed by many problems related to improving the welfare of its people. Therefore, Indonesia's development, especially in the economic sector, is something that must be improved and focused on in the next few years. This is in order to overcome various problems such as poverty, to improve overall welfare. To carry out economic development, it requires many aspects and factors that can be done.

#### *4.1 Economic Factors in Development*

The referred to include conditions all of which have a major influence on the industrial growth of a country. In addition, expertise and entrepreneurship are also needed in managing human resources that is a determinant of success in great to market various can determine capital resources.

In the context of learning process - local people collectively, organizational and cultural, the principles of the design of geo-tourism area development must be universal effort to build a natural environment. At the same time socio-culture that is inclusive. The development of this area must also pay attention to the principle of balance, which is the basic value of sustainable development. The value of balance is a universal value and appears as a cultural product. In tourism development, cultural aspects can become a strong tourist attraction.

CG is in an area dominated by the Sundanese that still carry Sundanese art culture, in this

case in the form of dance, singing and martial arts. There is Girimukti Village, which is still strong in carrying the Sundanese Buhun Cultural tradition adjacent to Ciwaru Village. Dance attractions in Girimukti Village, which is still in the same area of South Sukabumi. Here are the Kasepuhan Banten Kidul Cultural Villages. The existence of this cultural potential certainly strengthens efforts to maintain the existence of CG and the surrounding environment.

The main challenge are how this CG can become a potential geo-tourism that can be useful for increasing the income of the local village community, as well as the surrounding villages. With an inclusive development approach, the challenge that must be face is to continuously improving the capacity of the Ciwaru Village community. This is certainly a requirement. So that, people are able to actively participate in geo-tourism activities and even be able to exploit other potentials such as Sundanese culture, which is inherent to be process into cultural tourism attractions. In geo-tourism activities, the people of Ciwaru Village and its surroundings can learn to be tourist guides, for example, to deliver to waterfall locations or to participate in carrying goods on trips to explore difficult geological sites. This means that community empowerment efforts must become a program that is implementing in a planned manner. Community empowerment in tourism activities can take the form of community-based tourism development. It managed by community management by the local community.

In terms of utilizing natural resources, the development of sustainable tourism, which has prioritized the use of natural resources or geological resources for development to increase the national economy, is currently developing by applying the geopark concept, namely the concept of sustainable development of an area that combines three natural diversities, namely: Geology (Geo-diversity), Biology (Bio-diversity) and Culture (Cultural-diversity). This concept began to be develope at the United Nations through UNESCO since 2004.

CG Palabuhan Ratu surrounded by alluvial expanses of unique rocks and beautiful views. In addition, Cimaja beach, which is in the geopark area, is often chose as the location for international surfing competitions. The beach is cool and has waves that a surfers' need.

Geopark in the concept of sustainable development has a noble goal, namely changing the mindset of the use of natural resources, especially the geological heritage, which has only been exploited through extractive activities that have been transformed into conservation efforts to improve local and regional economies. The geopark concept is to integrate the protection for geological heritage into a socio-cultural and economic development strategy that is harmonious with the conservation of the natural environment. An area can be say to be a geopark, when it has elements or values of geological heritage, biodiversity and cultural heritage.

#### *4.2 Solution*

There are already signs of community participation in tourism activities in several villages. There is a group called Paguyuban Pakidulan Sukabumi Selatan (PAPSI), which is active as a tour-guide for tourism in Ciemas District, especially in the CG Area. Several communities

house in Ciwaru Village, Taman Jaya have been turn into homestays for tourists. The community has also been in the motor vehicle rental business. However, this participation percentage is still very small compared to the development of tourism, which has increased sharply to Ciemas District. The results of the interview for the Ciwaru Village Head revealed that fully involved in tourism activities. It still feel foreign, there needs to be efforts to empower village communities. In village development, community empowerment cadres are urgently need to encourage people to participate in village development.

## **5. Discussion**

From the results of the research, this study discusses further the problem of waste, the environment, and infrastructure. In addition, the most important thing is to build the attitude or mentality of citizens and tourists. So that, they are aware to always maintain a tourist attraction at least not littering and always maintaining its beauty. The local government are also expect to be able to build facilities and infrastructure such as making trashcans in the center of tourist objects and installing boards or banners that urge to dispose of garbage in its place. Garbage scattered in the CG area does not only come from households, tourists and industry, but also comes from outside the region. The garbage disposed towards the river empties and is carry into the sea. So that, there is a tidal wave of garbage, especially plastic from everywhere, strands on the beach. It is difficult hadling. Together with the community and other institutions, they are still trying to minimize the volume of waste around tourist destinations. The Sukabumi Regency Government is proposing a request for assistance from one of the BUMNs, Perum Jamkrindo, so that it can provide a special tool to clean up trash on the beach. Moreover, the company has a program in CG regarding handling plastic waste. On the other hand, to maintain CG as the world's geopark, all elements of society and tourists must be able to maintain its beauty, comfort. The United Nations of Educational, Scientific and Cultural Organization (UNESCO) decided to become a global geopark in 2018, the organization will revalidate.

Efforts to reduce waste are carried out by cooperating with maggot breeders. Maggot is believed to be able to break for organic waste quickly. Especially targeting the process of breaking for organic waste to reach 30 percent in 2025 in the maggot wasted bank program in Pendopo. The regional government is targeting that by 2021 the Ciletuh global geopark (CGG) will be free of plastic waste. Moreover, 45 percent of waste in Sukabumi Regency is organic. So that, maggot makes it easier to decompose organic waste. To accelerate the target of liberation to the world tourism area, they have ordered related agencies to cooperate with maggot breeders in Sukabumi Regency. Especially involving the community for empowerment of village communities. Not only household waste, but waste from tourist areas can be managed properly.

Maggot is the larva of the Black Soldier Fly (BSF) fly is indeed very special compared to other alternative feed ingredients. It contains complete nutrients for fish and is of good quality. In addition, Maggot can be produce in a short time and in sufficient quantities to meeting, a need of fish feed continuously. Meanwhile, Maggot Breeder from Incubi Farm said that he had coordinated with the Sukabumi Regency Government for handling waste in

the CG area. Through the media, black fly larvae (maggot) can break for quite a lot of organic waste.

Another advantage, namely the easy community of Maggot production technology. Then, in the process, Maggot can also be produce into flour (mag meal), so it can reduce feed production costs. Each kilogram of maggot can break for as much as two kilograms of organic waste. So that, the ratio is one in two. Maggots, which have a high enough protein content can be use as animal fed. Besides, it breaks for organic waste. It can also be sale as animal fed and has two effects. Both environmental and economic. In the environment, it can break for organic waste; its economic value is through the sale of maggot itself. The market already exists. So that, tthere is no difficulty in selling. While, black flies are not as dangerous as flies in general. Its existence is quite safe from the environment. An adult maggot grows into a fly. The life span of this fly is about seven days. During its lifetime, this fly often drinks water. So that, it does not cause disease (Rayadie, 2020).

The plan is that in 2020 the UN agency in charge of education, science and culture, namely UNESCO, will evaluate the development of CG in Sukabumi Regency. This is the first evaluation of the Ciletuh area was awarded the title of an UNESCO Global Geopark (UGG) in 2018. During the past year, the local government of Sukabumi Regency have developed the conservation area. Especially the development of supporting infrastructure towards CG, including the construction of a Regional Feeder Seaport located on Karang Pamulang Beach, Palabuhanratu District.

Another accelerated effort currently underway is the construction of the Amphitheater. This is a supporting facility for cultural arts performances financed by the West Java Provincial Government with a budget of USD 850,000. The amphitheater was built on land belonging to the provincial government which is located still in the CG area, precisely in Panenjoan, Taman Jaya Village, Ciemas District. (Kamajaya, 2019).

### *5.1 Environmental Management Issues*

The Ciletuh watershed is experiencing environmental damage. One of the causes is the practice of either mining, community mining or mining by companies in several sub-districts (Simpena, Ciemas and Waluran). The mining waste pollutes the Ciletuh River itself. Both by mercury and cyanide. So that, it must be taken into consideration and included in the CG structuring framework. Furthermore, environmental damage to the Ciletuh watershed is not only cause by mining, but also by forest destruction, which is increasingly concerning. The catchment area in the upper Ciletuh watershed was also damage due to forest conversion. The forest cover is decreasing. Especially the area of forest covered to continue to decrease. While, the forest area decreases to produce mud, mud will enter the river. The river will be pollute. It will be sedimentation in the estuary. This fact can be see how the Ciletuh estuary experienced sedimentation and was pollute.

If we examine it, this environmental aspect has escaped the efforts of structuring the Ciletuh Geopark. We support tourism development efforts, community-based tourism. However, environmental and economic aspects of the local community must be take into account. The

Indonesian Forum for the Environment (Walhi) West Java released a statement of damage to the upstream and downstream areas of the Ciletuh River Basin, Sukabumi Regency. The chairperson of the West Java Walhi said that regarding CG, his party agreed that the Geopark needed to be preserved, but the Geopark arrangement must also include other aspects, including the damaged environment due to mining activities. The upstream of the river are experiencing environmental damage. One of the causes is the practice of mining by companies. The mining waste pollutes the Ciletuh River itself. Both by mercury and cyanide.

### *5.2 Infrastructure*

Not all regions in Indonesia have complete tourist objects such as CG, therefore, his party asked the Sukabumi Regency Government to focus on fixing, adding and improving their facilities and infrastructure. Indeed, there are still obstacles to the development of tourist objects of Sukabumi Regency. Such as, tourists had to struggle to get to the location. It known as a congestion. It is still a major problem, both coming from the direction of Jakarta and Bandung. The congestion problem is currently being erode after the central government built road access to facilitate the entry to tourists, investors and others to Sukabumi, such as the construction of the Bogor-Ciawi-Sukabumi (Bocimi) Toll Road and the Sukabumi-Bogor Double Railroad. During the holiday season, the Palangpang Beach area in Ciletuh Bay is full of people. In fact, many visitors opened tents on the beach. They did not get a homestay. Meanwhile, there are more than 100 homestays in the Ciletuh area. The recommended solution is to empower the community to build a homestay business to answer these challenges. Meanwhile, divers exploit the environment to look for ornamental fish. For him, the use of potassium to find ornamental fish is a common thing. This of course damages the underwater ecosystem. The condition of Ciletuh Bay was critical to 2000-2005. Ecosystem damaged causes fish income to decline. They tried to build a conservation group after receiving advice from the Marine and Fisheries Service. They also provide training for managing nature in an environmentally friendly manner (Agr, 2018).

## **6. Decision**

The CG area has the potential for extraordinary natural tourism and cultural potential that still hidden. However, the people of Ciwaru Village are not fully ready to be able to participate in tourism activities. The concept of sustainable tourism that carries ecological - socio-cultural integrity can be an alternative concept for this CG development. CG tourism planning approach that involves the local community expected to realize inclusive development. It can create an increase in the welfare of the Ciwaru Village community and its surroundings. The improvement and development of tourism must be in line with the improvement and development of the capacity of the community.

To maintain and strengthen sustainable tourism, CG managers should prioritize more on waste management with margins, develop, and build better infrastructure access. In addition, they should also build homestay management education for local residents in improving CG performance. This can be strengthen by making CG management policies made by local governments in support of sustainable tourism programs based on geo-tourism. As a complementary program for community empowerment, it recommended that CG managers



create a training program to develop regional culinary tourism businesses with nuances of local culture through the production and sale of CG regional specialties.

## References

- Abdel-Latif, M. E., Boswell, D., Broom, M., Smith, J., & Davis, D. (2015). Parental presence on neonatal intensive care unit bedside rounds: randomised trial and focus group discussion. *Archives of Disease in Childhood. Fetal and Neonatal Edition*, 100(3), F203-9. <https://doi.org/10.1136/archdischild-2014-306724>
- Admin. (2020), August 14). *Geopark Ciletuh Sukabumi Menjadi UNESCO Global Geopark Harus Bermanfaat Bagi Masyarakat Sukabumi - Sabumi*. [Online] Available: <https://www.sabumiku.com/wisata-sukabumi/pengakuan-geopark-ciletuh-menjadi-unesco-global-geopark/>
- Agr. (2018), September 18). *The Ciletuh Geopark Faces a Classic Problem*. [Online] Available: <https://www.cnnindonesia.com/gaya-hidup/20181114193803-269-346625/geopark-ciletuh-berehadapan-dengan-masalah-klasik>
- Blume, L. E., & Easley, D. (1993). Economic natural selection. *Economics Letters*, 42(2-3), 281-289. [https://doi.org/10.1016/0165-1765\(93\)90075-N](https://doi.org/10.1016/0165-1765(93)90075-N)
- Brilha, J. (2016). Inventory and Quantitative Assessment of Geosites and Geodiversity Sites: a Review. *Geoheritage*, 8(2), 119-134. <https://doi.org/10.1007/s12371-014-0139-3>
- Brocx, M., & Semeniuk, V. (2019). The ‘8Gs’—a blueprint for Geoheritage, Geoconservation, Geo-education and Geotourism. *Australian Journal of Earth Sciences*, 66(6), 803-821. <https://doi.org/10.1080/08120099.2019.1576767>
- Brocx, M., & Semeniuk, V. (2020, April 2). Geodiversity and the ‘8Gs’: a response to Gray & Gordon (2020). *Australian Journal of Earth Sciences*, 67, 445-451. <https://doi.org/10.1080/08120099.2020.1722966>
- Cahyanti, P. A. B., & Agus, C. (2017). Development of Landscape Architecture through Geo-eco-tourism in Tropical Karst Area to Avoid Extractive Cement Industry for Dignified and Sustainable Environment and Life. *IOP Conference Series: Earth and Environmental Science*, 83(1), 012028. <https://doi.org/10.1088/1755-1315/83/1/012028>
- Canesin, T. S., Brilha, J., & D áz-Mart ínez, E. (2020). Best Practices and Constraints in Geopark Management: Comparative Analysis of Two Spanish UNESCO Global Geoparks. *Geoheritage*, 12(1), 1-9. <https://doi.org/10.1007/s12371-020-00435-w>
- Caretta, M. A., & Vacchelli, E. (2015). Re-Thinking the Boundaries of the Focus Group: A Reflexive Analysis on the Use and Legitimacy of Group Methodologies in Qualitative Research. *Sociol. Res. Online*, 20(4), 1-13. <https://doi.org/10.5153/sro.3812>
- Carlier, & Treich, N. (2020). *Directly Valuing Animal Welfare in (Environmental) Economics - Toulouse Capitole Publications*. International Review of Environmental and Resource Economics. <https://doi.org/10.1561/101.00000115>

- Cavazos-Rehg, P. A., Krauss, M. J., Sowles, S., Connolly, S., Rosas, C., Bharadwaj, M., & Bierut, L. J. (2016). A content analysis of depression-related tweets. *Computers in Human Behavior, 54*, 351-357. <https://doi.org/10.1016/J.CHB.2015.08.023>
- Chiesura, A., & de Groot, R. (2003). Critical natural capital: a socio-cultural perspective. *Ecol. Econ., 44*(2-3), 219-231. [https://doi.org/10.1016/S0921-8009\(02\)00275-6](https://doi.org/10.1016/S0921-8009(02)00275-6)
- CNN Indonesia. (2018, November 18). *The Ciletuh Geopark Faces a Classic Problem*. [Online] Available: <https://www.cnnindonesia.com/gaya-hidup/20181114193803-269-346625/geopark-ciletuh-be-rhadapan-dengan-masalah-klasik>
- Collins, S. E., Taylor, E., Jones, C., Haelsig, L., Grazioli, V. S., Mackelprang, J. L., ... Clifasefi, S. L. (2018). Content Analysis of Advantages and Disadvantages of Drinking Among Individuals With the Lived Experience of Homelessness and Alcohol Use Disorders. *Substance Use & Misuse, 53*(1), 16-25. <https://doi.org/10.1080/10826084.2017.1322406>
- Eisenberg, M. E., Carlson-McGuire, A., Gollust, S. E., & Neumark-Sztainer, D. (2015). A content analysis of weight stigmatization in popular television programming for adolescents. *International Journal of Eating Disorders, 48*(6), 759-766. <https://doi.org/10.1002/eat.22348>
- Farsani, Neda T., Coelho, C. O. A., & Costa, C. M. M. (2014). Analysis of Network Activities in Geoparks as Geotourism Destinations. *International Journal of Tourism Research, 16*(1), 1-10. <https://doi.org/10.1002/jtr.1879>
- Farsani, Neda Torabi, Mortazavi, M., Bahrami, A., Kalantary, R., & Bizhaem, F. K. (2017). Traditional Crafts: a Tool for Geo-education in Geotourism. *Geoheritage, 9*(4), 577-584. <https://doi.org/10.1007/s12371-016-0211-2>
- Firdaus. (2019). *Japan Agrees to Cooperate to Develop Ciletuh Geopark Tourism*. [Online] Available: <https://bipol.co/jepang-sepakat-kerja-sama-kembangkan-wisata-geopark-ciletuh.html>
- Gilang, R. (2018, November 4). *Five Days of Learning cullinary art, Residents Start Production of Typical Food for the Ciletuh Palabuhanratu Geopark*. [Online] Available: <https://sukabumiupdate.com/detail/desaku/news-desaku/48953-Lima-Hari-Belajar-Tataboga-Warga-Mulai-Produksi-Makanan-Khas-Geopark-Ciletuh-Palabuhanratu>
- Halim, H. S. (2017). Scrutinizing Coastal Ecotourism in Gili Trawangan, Indonesia. *International Journal of Marine Science*. <https://doi.org/10.5376/ijms.2017.07.0025>
- Hall, C. M. (2019). Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *Journal of Sustainable Tourism, 27*(7), 1044-1060. <https://doi.org/10.1080/09669582.2018.1560456>
- Hamhami, A., Amrani, A. K., & Smahi, A. (2020). Environmental economics in Algeria: empirical investigation into the relationship between technological policy, regulation intensity, market forces, and industrial pollution of Algerian firms. *Environmental Science and Pollution Research, 1*-16. <https://doi.org/10.1007/s11356-020-10411-0>

- Hengky, S. H. (2014). Sustainable Peace: Developing Peace Education Based on Sustainable Coastal-Tourism in Ciantir and Badegur Coasts, Banten, Indonesia. *Journal of Management Research*, 6(4), 142-154. <https://doi.org/doi:10.5296/jmr.v6i4.6466>
- Hengky, S. H., & Kikvidze, Z. (2018). Tourism sustainability in the Bogor Botanical Gardens, Indonesia. *Urban Forestry & Urban Greening*, 30, 8-11. <https://doi.org/10.1016/J.UFUG.2018.01.007>
- Henriques, M. H., Castro, A. R. S. F., Félix, Y. R., & Carvalho, I. S. (2020). Promoting sustainability in a low density territory through geoheritage: Casa da Pedra case-study (Araripe Geopark, NE Brazil). *Resources Policy*, 67, 101684. <https://doi.org/10.1016/j.resourpol.2020.101684>
- Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable development: mapping different approaches. *Sustainable Development*, 13(1), 38-52. <https://doi.org/10.1002/sd.244>
- Jiang, Y., Sun, S., Wang, Y., & Zheng, S. (2018). Niche Evolution of China's Provincial Social-Economic-Natural Complex Ecosystems, 2005-2015. *Sustainability*, 10(8), 2824. <https://doi.org/10.3390/su10082824>
- Kamajaya, T. (2019, May 13). 2020, Unesco will re-evaluate the development of the Ciletuh Geopark. [Online] Available: <https://jabar.idntimes.com/news/jabar/toni-kamajaya/2020-unesco-bakal-evaluasi-kembali-perkembangan-geopark-ciletuh>
- Mandić, A., & Petrić, L. (2020). The impacts of location and attributes of protected natural areas on hotel prices: implications for sustainable tourism development. *Environment, Development and Sustainability*, 1-31. <https://doi.org/10.1007/s10668-020-00611-6>
- Nyumba, T., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, 9(1), 20-32. <https://doi.org/10.1111/2041-210X.12860>
- Palacio-Prieto, J. L., Rosado-González, E., Ramírez-Miguel, X., Oropeza-Orozco, O., Cram-Heydrich, S., Ortiz-Pérez, M. A., ... de Castro-Martínez, G. F. (2016). Erosion, Culture and Geoheritage; the Case of Santo Domingo Yanhuítlan, Oaxaca, México. *Geoheritage*, 8(4), 359-369. <https://doi.org/10.1007/s12371-016-0175-2>
- Palos-sanchez, P. R. (2020). *UNESCO Global Geoparks and Their Framework in Latin America and Caribbean*. pp. 9-27. <https://doi.org/10.1007/978-3-030-26245-7>
- Powell, R. B., Green, T. F., Holladay, P. J., Krafte, K. E., Duda, M., Nguyen, M. T., ... Das, P. (2018). Examining Community Resilience to Assist in Sustainable Tourism Development Planning in Dong Van Karst Plateau Geopark, Vietnam. *Tourism Planning and Development*, 15(4), 436-457. <https://doi.org/10.1080/21568316.2017.1338202>
- Rayadie, A. (2020, January 14). *Ciletuh Geopark Is Expected To Be World Class Tourism*. [Online] Available: <https://www.pikiran-rakyat.com/jawa-barat/pr-01331950/geopark-ciletuh-diharapkan-jadi-wis>

ata-kelas-dunia-masalah-sampah-disoroti

Rosado-González, Emmaline M., Palacio-Prieto, J. L., & Sá A. A. (2020). *Geotourism in Latin America and Caribbean UNESCO Global Geoparks: Contribution for Sustainable Development Goals*. [https://doi.org/10.1007/978-3-030-26245-7\\_7](https://doi.org/10.1007/978-3-030-26245-7_7)

Rosado-González, Emmaline Montserrat, Sá A. A., & Palacio-Prieto, J. L. (2020). UNESCO Global Geoparks in Latin America and the Caribbean, and Their Contribution to Agenda 2030 Sustainable Development Goals. *Geoheritage*, 12(2), 1-15. <https://doi.org/10.1007/s12371-020-00459-2>

Ruhanen, L., Weiler, B., Moyle, B. D., & McLennan, C. J. (2015). Trends and patterns in sustainable tourism research: a 25-year bibliometric analysis. *Journal of Sustainable Tourism*, 23(4), 517-535. <https://doi.org/10.1080/09669582.2014.978790>

Ruth, M. (2020). A Research Agenda for Environmental Economics. In *A Research Agenda for Environmental Economics*. <https://doi.org/10.4337/9781789900057>

Sang, X., Xue, L., Leng, X., Li, X., & Zhou, J. (2020). *Using Photo Modeling Based 3DGRSL to Promote the Sustainability of Geo-Education, a case study from China*. [Online] Available: <http://arxiv.org/abs/2004.05535>

Sapitri, E. (2020, February 9). *Geopark Ciletuh Palabuhanratu as World Geopark, Government is Worried about the waste problem*. [Online] Available: <https://cirebon.pikiran-rakyat.com/jawa-barat/pr-04338493/geopark-ciletuh-palabuhanratu-sebagai-geopark-dunia-pemerintah-khawatirkan-permasalahan-sampah>

Sari, S. M. (2016, September 25). *Geopark management in Indonesia is still fragmented*. [Online] Available: <https://ekonomi.bisnis.com/read/20160925/12/586833/pengelolaan-geopark-di-indonesia-masih-terkotak-kotak>

SAS Institute. (2016). *SAS Contextual Analysis Customer Product Page*. [Online] Available: <http://support.sas.com/software/products/ca/index.html>

Sebillo, M., Vitiello, G., & Di Gregorio, M. (2020). Maps4Learning: Enacting Geo-Education to Enhance Student Achievement. *IEEE Access*, 8, 87633-87646. <https://doi.org/10.1109/ACCESS.2020.2993507>

Shin, T., Smyth, T. B., Ukimura, O., Ahmadi, N., de Castro Abreu, A. L., Ohe, C., ... Gill, I. S. (2018). Diagnostic accuracy of a five-point Likert scoring system for magnetic resonance imaging (MRI) evaluated according to results of MRI/ultrasonography image-fusion targeted biopsy of the prostate. *BJU International*, 121(1), 77-83. <https://doi.org/10.1111/bju.13972>

Singh, A. (1975). Take-overs, Economic Natural Selection, and the Theory of The Firm: Evidence from the Postwar United Kingdom Experience. *The Economic Journal*, 85(339), 497. <https://doi.org/10.2307/2230895>

Stratton, S. J. (2018). Likert Data. *Prehospital and Disaster Medicine*, 33(02), 117-118.

<https://doi.org/10.1017/S1049023X18000237>

Sullivan, G. M., & Artino, J. A. R. (2013). Analyzing and Interpreting Data From Likert-Type Scales. *J. Graduate Medical Educ.*, 5(4), 541-542. <https://doi.org/10.4300/JGME-5-4-18>

Thompson, B. S., Gillen, J., & Friess, D. A. (2018). Challenging the principles of ecotourism: insights from entrepreneurs on environmental and economic sustainability in Langkawi, Malaysia. *Journal of Sustainable Tourism*, 26(2), 257-276.

<https://doi.org/10.1080/09669582.2017.1343338>

Wang, C., Wang, Y., Geng, Y., Wang, R., & Zhang, J. (2016). Measuring regional sustainability with an integrated social-economic-natural approach: A case study of the Yellow River Delta region of China. *Journal of Cleaner Production*, 114, 189-198.

<https://doi.org/10.1016/j.jclepro.2015.05.121>

Wong, Y., & Zhou, S. (2020). Ecotourism Management and Sustainable Development in Wildlife Reserves. *Revista Científica-Facultad de Ciencias Veterinarias*.

### **Copyright Disclaimer**

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).