

Mangrove Ecotourism Development to Improve Coastal Community's Welfare in Sedari Village, Karawang Regency, West Java

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ABSTRAK

Wilayah pesisir Indonesia merupakan wilayah yang rentan terhadap kemiskinan. Kesejahteraan masyarakat pesisir sangat bergantung pada sumber daya alam setempat. Mangrove, tumbuhan yang tumbuh subur di area pesisir, memiliki fungsi ekologis dan ekonomis yang mendukung kesejahteraan masyarakat. Salah satu implementasinya adalah melalui pengembangan ekowisata mangrove yang dapat meningkatkan nilai ekonomi, sosial serta lingkungan. Artikel ini mengeksplorasi peran dan potensi ekowisata hutan mangrove dalam meningkatkan kesejahteraan masyarakat Desa Sedari di Kabupaten Karawang. Melalui metode studi literatur dan wawancara terstruktur, analisis menunjukkan bahwa ekowisata mangrove di Desa Sedari dapat meningkatkan pendapatan desa hingga lebih dari Rp.100.000.000/tahun, menciptakan lapangan pekerjaan untuk mengurangi ketergantungan masyarakat pada hasil tangkapan laut dan meningkatkan kualitas sosial serta lingkungan dengan partisipasi aktif masyarakat dalam pengelolaan ekowisata mangrove.

Keywords:

Mangrove

Ecotourism

Sedari Village

Welfare

Coastal Area

ABSTRACT

Coastal regions in Indonesia grapple with high poverty rates. The prosperity of coastal communities hinges on the utilization of coastal natural resources. Mangroves, flourishing in these areas, play diverse roles in supporting the well-being of coastal communities, as illustrated comprehensively through their ecological and economic functions. A concrete implementation of this is the development of mangrove ecotourism, contributing to the economic and social value of the community. This article aims to explore the role and potential of mangrove forest ecotourism development in enhancing the well-being of Sedari Village's communities. The methodology involves a literature review and structured interviews with key informants. The analysis shows that mangrove ecotourism in Sedari Village can contribute to: 1) a increasing Sedari Village's income, potentially exceeding Rp. 100,000,000 annually, 2) Enlarging job opportunities for reducing the communities' reliance on sea catches, and 3) Improving the social and environmental value with active participation in managing the mangrove forest ecotourism area.

Introduction

Sedari Village, located in the Cibuaya Subdistrict, Karawang Regency, is one of the villages in the northern coastal area of Karawang. The coastal ecosystem has abundant resources, both renewable and non-renewable. According to the Republic of Indonesia Law 27/2007 concerning the Management of Coastal Areas and Small Islands, the potential resources of coastal areas include biological resources (fish, coral reefs, seagrass beds, mangroves, and other marine biota), non-biological resources (sand, seawater, seabed minerals), artificial resources (maritime infrastructure related to marine and fisheries),



and environmental services (natural beauty, seabed surface where underwater installations related to marine and fisheries, and wave energy are located in coastal areas). Therefore, the communities who live in coastal areas is highly dependent on the conditions of coastal resources. In essence, the dependence of coastal communities on marine resources, climate, and the surrounding environment is a characteristic of coastal communities (Siburian and John, 2016:22). However, the wealth of coastal resources contradicts the actual economic conditions of the coastal region. In 2021, the extreme poverty rate in coastal areas reached 4.19%. This figure is higher than the national extreme poverty rate of 4% (Indraswari, 2023:1). Poverty in coastal areas is closely related to the high dependence of the community, which tends to rely solely on the marine and fisheries sector. Therefore, coastal communities need to be directed to understand the natural resources wealth beyond marine resources. One of them is mangroves.

Mangrove forest is crucial not only because mangroves have direct economic value (such as stems, roots, leaves, and fruit) but the mangrove forest ecosystem also supports the existence of other ecosystems around it, such as coastal fisheries, coral reefs, and seagrass beds (Siburian and John, 2016:24). Table 1 below shows total of economic value of mangrove :

Table 1. Total Economic Value of Mangrove Ecosystem

Variety of Economic Value	Total Economic Value (Rp)	Average of Value (Rp/ha/year)	Percentage (%)
Direct Value	928.000	4.640	1,66
Indirect Value	11.900.000	59.500	21,36
Option Value	42.564.000	212.820	76,40
Existence Value	321.220	1.606	0,58
Total Economic Value	55.713.220	278.566	100

(Rosmiyati et al. (2022:4)

As for the total economic value of the mangrove ecosystem, it consists of *direct value*, such as the environmental services provided by mangroves as a supplier of wood and nursery ground for fisheries resources; *indirect value*, including the environmental services of mangroves as coastal erosion control, protection against the intrusion of seawater, and tourism; *option value*, representing the value of utilizing the biodiversity of the mangrove ecosystem; and *existence value*, reflecting the utilization value beyond environmental services and mangrove biodiversity. Regarding the coastal community's economy, Rosmiyati et al. (2022:4) state that the presence of mangroves in a region can impact the surrounding community economically and socially. The community can effectively utilize the presence of mangroves to support their economic needs. One of the ways is by serving as tourist destination.

Mangrove forests have tourism value due to the attraction of flora and fauna associated with their ecosystem. This is because mangrove forests provide a habitat for various types categorized into three groups with interconnected activities: aquatic (water), semi-aquatic, and terrestrial (land) biota. This potential for mangrove ecosystems as a tourist attraction, especially ecotourism that offers education and conservation concepts, is emphasized by Anah (2017:140). It states that regional development should be an effort to boost the local and regional economies so that the area can grow and develop independently by utilizing local resources. The development strategy that relies on local resources is known as the concept of local economic development. Therefore, in terms of economic value, the ecotourism potential of mangrove forests can impact the development of the local economy in coastal regions. The development strategy that relies on local resources is known as the concept of local economic development. This development model has the potential to bring about new opportunities to enhance the well-being of a region, including coastal areas.

Karawang Regency has a mangrove forest area of 275 hectares (Data from the Karawang Regency Environmental Agency in 2015). The most considerable mangrove potentials in Karawang are found in the Tirtajaya, Cibuya, Cilebar, and Cilamaya Subdistricts (Hartati and Pin, 2020:1). One of the villages in these four districts already has a mangrove ecotourism area and has become a pilot project for Karawang's mangrove ecotourism is Sedari Village. The mangrove forest area in Sedari Village is approximately 49.20 hectares, with a physical carrying capacity of 32,800 people/day, a fundamental carrying capacity of 25,047 people, and an ecological carrying capacity of 26.65 hectares (Hidaya, Riyantini & Pamungkas, 2020, in Readi et al., 2021:151). With the extent of the mangrove forest in Sedari Village as an ecotourism area, it is essential to assess the potential values generated by the

development of mangrove ecotourism. These potential include not only about material or economic value but also environmental and social values, the values refers to improve communities welfare of Sedari Village.

Methodology

The method employed in this writing is the qualitative method by using literature review method. It started in April-June 2023. A literature review, broadly understood as a systematic scientific method for collecting and synthesizing information and theories based on previous research, was used. This method is capable of meeting the researcher's needs to examine numerous sources scattered across a topic and present theoretical conclusions related to the topic under discussion (Baumeister and Leary, 1997:311). The data utilized in the literature review research consists of secondary data obtained from literature sources. Several elements are also essential for a study to be considered scientific, including problem formulation, theoretical foundation, data analysis, and conclusion. The obtained data is organized into sub-chapters to address the research problem (Melfianora, 2012:3). The literature revolves the conditions of the mangrove forest in Sedari Village, Karawang or others coastal area in Java, as well as the utilization of mangroves as ecotourism destinations implemented in various coastal areas. The primary data reviewed from this literature is related to the study of the calculation of potential income from mangrove ecotourism areas in various locations and the assessment of the non-economic values of mangrove ecotourism area development.

In addition to the literature review method, data collection was also carried out through direct interviews with Mr. Bisri Mustopa, the Head of Sedari Village and workers of Sedari’s village office who take roles in tourism. The collected data, both from the literature review and the interview, includes information related to; (1) Social and economic life of the Sedari Village community; (2) Conditions of mangrove forest area management in Sedari Village as an ecotourism area; (3) Support from external parties for the management and development of the mangrove forest ecotourism area in Sedari Village; (4) Impact of the presence of mangrove ecotourism on the economy and other aspects of the life of the Sedari Village community.

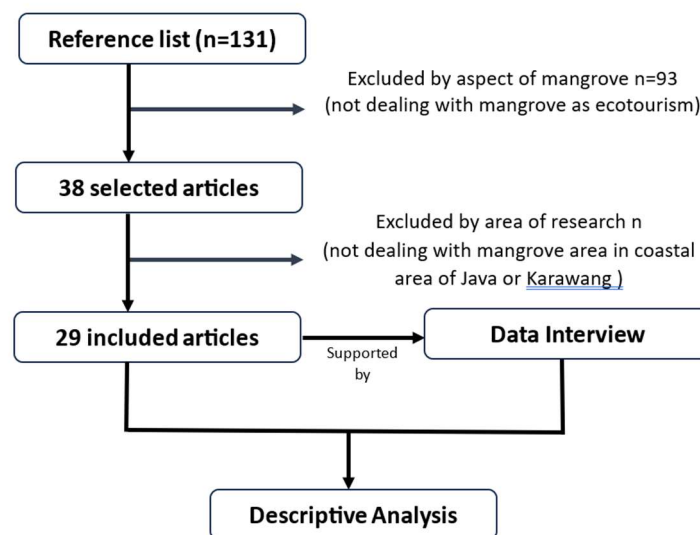


Figure 1. Flow Chart of Literature Review Methods

Findings and Discussion

Existing Condition of Sedari Village’s Communities

Research by Wardhani (2011:62-64), Pasaribu et al. (2019:138), Kholiq (2022:2519-2522), Panjaitan et al. (2022:20-23), and the author's interviews with the Head of Sedari Village provides an

overview of life in Sedari Village, Cibuyaya Sub-district, Karawang Regency, covering the following aspects:

Economic Aspect

The primary livelihoods of Sedari Village residents are fishermen, pond farmers, and agricultural laborers. Many inhabitants of Sedari Village work solely as pond agricultural laborers, while the owners of the ponds or agricultural land are residents from outside Sedari Village. This poses an economic challenge for the community in Sedari Village as they need a stable income. Therefore, income becomes a crucial factor in the relatively low economic growth of Sedari Village. The COVID-19 pandemic exacerbated the economic situation, leading to many laborers or workers being laid off. Small to medium-sized entrepreneurs, such as vendors who usually sell on the coastal shores, also suffered losses due to the closure of Sedari beach as a tourist destination during COVID-19.

Environmental Aspect

Overall, the mangrove ecosystem area in Karawang Regency experienced a reduction in size over 20 years, decreasing from approximately 2,699.3 hectares in 1972 to only about 233.7 hectares in 2013. One of the villages heavily affected by erosion is Sedari Village. As of 2018, it was recorded that the area of Sedari Village impacted by erosion reached 166,802 hectares. The erosion distance is around 5 km (1972-2002), with accretion reaching 1 km. The acceleration of erosion happened due to the high damage to the mangrove ecosystem in this village. The evidence and significant impact of this high erosion rate include numerous residential areas heavily damaged and no longer habitable and the destruction of fish ponds, a source of livelihood for most Sedari Village residents. This indicates that the environmental services of mangroves in preventing and protecting against coastal erosion are crucial.

Activities of Mangrove Forest in Sedari Village as Ecotourism Object

The conservation area of the mangrove forest in Sedari Village has been initiated since 1986. In 1991, there was mass tree planting for the preservation of the forest and food self-sufficiency for the 2nd President of Indonesia. The land for the conservation area of the mangrove forest in Sedari Village is located in abandoned shrimp farming areas. However, the current conservation area is widely utilized by the surrounding community for silvofishery activities (Sewiko et al., 2022:43-45). The area of Mangrove Forest in Sedari Village can be seen in Table 2 below:

Table 2. Area of Mangrove Conservation in Sedari Village

No	Variaton	Area (ha)	Percentage (%)
1	<i>Avicenia sp.</i>	7,64	16,44
2	<i>Rhizophora sp.</i>	24,68	53,10
3	Non-vegetation	13,97	30,06
4	<i>Death mangrove</i>	0,19	0,41
	Total	46,48	100

The environmental services of the mangrove ecosystem from an economic strengthening perspective, aimed at improving the well-being and quality of life of coastal communities to reduce poverty in the region, involve the development of the mangrove ecosystem as an ecotourism area. Ecotourism is one of the environmentally-conscious tourism activities that prioritizes aspects of natural conservation, empowerment of the local community's social, cultural, and economic aspects, as well as learning and education aspects (Blitar Environmental Agency, 2022:1). Ecotourism is part of creative tourism. Creative tourism focuses on the development of small-scale creative experiences and learning activities, mainly provided by creative entrepreneurs as a complement to other creative productions. Hermantoro (2011) in Readi et al. (2021:152-154) explains that creative tourism is a form of responsible tourism toward the existence of the local community. Creative tourism is understood as tourism aimed at self-development rather than mass-oriented, accommodating the presence of medium and small businesses, providing interaction space for the community, and appreciating the environment. In relation to ecotourism in mangrove forests, therefore, mangrove forest area in Sedari Village has excellent potential for creative tourism. This potential is reflected in the tourism activities visitors can engage in while in the mangrove ecotourism area of Sedari Village, along with the significant environmental benefits or services provided by the mangroves. Some of these creative tourism potentials include (Readi et al., 2021:154-155):

Birdwatching : Mangrove forest in Sedari Village is a habitat for various bird species, allowing tourists to engage in birdwatching activities. Tourists can observe and increase their knowledge of bird diversity through this activity and other wildlife biodiversity.

Natural Sport : The mangrove forest area in Sedari Village has a relaxed atmosphere due to the lush and sturdy mangrove trees, despite being located on the north coast of Karawang with a hot climate. Natural tourism activities such as hiking, boating, canoeing, or kayaking can be utilized in this condition. Therefore, developing infrastructure for the mangrove ecotourism object is needed to support the realization of these tourism activities.

Education Experience: Tourists can also participate in planting mangrove seedlings and mangrove conservation. Besides serving as a learning tool, this activity can also instill awareness and concern among tourists for the sustainability of the mangrove ecosystem. This activity can also support the potential for active tourist participation in managing the mangrove forest, starting from planting mangroves, considering the appropriate water depth for planting mangrove seedlings, regulating environmental conditions for mangrove growth processes, and others.

Learn about Local Art and Culture: Local cultural art attractions held once a year, such as Nadran and Baritan, are expressions of gratitude from the Sedari Village community for the results obtained during the year. This activity can provide a unique experience for tourists when visiting the mangrove forest in Sedari Village and enjoying tourism activities related to the ecological functions of mangroves.

The development of ecotourism in the mangrove forest by the residents of Sedari Village began to be intensified in 2019, although there were some early development activities before that. Collaborations carried out by the Sedari Village government with local stakeholders, PERHUTANI (state-owned forestry enterprise), and the Department of Tourism and Culture were just implemented in 2021.

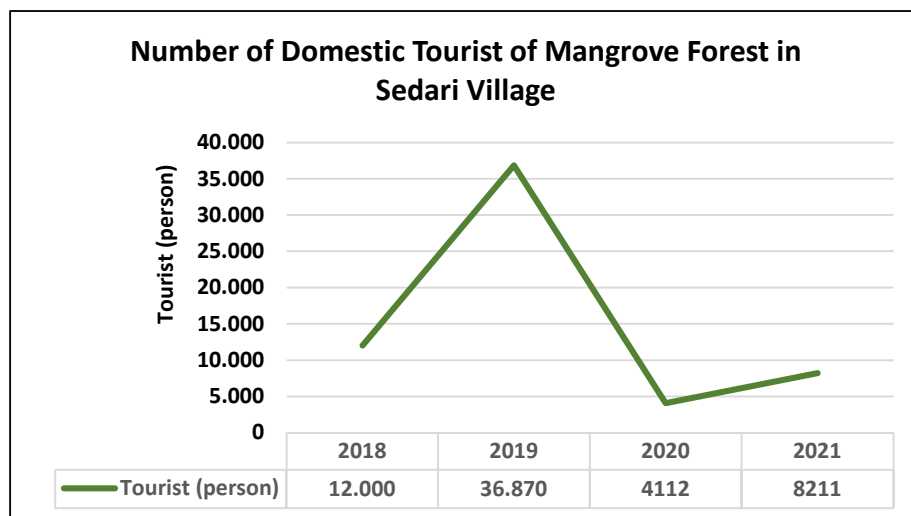


Figure 2. Number of Tourist of Mangrove Forest Area in 2018-2021
(Source : Central Agency of Statistics Karawang Regency)



Figure 3. Mangrove Forest in Sedari Village

Potential of Mangrove Ecotourism Development For Support Life of Sedari Village’s Communities

The development of the mangrove forest as an ecotourism area certainly has a relatively high economic value. Research by Rosmiyati et al. (2022:4) also demonstrates the calculation of one component of the total economic value. The value for tourism destination of the mangrove forest in Rosmiyati et al.'s study in January-April 2021 in Lontar Village, Serang, Banten, reached to Rp. 11,900,000 with an average benefit of Rp 59,500/ha/year. Based on the results of this research, the mangrove tourism site contributes to the economic income of the village. This is the most significant supporting factor for improving the welfare of coastal village communities, such as Sedari Village. Below is a analysis of the contributions and potential outcomes resulting from the development of the mangrove ecotourism in Sedari Village for the improvement of the welfare and quality of life of the community:

Increasing Village and Communities’ Income

According to Sumaryam et al. (2022:4), one of economic analysis used to calculate ecotourism area's income consists is potential income. Potential income is necessary to determine the potential amount that can be generated from the presence of mangrove forest ecotourism. Potential income also involves calculations over the course of one year to evaluate the implementation of annual activities. In order to calculate potential income, it is assumed that every day is equivalent to a day with maximum visitor attendance. According to an interview with the Head of Sedari Village and the workers, the income of the Sedari Village Mangrove Forest has so far been generated only through the entrance ticket price, which is Rp. 10,000/person for all use. Therefore, the actual and potential income of the Sedari Village mangrove forest in 2021 (data from the Central Agency of Statistics of Karawang Regency, shown in Figure 2) is calculated using the following formula:

Estimation of Potential Income of the Sedari Village Mangrove Forest in 2021

$$Potential\ income = Number\ of\ visitors\ (potential)\ in\ a\ day \times Number\ of\ days\ in\ a\ year \times Ticket\ price\ (1)$$

Explanation; (1) Sedari Village’s mangrove forest tour is open everyday; (2) Other facilities of tourism such as *boating, hiking, foodcourt, tour guide*, etc. are not included in ticket price; (3) Other assumptions are by the assumptions in Table 3 and Table 4

In 2021, Indonesian tourism was still affected by the impact of the COVID-19 pandemic, causing a significant decline in the number of tourists compared to before the pandemic. Suppose we want to compare the calculation of actual and potential income from the Sedari Village mangrove forest in the pre-pandemic period (2018-2019) and the pandemic period (2020-2021). In that case, it can be seen in the following Table 3:

Table 3. Estimation of Potential Income Per Day of Sedari Village Mangrove Forest Year 2018-2021

Year	Number of tourist/year	Weekday			Weekend		
		Number of tourist/year	Number of tourist/day	PI/day (Rp.)	Number of tourist/year	Number of tourist/day	PI/day (Rp)
2018	12.000	2.164	8	80.000	9.836	37	370.000
2019	36.870	6.649	25	250.000	30.221	114	1.140.000
2020	4.112	742	3	30.000	3.370	13	140.000
2021	8.211	1.481	6	60.000	6.730	25	250.000

Explanation:

- PI : Potential Income
- Data of number of tourist in a year (column 2) taken from Central Agency of Statistics of Karawang Regency, shown in Figure 2
- The daily number of tourists (on weekdays and weekends) obtained from literatures and data estimated of workers of Sedari Village : Weekdays (Monday-Friday): 20 people/day; weekends (Saturday-Sunday): 250 people/day. These data

then analyzed on average. With an average of 1 month consisting of 22 weekdays and 8 weekends (1 month = 4 weeks), then in 1 year, there are 264 weekdays and 96 weekends. Therefore, total number of tourists in 1 year on weekdays is 5.280 people, and on weekends, it is 24.000 people. The percentage of weekday tourists is 18%, and weekend tourists are 82% of the total tourists in 1 year. This percentage calculates the number of weekday and weekend tourists in a day and a year.

Table 4. Estimation of Potential Income Per Month dan Year of Sedari Village Mangrove Forest Year 2018-2021

Year	Potential Income/month (Rp)	Potential Income/year (Rp)
2018	4.720.000	56.640.000
2019	14.620.000	175.440.000
2020	1.780.000	21.360.000
2021	3.320.000	39.840.000

Explanation:

- Potential income in month and year has been combined for weekday and weekend's calculation (22 weekdays and 8 weekends in a month; 12 months in a year)

After data has been analyzed that shown in Table 3 dan Table for, states that potential income of Sedari Village generated from the development of the mangrove forest ecotourism can exceed Rp. 100,000,000 per year, assuming there is no COVID-19 pandemic. This potential income is not include other ticket for paying facilities of tourism such as hiking, tour guide, canteen, etc. It means, this income is only the minimum potential of income. This income can also be greatly increased further, if the management of the Sedari Village mangrove ecotourism area is improved (development of infrastructure for tourism activities, increasing the number of attractions and activities around the area, and other improvements), attracting more tourists to visit the Sedari Village mangrove forest. The head of Sedari Village mentioned that, until now, the management of the Sedari Village mangrove ecotourism area is still independent of the village internally, with no official support from external parties. Support and assistance from various parties, including the local government, are needed to develop and improve the management of this mangrove forest ecotourism area in Sedari Village. With the increase in village income, the opportunity for the village to improve its residents' welfare and quality of life also increases.

Minimizing Dependency of the Community on Livelihoods as Fishermen or Pond Laborers

The characteristic of communities residing in coastal areas is their dependence on marine resources, the environment, climate, markets, and human resources for their livelihoods. The coastal communities utilize coastal resources to meet their daily needs and engage in daily activities in the coastal areas (Siburian and John, 2016:19). The establishment of the mangrove forest as an ecotourism area in Sedari Village can empower the human resources in Sedari Village. In this regard, the community and village officials play a role in managing the mangrove forest ecotourism area. This serves as the basis for reducing the dependence of the coastal community in Sedari Village on their jobs as fishermen or pond laborers, where they rely solely on sea catches or work in pond ownership. By minimizing this dependency, the poverty rate in coastal areas is hoped to decrease.

Improving Social Quality of Life and Environmental Awareness in Communities

The development of ecotourism areas can be carried out through *community-based tourism* (CBT) strategies, where the primary managers of the ecotourism area are the local community. According to Yudha (2019:1), the basic principle of CBT is to place the community as the main actors by empowering them in various tourism activities. The maximum benefits of tourism are intended for the welfare of the community. Additionally, CBT involves the community in decision-making processes and in obtaining the largest share of income directly from the presence of tourists. Thus, the CBT strategy can increase active community participation, create job opportunities, reduce poverty, and positively impact the preservation of the environment and the village's original culture. CBT is also part of the people's economy, where the community directly carries out management, and the results are enjoyed directly by the community. This concept emphasizes the impact of tourism on the community and environmental resources. Therefore, the application of CBT in developing the Sedari Village mangrove forest ecotourism area can improve the quality of social life in Sedari Village. In addition to the social aspect, the development and management of the mangrove ecosystem as a forest tourism area can also increase

community awareness to preserve the existence of the mangrove ecosystem. This is because the community's opportunity to interact with mangroves and the environment increases when they directly participate in the development and management of mangrove ecotourism (Wardhani, 2011:69). The community gains a better understanding of mangrove seed planting and maintenance until they grow into trees and form a forest ecosystem, the environmental and non-environmental factors that support and hinder the existence of mangroves, and other knowledge. Good awareness and understanding of mangrove ecosystem management can also enhance the community's ability to discuss with other parties wanting to convert mangrove land into other activities (mining, ponds, etc.). Thus, the potential for mangrove ecosystem damage will decrease.

Conclusion

The potential of mangrove forest as an ecotourism area in enhancing the well-being and quality of life of the coastal community in Sedari Village includes:

Increased Village and Community Income: This involves potential income through the sale of mangrove forest tourism tickets and activities and facilities within it. The increased village income provides an opportunity for the village to enhance its residents' well-being and quality of life.

Minimizing Dependency of Coastal Village Residents: This is achieved by providing employment opportunities to work in mangrove forest ecotourism area. This helps minimize the dependence of coastal residents in Sedari Village on their primary livelihoods as fishermen or pond laborers.

Improving the Quality of Social Life: This is accomplished through managing and developing the Sedari Village mangrove forest ecotourism, utilizing a *community-based tourism* strategy that empowers local community resources. In addition to the social aspect, environmental awareness in the village community can also improve.

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