



Tourism Village Strategies as Catalysts for Sustainable Tourism: A Case Study in Karang Tengah Village, Bogor Regency

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ABSTRACT :

Village-based tourism has emerged as an alternative approach to sustainable tourism development that empowers local communities and preserves environmental integrity. Karang Tengah Village, Babakan Madang District, Bogor Regency, possesses promising natural assets (waterfalls, pine forests, hot springs) and cultural resources (handicrafts, traditions), yet still faces challenges in infrastructure, institutional capacity, and product diversification. This study aims (1) to identify the existing conditions of Karang Tengah Village using the 6A framework (Attraction, Accessibility, Amenity, Ancillary, Activities, Available Package), and (2) to formulate sustainable tourism planning strategies based on village tourism concepts and a SWOT analysis.

A descriptive qualitative method was employed, combining field studies and in-depth interviews with key stakeholders (village officials, BUMDes managers, tourism practitioners, and community members), alongside direct observation of facilities and attractions. Data were thematically analyzed according to the 6A framework and synthesized through SWOT to develop targeted strategies.

Findings indicate that the village's attractions and activities are inherently strong, but accessibility and amenities require significant enhancement, while institutional support (ancillary) and packaged offerings (available packages) remain limited. Strengths include diverse attractions and high community engagement; weaknesses lie in underdeveloped infrastructure and limited human resource capacity; opportunities stem from rising ecotourism trends and village fund support; threats involve competition from nearby destinations and environmental risks. Based on these insights, recommended strategies include strengthening infrastructure, building institutional capacity, diversifying thematic packages, and establishing a continuous monitoring system.

This study is expected to guide the village government, BUMDes, and other stakeholders in designing policies and programs that foster sustainable tourism development in Karang Tengah Village.

Keywords: 6A; Sustainable Tourism; SWOT; Karang Tengah Village.

1. Introduction

Law No. 10 of 2009, Article 14, delineates the diverse components of the tourism sector, including tourist attractions, tourism areas, transportation services, travel services, food and beverage provisions, accommodation, MICE (Meetings, Incentives, Conferences, and Exhibitions) organization, as well as various consultancy and information services such as tourism information, tourism consulting, tour guiding, water tourism, and spa services. This legal framework highlights the comprehensive nature of tourism, which functions as a service industry with complex regulatory mechanisms. These mechanisms are designed to manage the intricate movement of tourists from their points of origin to destinations and back, requiring coordination among a wide array of stakeholders like travel agencies, tour guides, tour operators, accommodation providers, restaurants, art shops, money changers, and transportation services. Furthermore, the tourism landscape is diversified by various tourism types, encompassing nature, cultural, historical, and artificial attractions, alongside specialized interest tourism.

The tourism sector holds a pivotal position as a significant generator of foreign exchange earnings, which are indispensable for a nation's economic stability and growth. These foreign exchange reserves are strategically utilized to facilitate international trade, enabling the purchase of goods and services from abroad, and to finance external economic activities crucial for national development. Among the various economic sectors that contribute substantially to foreign exchange generation, tourism stands out as a leading contributor. Its multi-sectoral nature allows it to provide immense opportunities and contribute significantly to regional development, playing a vital role in overcoming regional isolation and poverty alleviation efforts. This intrinsic characteristic of tourism fosters its widespread growth and development across diverse attractions within the archipelago, whether in bustling urban centers, tranquil rural areas, or pristine small islands (Nadjwi, 2014).

Wahab (2003) posits that tourism represents a dynamic new industry capable of generating rapid economic growth. It effectively contributes to job creation, elevates living standards, and possesses the potential to stimulate other productive sectors within the economy. By fostering economic activity, tourism can significantly bolster national economic growth, leading to a reduction in unemployment rates and an overall increase in a country's productivity. Consequently, the tourism sector is recognized as a strategic imperative that must be strategically leveraged for comprehensive tourism development, integrated seamlessly as an integral component of national development agendas. The ultimate aim of such tourism development initiatives is to enhance community income, which in turn directly translates into improved community welfare and sustained economic growth. Furthermore, acknowledging the multifaceted nature of the tourism sector, Wahab (2003) extends its scope to encompass traditional industries such as handicrafts and souvenirs, as well as essential services like accommodation and transportation, all of which are economically viewed as integral parts of the broader tourism sector (Wahab, 2003). This holistic perspective underscores how tourism, as an industry, profoundly impacts the economy, providing a significant impetus for economic growth through its interconnectedness with various related sectors (Arghutashvili and Tbilisi, 2018).

Tourism activities inherently create both consumption and investment demand, which subsequently stimulate the production of goods and services across various industries. This dynamic interaction establishes a positive correlation where tourism beneficially influences economic growth, and conversely, economic growth positively impacts the tourism sector. Other influential factors affecting tourism in Indonesia include exchange rates and inflation, which can significantly sway tourist arrivals and spending. Tourism's contribution to economic growth is channeled through multiple avenues, notably through the generation of foreign currency earnings and its capacity to attract international investments. Local governments are increasingly prioritizing the development of the tourism sector, recognizing its strategic importance as a catalyst for regional economic growth, particularly when aligned with their inherent potentials. The tourism sector exerts a substantial impact on local communities, especially those residing within or proximate to tourist destinations. This profound influence elevates tourism to a prominent position in the development planning agendas of local governments, exemplified by the active focus of the West Java Provincial Government on this sector.

The substantial influx of tourists to West Java serves as a vital source of Local Original Revenue (PAD). Every visit to a tourist attraction typically involves local government charges for tourism services, commonly categorized as retribution. Beyond these direct charges, PAD is also augmented by other regional revenues, including taxes derived from restaurants, hotels, and various other supporting facilities that cater to tourists. The expansion of the tourism sector can be meticulously executed by carefully considering several key factors: the total number of domestic and international tourists, the available capacity of hotel rooms, the quantity of restaurants/eateries, and the level of government expenditure specifically allocated to the tourism sector. Consequently, the volume of PAD is highly contingent upon overall economic growth, particularly that generated by these interdependent sectors. This interdependency further solidifies the perception of the tourism sector as a crucial engine for enhancing regional economic development.

Karang Tengah Village, situated within Babakan Madang District in Bogor Regency, stands as a prime example of an area in West Java undergoing active tourism development. Its strategic geographical positioning, nestled between Jakarta (the national capital) and Bandung (the provincial capital of West Java), imbues it with significant potential for development, economic growth, and the provision of various services. This location facilitates its role as a burgeoning center for national industry, trade, transportation, communication, and, notably, tourism. Within the international tourism landscape, Karang Tengah Village benefits immensely from its close proximity to Jakarta, which serves as one of the primary entry points for international tourists into Indonesia. This offers a significant opportunity for further tourism development. Beyond its strategic location, Karang Tengah Village is recognized as an important tourism destination within Indonesia's broader tourism development framework, particularly for West Java province. It boasts several compelling tourist attractions that draw both domestic and international visitors, cementing its status as a key destination.

Currently, the prevailing paradigm in tourism development is shifting from a sole focus on maximizing tourist numbers to a more holistic approach that prioritizes environmental, social, and economic sustainability. This evolving perspective also highlights tourism's capacity to introduce and promote local culture while safeguarding environmental preservation. Furthermore, tourism is increasingly recognized as a vital sector capable of significantly boosting economic prosperity and enhancing community welfare (UNWTO, 2024). A prominent manifestation of this development trend is the proliferation of tourism villages, which are defined as villages possessing tourist attractions and actively managed by the local community. The rise of tourism villages empowers local residents to directly engage in tourism activities, thereby reaping the benefits from this sector. Governments are actively supporting the growth of tourism villages as an integral part of their local potential-based development programs (Purba, 2025). Karang Tengah Village, located in Babakan Madang District, Bogor Regency, exemplifies this potential, boasting attractive natural features such as pine forests, waterfalls, and an unspoiled rural ambiance. Its convenient accessibility from major urban centers like Jakarta and the Sentul area positions it favorably for becoming a premier tourism village destination in the Bogor region (International Labour Organization, 2011).

However, the full potential of Karang Tengah Village remains underexploited due to several impediments. These include a discernible lack of clear developmental planning, insufficient community engagement in tourism initiatives, and the inactive status of crucial tourism management bodies, such as Pokdarwis (Community Tourism Awareness Group). Moreover, there is a recognized need to intensify efforts aimed at preserving the local environment and cultural heritage (UNWTO, 2024). Failure to promptly develop Karang Tengah Village's tourism potential with sound and sustainable planning risks foregoing significant opportunities for growth and limiting its contribution to local community welfare. Consequently, a comprehensive analysis of the village's tourism potential is imperative, alongside the formulation of planning strategies that strictly adhere to the principles of sustainable tourism. This strategic approach will enable the village to evolve into a thriving tourism destination that delivers tangible benefits to its community while simultaneously safeguarding its natural environment and cultural integrity (International Labour Organization, 2011; UNWTO, 2024).

Karang Tengah Village possesses a rich tapestry of potentials ripe for development into a sustainable tourism village. This includes abundant natural assets such as pristine waterfalls, serene rivers, and well-preserved forest areas, exemplified by attractions like Curug Leuwi Hejo, Curug Putri Kencana, and Goa Agung Garunggang. These natural endowments not only offer breathtaking landscapes but also provide a robust foundation for adventure-based and ecotourism activities, which are increasingly sought after by contemporary tourists (Suwantoro, 2004). The sheer number of natural tourist destinations, coupled with extensive trekking facilities, positions Karang Tengah Village as a favored destination for both domestic and international tourists, particularly those from Jakarta who seek natural retreats from the urban environment. The allure of its waterfalls and natural beauty holds a distinct appeal for a wide demographic of visitors, ranging from youth to families and older generations.

Beyond its natural splendor, Karang Tengah Village also boasts a rich cultural heritage, encompassing vibrant local traditions, distinctive culinary offerings, and captivating traditional arts, all of which can be transformed into compelling community-based tourist attractions. The well-preserved local wisdom within the community holds significant potential to underpin tourism development that prioritizes the preservation of cultural values and the social fabric of the local populace (Nurhadi, 2020). The strategic geographical location of Karang Tengah Village within the Babakan Madang District of Bogor Regency further serves as a crucial supportive factor for its sustainable tourism village development. Its proximity to the popular Sentul tourist area and relatively easy access from major cities like Jakarta and Bogor make it highly desirable. This accessibility is a fundamental component of sustainable tourism development, directly influencing tourist visit flows and creating economic opportunities for the surrounding community (Yoeti, 2008). Karang Tengah Village is also a frequent destination for corporate gatherings, often attracting large groups for "mass tourism," thereby generating significant economic impact for the local community. This context motivates researchers to further explore and develop Karang Tengah Village into a continuously sustainable tourism village, aiming to enhance the local economy. Through precise planning, managing the village's tourism potential can not only uplift the economic well-being of its residents but also ensure the preservation of its natural environment and local culture, in strict adherence to the principles of sustainable tourism (UNWTO, 2017).

The implementation of sustainable tourism planning in Karang Tengah Village is paramount to mitigate potential negative impacts on the local environment and ecosystems. The village's rich natural resources, including waterfalls, rivers, and forests, render it highly susceptible to the pressures of unmanaged tourism. Without integrated planning, unchecked tourist influxes could lead to habitat degradation, soil erosion, and water pollution, thereby jeopardizing the pristine quality of the destination (Inskeep, 1991). Consequently, a planning study employing a sustainable approach is indispensable for formulating effective natural resource management policies. These policies should include limitations on visitor capacity, ecological zoning, and the consistent application of environmentally friendly ecotourism practices (United Nations World Tourism Organization [UNWTO], 2017). Beyond environmental considerations, this study is equally critical for empowering local communities and fostering their economic welfare. Sustainable tourism inherently emphasizes the active involvement of communities in destination planning and management, ensuring that economic benefits—such as opportunities for homestays, local guiding services, and the production of local handicrafts—directly accrue to the residents (Nurhadi, 2020). Thus, sustainable planning also serves as a mechanism for preserving cultural values and local wisdom, as communities are motivated to maintain their traditions and environment for long-term economic sustainability (Yoeti, 2008). Through comprehensive research, specific strategies like human resource capacity building, diversification of tourism products, and robust cross-sector collaboration can be precisely identified and effectively implemented.

The research's problem formulation centers on two key questions: firstly, what are the existing conditions of Karang Tengah Village, Babakan Madang District, Bogor Regency? Secondly, what sustainable tourism planning strategies based on the tourism village model can be developed for Karang Tengah Village, Babakan Madang District, Bogor Regency? The overarching general objective of this research is to integrate and apply undergraduate academic knowledge through dedicated research and community service initiatives. Specifically, this study aims to contribute to the advancement of knowledge in tourism studies, with a concentrated focus on sustainable tourism planning strategies within the context of tourism villages. The specific objectives are twofold: to accurately identify the current conditions prevalent in Karang Tengah Village, Babakan Madang District, Bogor Regency, and to precisely identify the strategies for tourism villages to act as drivers of sustainable tourism, as exemplified by the case study in Karang Tengah Village, Bogor Regency.

2. Methodology

This research was conducted in Karang Tengah Village, Babakan Madang District, Bogor Regency, West Java, approximately 1-1.5 hours from Jakarta via the Jagorawi toll road and Sentul Selatan exit. The area, part of the "Sentul City Mountain Town" or Sentul Industrial Estate, offers various amenities and tourist attractions like Bidadari Waterfall, Mount Pancar Pine Forest, and JungleLand Adventure Park. The scope of the study is divided into two main aspects: firstly, identifying the existing conditions of Karang Tengah Village based on the 6A components of tourism object development (attraction, accessibility, amenity, ancillary, activities, and available package); and secondly, assessing sustainable tourism planning strategies for the village. This involves identifying principles of sustainable tourism development in Karang Tengah and analyzing tourism planning strategies using SWOT analysis. The study employs both qualitative and quantitative data. Qualitative data, as defined by Sugiyono (2003:11) and Bungin (2007:103), includes descriptive information on natural, cultural, and human potential, 4A components of tourist objects, general overview, existing conditions, sustainable tourism development principles, criteria for tourism village development, and local community participation. Quantitative data (Sugiyono, 2010:15) comprises measurable information such as the number of tourist attractions, tourism institutions, facilities, daily tourist visits, registered guides, and daily revenue from tickets, parking, and food sales.

Data collection utilizes primary and secondary sources. Primary data, obtained directly from informants (Arikunto, 2010; Moleong, 2000:112), includes details on the general overview, existing conditions, natural, cultural, and human potential, 4A components, tourism institutions, guides, facilities, daily tourist numbers, and daily revenues. Secondary data, gathered from literature reviews, documents, journals, books, and relevant past research (Sugiyono, 2005:62), covers aspects of the general overview, criteria for tourism village development, principles of sustainable tourism, local community participation in tourism (community-based tourism), and SWOT analysis for tourism planning strategies. Data collection techniques involve observation, particularly participant observation where the researcher interacts to gather insights on existing conditions, potential, and facilities. Interviews (Bungin, 2007:111) are conducted with competent informants, including village managers, local institutional actors, guides, local vendors, community members, and local government officials, to gather information on existing conditions, institutions, workforce, tourist visits, and daily revenues. Documentation (Gottschalk, 1986:38) serves as a secondary data source and supporting evidence, including photographic documentation of existing conditions, audio/video recordings of interviews, text messages from informants, and official correspondence. Informant selection employs purposive sampling, selecting individuals with in-depth and broad knowledge relevant to the research problem (Bungin, 2007). Data analysis primarily uses SWOT analysis (Strength, Weakness, Opportunities, and Threats) as outlined by Chafid Fandeli (2002:192) and Freddy Rangkuti (1992:12). This involves identifying internal factors (Strengths and Weaknesses) and external factors (Opportunities and Threats) to formulate appropriate development strategies (SO, ST, WO, WT strategies) by comparing and integrating these factors (Lutfi Muta'ali, 2003:123). The analysis of existing conditions and sustainable tourism planning strategies will determine the feasibility and applicability of sustainable tourism village development for the long-term success of Karang Tengah Village.

3. Results

General Overview of Karang Tengah Village

Karang Tengah Village, initially renowned for its fertile land, reflects its name's etymology: "Karang" (coral/material for building, in Sundanese) signifying a base for settling, and "Tengah" (middle), indicating its central location amidst rivers. Historical accounts suggest that early inhabitants produced their own cement-like material from coral, lime, and clay for construction, a process known as "pengapuran" near Cipancar Bridge. Administratively, Karang Tengah Village evolved significantly, becoming one of nine villages within the newly formed Babakan Madang District in 1999, following its separation from Citeureup District as per Government Regulation Number 48 of 1999. The village shares its borders with Sumur Batu to the west, Cibadak to the east, Bojongkoneng to the south, and Hambalang to the north. Covering an area of 3,456.83 hectares at an elevation of 529 meters above sea level, the terrain comprises low hills and mountains, organized into 56 RTs and 15 RWs, and is located 15 km from the district capital.

With a population of 19,154 individuals spread across 5,985 families, Karang Tengah Village exhibits a population density of approximately 5.54 people per hectare, offering a relatively spacious and comfortable living environment. Agriculture forms a significant part of the local economy, with around 30 hectares of rice fields yielding up to 7 tons per hectare, and a substantial 700 hectares dedicated to coffee plantations, which serve as a primary source of income for many residents. Specifically, 780 inhabitants are engaged in farming.

Karang Tengah Village boasts diverse natural potential, complemented by ongoing efforts to develop and preserve its local culture and indigenous wisdom. These attributes contribute to its remarkably beautiful natural panorama, making it an ideal place for both residence and tourism. Beyond its moniker as the "Village of a Million Tourist Attractions," Karang Tengah Village also holds a unique, lesser-known distinction as the largest coffee producer in the Babakan Madang sub-district.

Existing Conditions of Karang Tengah Village

The identification of Karang Tengah Village's existing conditions involved a qualitative analysis of each of the 6A components: attraction, accessibility, amenity, ancillary, activities, and available package. Firstly, attraction was assessed by inventorying and mapping key natural (waterfalls, pools, mountains) and cultural (traditional ceremonies, local crafts) attractions to determine the village's unique characteristics and potential. Secondly, amenity covered basic facilities like toilets, parking, and information centers, with their quality, quantity, and maintenance levels evaluated. Thirdly, accessibility was judged based on transportation infrastructure, road conditions, and the availability of public transport to and within the tourist area, including ease of routes for disabled tourists. Fourthly, ancillary elements, such as homestays, local eateries, and souvenir shops, were evaluated for capacity, services, and community involvement in their management. Fifthly, activities were identified by listing types of tourist activities, like trekking, agricultural education, or cultural workshops, along with their frequency and community participation. Lastly, available package was examined by reviewing current tour packages offered by both formal businesses and community initiatives, assessing their integrated activities, promotional information adequacy, and commercial appeal. This comprehensive assessment provides a solid foundation for formulating appropriate development strategies.

A. Attraction

Tourist attractions generally fall into six main categories: natural attractions (landscapes, waterfalls, forests), cultural attractions (traditions, arts, historical sites), man-made attractions (recreational facilities, thematic rides), special events (festivals, exhibitions), culinary/social attractions (local food experiences, community interaction), and unique attractions (rare or eccentric points of interest). However, based on the on-site identification during this research, Karang Tengah Village predominantly features only two types of attractions out of Ritchie & Crouch's (2003) six categories: natural tourist attractions and man-made tourist attractions.

Natural Tourist Attractions

a. Goa Agung Garunggung (Agung Garunggung Cave) Goa Agung Garunggung is a natural tourist destination in Karang Tengah Village, Babakan

Madang District, Bogor Regency, West Java, known for its significant geological value. Formed over thousands of years by natural processes like rock dissolution, erosion, and tectonic activity, its unique rock formations with vertical fissures strongly indicate past plate movements (Auliya et al., 2021). Geomorphologically, it is a karst area developed on sedimentary rocks, featuring geological formations like stalactites, stalagmites, and uplifted rock morphologies that enhance its aesthetic and educational tourism potential, making it suitable for geotourism, which integrates recreation, education, and geological conservation (Hose, 2000). Its proximity to urban centers like Jakarta and Sentul gives it strategic value for tourism village development, though sustainable management requires balancing ecological, social, and economic aspects (UNWTO, 2005) and active local community participation for positive local welfare and environmental preservation.

b. Hutan Pinus Gunung Pancar (Mount Pancar Pine Forest) The Mount Pancar Pine Forest, located in Karang Tengah Village, Babakan Madang District, Bogor Regency, West Java, is a protected forest area managed by Perum Perhutani and holds substantial potential as an ecotourism destination. Geographically, Gunung Pancar's elevation (300-800 meters above sea level) provides a cool climate and ecological conditions conducive to the growth of typical mountain forest vegetation, particularly *Pinus merkusii* (Perhutani, 2021). Beyond its conservation role, the forest is utilized for sustainable nature tourism activities such as camping, trekking, photography, and environmental education. With increasing public interest in nature tourism, this forest is crucial not only for the local economy but also for environmental preservation (Setiawan, 2020), embodying an integration of conservation and economic utilization that supports Sustainable Development Goal 15 on terrestrial ecosystem protection and sustainable use (Kementerian PPN/Bappenas, 2019).

c. Pemandian Air Panas Gunung Pancar, Sentul (Mount Pancar Hot Spring, Sentul) The Mount Pancar Hot Spring in Karang Tengah Village, Babakan Madang District, Bogor, is a popular destination within the Gunung Pancar natural area, renowned for its pristine natural panorama, dense pine forests, and cool, refreshing air. Situated at an elevation of 300-800 meters above sea level, it offers an ideal setting for relaxation, health, and ecotourism-based education (Dinas Pariwisata dan Kebudayaan Kabupaten Bogor, 2023). The hot springs, with temperatures ranging from 40 to 70 degrees Celsius, are naturally geothermally heated and contain beneficial minerals like sulfur, calcium, sodium, and magnesium, believed to offer therapeutic benefits for muscle tension, blood circulation, and skin conditions (Setiawan, 2021). Besides relaxation, the springs contribute to environmental education and conservation, adhering to sustainable natural preservation principles through eco-tourism approaches like eco-friendly waste management and local material use (Susanti & Pranata, 2022). Facilities include public and private soaking pools, camping grounds, and natural concept accommodations. Strategically located near Jakarta, it's a popular domestic weekend destination, positively impacting local communities through job opportunities in services, culinary arts, guiding, and local craft sales, aligning with community empowerment principles in sustainable tourism (Yuliana & Mahendra, 2020) and demonstrating significant potential for professional and sustainable development. Its abundant natural resources, health benefits, and inclusive, eco-friendly management can serve as a model for sustainable tourism development in Bogor Regency, requiring synergy among government, community, and tourism stakeholders (Susanti & Pranata, 2022).

d. Pemandian Air Panas Kawah Merah (Red Crater Hot Spring) Pemandian Air Panas Kawah Merah is a nature-based tourist destination within the Mount Pancar area in Karang Tengah Village, Babakan Madang District, Bogor Regency. Its name, "Red Crater," derives from the reddish hue caused by high sulfur and mineral content in the surrounding soil, distinguishing it from other hot springs (Lestari & Hidayat, 2021). The spring features natural hot water from underground volcanic activity, reaching temperatures of 90-95 degrees Celsius (though filtered and cooled before reaching the pools). Its main draw is the purported health benefits of the sulfurous water, believed to alleviate aches, rheumatic symptoms, improve circulation, and benefit skin (Saputra, 2022; Nugroho et al., 2019). Geographically, it's nestled in cool, fresh air amidst hills and pine forests. Access is semi-natural, requiring a walk through forests and rice fields, adding an educational and adventurous element (Maulana & Prasetyo, 2020), reinforcing its ecotourism character for physical relaxation and psychological rejuvenation through nature interaction. Locally managed by the Karang Tengah Village community, it offers simple yet functional facilities like public and private pools, changing rooms, and food stalls at affordable prices (Rp 10,000 for public pool, Rp 25,000/hour for private), demonstrating local economic empowerment consistent with sustainable tourism principles (Kusuma & Sari, 2021). Overall, Kawah Merah has significant potential as a leading local-based tourism destination, embodying sustainable village tourism through its unique natural resources, health benefits, authentic environment, and active local community involvement.

e. Pemandian Air Panas Lembah Alam Tirta (Lembah Alam Tirta Hot Spring) Pemandian Air Panas Lembah Alam Tirta is a natural tourist destination in Sentul, Bogor Regency, West Java, offering hot spring bathing amidst mountains and lush tropical vegetation. Located in Babakan Madang, it serves as a natural tourism buffer for Sentul and Mount Pancar, attracting both local and out-of-town visitors seeking tranquility, physical recovery, and nature-based recreation (Astuti, 2021). Its primary appeal lies in the geothermally sourced hot water, believed to offer various therapeutic health benefits like improved blood circulation, muscle pain relief, and better sleep, scientifically supported by hydrotherapy research on mineral hot springs (Haryanto & Sari, 2020). The natural atmosphere and cool air make it suitable for relaxation and meditation. Facilities include changing rooms, gazebos, children's play areas, and traditional food stalls, making it a family-friendly and accessible destination from Bogor and Jakarta. It's also used for educational tourism and field studies on sustainable natural resource utilization. From a sustainable tourism perspective, Lembah Alam Tirta has great potential by integrating ecological (natural hot spring management), social, and economic aspects through local community involvement in businesses like food, parking, and small-scale accommodation (Rahmawati, 2022), reflecting community-based tourism. This harmonizes natural potential with sustainable tourism development and can become a national or international wellness tourism icon, especially post-pandemic, with improved arrangement and promotion.

f. Pemandian Air Panas BUMDes (BUMDes Hot Spring) The hot spring managed by BUMDes (Village-Owned Enterprise) Karang Tengah is a flagship tourist attraction in the Mount Pancar area, Karang Tengah Village, Babakan Madang District, Bogor. It features natural hot spring water from geothermal activity, ideal for relaxation and health recovery. The facility offers public and private hot spring pools, changing rooms, prayer rooms, gazebos, and Sundanese food stalls. The sulfur-rich water is believed to benefit skin health, reduce stress, and improve blood circulation (Nurhidayati, 2022). The surrounding pine forest and cool mountain air provide a therapeutic and refreshing "healing" experience. BUMDes management also stimulates local economic growth by involving residents as managers, massage service providers, and culinary vendors (Wahyuni & Prasetyo, 2021). Easily accessible from Jakarta via Jagorawi Toll Road, it's part of the village's community-based tourism strategy, balancing economic, environmental, and social aspects (Suryana & Nugroho, 2020). Its affordable entry fees and 24-hour operation make it an attractive and accessible option, serving as a

model for sustainable village-based tourism. Success stems from active local community participation in planning, operations, and evaluation (Damayanti, 2021), creating jobs, increasing income, and fostering supporting sectors like homestays and local culinary businesses (Ramadhani, 2023). Conservation efforts include soil retention vegetation, waste management, and visitor limits (Herlina & Saputra, 2020), ensuring it remains attractive while embodying sustainable development values. Its long history of community-based management since the late 1980s led to professional development by BUMDes as part of a village tourism program (Ramadhani, 2023). Stable temperatures and sulfur content from Mount Pancar's geothermal source offer health benefits (Suryana & Nugroho, 2020). Affordable tickets (Rp5,000-Rp10,000 for public, Rp25,000-Rp100,000 for private) and 24-hour operation provide flexibility (Herlina & Saputra, 2020). Beyond economic and health value, it's an environmental education and conservation tool, with ongoing conservation, integrated waste management, and visitor limits. This community-based tourism approach exemplifies sustainable tourism by balancing nature, community empowerment, and local culture (Damayanti, 2021).

g. Curug Putri Kencana (Princess Kencana Waterfall) Curug Putri Kencana is a natural tourist destination in Karang Tengah Village, Babakan Madang District, Bogor, West Java. This waterfall, approximately 7 meters high, is surrounded by natural rocks and lush tropical vegetation, creating a serene and refreshing atmosphere (Rahmawati, 2020). Its clear water and natural rock contours make it suitable for recreation like swimming, nature photography, and light adventure tourism. Access from Sentul is relatively easy, and it's about 1.5 hours from Jakarta, making it a popular weekend choice for domestic tourists (Yulianti, 2021). The non-extreme trekking path allows visitors of all ages to enjoy nature directly. Basic facilities such as parking, food stalls, and resting areas enhance visitor comfort. From a community-based tourism perspective, Curug Putri Kencana has significant potential as a local ecotourism asset. Local community involvement in managing entrance tickets, guiding services, and camping equipment rentals indicates its role in fostering sustainable local economic growth (Suryana & Lestari, 2022). With management that considers environmental carrying capacity and socio-cultural aspects, this area can be developed as an integral part of a sustainable village tourism strategy.

h. Curug Love (Love Waterfall) Curug Love is a prominent natural tourist destination in Karang Tengah Village, Babakan Madang District, Bogor, West Java, named for its heart-shaped rock formations that serve as a unique main attraction. It's part of a broader village ecotourism area that includes other waterfalls like Curug Putri Kencana, Curug Leuwi Asih, and Curug Leuwi Cepet (Radar Bogor, 2024). Geographically, Curug Love is located in an unspoiled hilly area, requiring a light trek through gardens, rice fields, and bamboo forests, offering a characteristic village-based nature experience (LiburanYuk, 2020). The approximately 5-meter high waterfall flows into a clear turquoise natural pool, 1-1.5 meters deep, safe for swimming and relaxation (Sering Jalan, n.d.). Curug Love holds significant potential for sustainable tourism development. It has supporting facilities such as parking, food stalls, changing rooms, and light body rafting equipment rental. With an affordable entrance fee of Rp10,000-Rp25,000, it's an accessible nature tourism alternative for visitors from the greater Jakarta area (iNews, 2021). However, its management requires sustainable practices, including environmental preservation, waste management, and educating tourists about local cultural values and wisdom. As part of a developing tourism village, Curug Love represents the synergy between natural potential and community-led tourism resource management. With strengthened village institutions, continuous promotion, and environmentally conscious facility development, Curug Love can become a sustainable nature tourism icon in Bogor Regency, supporting local economic development, job creation, and promoting nature conservation awareness amidst urbanization in the Jabodetabek region.

i. Curug Leuwi Kuntan (Leuwi Kuntan Waterfall) Leuwi Kuntan is a natural tourist destination in Karang Tengah Village, Babakan Madang District, Bogor, accessible by private vehicle, about 30-40 minutes from Bogor city center, with paved but narrow roads leading to the site. Facilities include parking, toilets, prayer rooms, traditional food stalls, gazebos, and safety equipment rentals (life jackets, helmets). Visitors can enjoy swimming, playing in shallow river areas, picnicking, and relaxing amidst green natural scenery. Leuwi Kuntan operates daily from 8 AM to 8 PM/10 PM, with affordable tickets (Rp15,000 on weekdays, Rp20,000-Rp25,000 on weekends/holidays) and additional charges for parking and rentals. Leuwi Kuntan holds strategic value for village-based tourism development in Karang Tengah, contributing to the preservation and sustainable utilization of natural resources. Its accessible open-air concept attracts local and out-of-town visitors. Local community management, either independently or in cooperation with the village government or local communities, reflects a growing community-based tourism economy, providing services like parking, food stalls, equipment rental, and local guides. This makes Leuwi Kuntan a model for small-scale tourism destinations that can drive local economic growth without environmental degradation. Its natural landscape, surrounded by hills and natural rivers, gives Leuwi Kuntan high ecotourism potential. The natural arrangement, using bamboo gazebos and natural rock barriers, enhances its ecological appeal and encourages visitors to appreciate nature's preservation. Thus, Leuwi Kuntan functions as a recreational, educational, and reflective space for understanding the harmonious and responsible human-nature relationship (Orami, n.d.; SukabumiUpdate, 2025; Traveloka, 2025).

j. Curug Leuwi Asih (Leuwi Asih Waterfall) Curug Leuwi Asih is a natural tourist destination in Kampung Wangun Landeuh, Karang Tengah Village, Babakan Madang District, Bogor, West Java. It's part of the developing Sentul natural tourism area, notable for its pristine environment and relatively easy access from Jakarta and Bogor. Located at a moderate elevation amidst tropical forest and community gardens, Curug Leuwi Asih offers a blend of nature recreation, environmental education, and light physical activity through natural trekking trails (Desyusnita, 2022). Morphologically, it's not a very high waterfall; its flow comes from a small river over natural rocks, forming natural pools with depths varying from one to three meters. The clear water is a major attraction, making it suitable for swimming and water play, with shallow areas for children, making it safe and ideal for family tourism (Kustiawan, 2023). Access to Curug Leuwi Asih is relatively easy, not requiring advanced hiking skills. The trekking path, taking 15-30 minutes depending on the starting point, crosses rice fields, pine forests, and small rivers. The path has bamboo bridges, signposts, and resting areas with beautiful hill and rice field views. In recent years, the village government and local community have improved tourism facilities, including parking, public toilets, prayer rooms, gazebos, and simple food stalls managed by locals (Kompasiana, 2022). Curug Leuwi Asih serves not only as a recreational spot but also for community-based education and conservation. Local community participation in management supports economic growth through tourism services, equipment rental, and homestays. Activities include swimming, water play, enjoying nature, photography, and trekking packages connected to other destinations like Goa Agung Garunggang and Curug Love, integrating natural attractions for sustainable rural tourism development (Radar Bogor, 2024). As part of the developing tourism village, Curug Leuwi Asih holds potential for sustainable tourism development based on local potential and nature preservation. Collaboration among the local community, village government, and tourism stakeholders is crucial for environmental sustainability, service quality, and strengthening local identity. Its location within Karang Tengah Village also strategically supports

spatial planning and ecotourism development in Babakan Madang District (Sentul Travel, n.d.).

k. Curug Leuwi Hejo (Leuwi Hejo Waterfall) Curug Leuwi Hejo is a popular natural tourist object in Bogor Regency, specifically in Karang Tengah Village, Babakan Madang District. Its name, "Leuwi Hejo" (Sundanese for "green pool"), refers to the clear green water of the natural pool beneath the waterfall, reflecting surrounding vegetation and rock base. The waterfall is about 5 meters high with clear water from the unpolluted Sentul mountain upstream. Its landscape, dominated by green vegetation, natural rocks, and natural river flow, offers a calm and refreshing atmosphere, attracting tourists seeking authentic and integrated nature experiences. Accessibility to Curug Leuwi Hejo is good, though visitors need to trek about 500 meters from the parking area through hills, community forests, and farmlands, making the journey part of the natural experience. Besides its visual beauty, Curug Leuwi Hejo's appeal lies in its suitability for water recreation like swimming, bathing, and photography (Rohman, 2020; Yulianti & Pratama, 2021). From a sustainable tourism perspective, Curug Leuwi Hejo has strategic potential as part of community-based ecotourism. Local community involvement in managing parking, stalls, and local guides reflects community-based tourism principles, enhancing local economy and fostering ownership for natural preservation. However, increased visitor numbers, especially on weekends, pose challenges like potential environmental damage, waste, and water resource pressure. Therefore, Curug Leuwi Hejo's management needs more planned systems, considering environmental carrying capacity and educating visitors on responsible tourism practices. As part of the Sentul natural tourism ecosystem, Curug Leuwi Hejo can diversify nature-based destinations in Bogor Regency. Integrated and sustainable tourism planning and development strategies can make it a model for tourism villages that leverage natural beauty, empower communities, and maintain environmental balance.

l. Curug Barong (Barong Waterfall) Curug Barong is a hidden natural gem in Sentul, specifically in Karang Tengah Village, Babakan Madang District, Bogor Regency. This waterfall, 7-10 meters high, is known for its clear bluish-green natural pool, ideal for swimming and relaxation (Jabartrip, 2023). Surrounded by rocky cliffs and lush trees, it offers a serene and refreshing nature experience, perfect for escaping city bustle. The water flow from Cirangrang River is strong yet safe for activities like body rafting or cliff jumping (Superlive, 2022). Reaching Curug Barong requires a challenging 1-2 km trek, taking 40-60 minutes, through rocky terrain, narrow paths, wooden bridges, and forest areas, necessitating comfortable footwear and physical preparedness (Travelspromo, 2023). While lacking extensive facilities like cafes, it has parking and simple stalls at the trekking starting point (NativeIndonesia, 2023). Entrance fees total around Rp30,000 (Rp15,000 for Gunung Pancar area, Rp15,000 for Curug Barong) (Wisatainfo, 2023). Morning visits are recommended for cooler weather and fewer crowds. Curug Barong is a captivating, hidden waterfall in Sentul, 7-10 meters high, flowing into a 2-meter deep, clear bluish-green pool, attractive for swimming and enjoying nature (Jabartrip, 2023). Its surrounding large rocks, natural cliffs, and dense green trees create a tranquil atmosphere for unwinding. The strong but safe flow from Cirangrang River allows for body rafting and cliff jumping (Superlive, 2022). The challenging 1-2 km trekking route from Gunung Pancar parking, through pine forests and bushes, takes 40-60 minutes, offering an adventurous natural experience (Travelspromo, 2023). Limited facilities at the waterfall itself mean visitors should bring personal supplies and maintain cleanliness (Wisatainfo, 2023). Early morning visits are best. Curug Barong is ideal for those seeking natural challenges, adventure, and unspoiled natural beauty. A popular route is trekking from Curug Leuwi Hejo (20-30 mins), passing Leuwi Lieuk and Leuwi Cepet, creating a "curug hopping" experience (Travelspromo, 2023; NativeIndonesia, 2023). Entrance fees total around Rp30,000 (Rp15,000 main gate, Rp15,000 for Curug Barong) (Wisatainfo, 2023). Facilities are minimal near the waterfall, so self-sufficiency is key. Morning visits are recommended for tranquility. Curug Barong is highly suitable for adventurers and nature lovers seeking pristine natural beauty.

m. Curug Cisadon (Cisadon Waterfall) Curug Cisadon is a natural destination located in Karang Tengah Village, Babakan Madang District, Bogor Regency, situated on the slopes of Mount Salak at an elevation of approximately 1,100 meters above sea level. The trail to Curug Cisadon is known as a challenging but popular trekking route, particularly among nature enthusiasts and light adventurers. Various starting points exist, including Gunung Pancar, Rawa Gede, and Prabowo Subianto's residence, with round-trip distances ranging from 7 to 14 kilometers (Outbound Offroad, 2021). Along the journey, visitors traverse dirt paths, hills, coffee plantations, pine forests, and several small rivers, enriching the exploration experience (TrekkingSentul.id, n.d.). Local communities actively maintain the natural and cultural sustainability along this route, making the area suitable for community-based tourism development. Upon arrival, Curug Cisadon presents a waterfall approximately 40 meters high, cascading into a natural pool below. The clarity of the water and the lush vegetation surrounding the waterfall create a serene atmosphere, ideal for relaxation or simply enjoying the natural scenery (Kumparan, 2021). Facilities near the site remain very natural, with no permanent structures, so visitors are advised to bring their own provisions and maintain environmental cleanliness (Sentul Travel, n.d.). Beyond being a trekking destination, this area is also popular for photography and "healing" activities due to its well-preserved natural state (AllTrails, n.d.).

Man-Made Tourist Attractions

a. JungleLand Adventure Theme Park Jungleland Adventure Theme Park is a large-scale thematic tourist destination situated in Karang Tengah Village, Babakan Madang District, Bogor, serving as a vital component in the area's village-based tourism development. As part of Karang Tengah Village, Jungleland not only symbolizes modernization and progress in tourism infrastructure but also significantly contributes to the socio-economic dynamics of the local community. Spanning approximately 35 hectares, Jungleland features over 30 rides divided into thematic zones such as Carnivalia, Tropicalia, Mysteria, and Explora, catering to diverse visitor segments from children to adults (PT Bakrieland Development Tbk., 2025). The presence of this large-scale tourist destination has brought significant spatial and economic transformation to Karang Tengah Village, which was previously known primarily for its rural residential areas dominated by agricultural and plantation activities. Its strategic location in the Sentul area with easy accessibility via the Jagorawi toll road has boosted tourist visits to Karang Tengah Village annually. This impact is evident in the increase of local micro, small, and medium-sized enterprises (MSMEs), new job opportunities for villagers, and increased local original revenue through retribution and cooperation in managing land and supporting tourism facilities. Beyond entertainment rides, Jungleland also offers educational attractions like Robot Zoo and Science Center, appealing to educational and family tourism. Supporting facilities like vast parking areas, culinary centers, prayer rooms, shuttle services, and disabled-friendly access further strengthen Jungleland's competitiveness as a leading tourist destination (Traveloka, 2025; RuangBogor.com, 2024). Jungleland's existence demonstrates how modern tourism can integrate with local potential and the character of a tourism village, while simultaneously supporting inclusive and community-based sustainable tourism development in Karang Tengah Village, Bogor.

b. Eco Edu Tourism Forest The Eco Edu Tourism Forest Sentul is an educational tourism forest located in Karang Tengah Village, Babakan Madang District, Bogor Regency, jointly managed by Perum Perhutani and the Korea–Indonesia Forest Cooperation Center (KIFC), officially inaugurated in

2013 as part of a bilateral conservation and forestry cooperation. The Eco Edu Tourism Forest contributes not only to nature conservation but also strengthens Karang Tengah Village's position as a sustainable local potential-focused tourism village. With its integrated concept of conservation, education, and tourism, this destination serves as an ecotourism development model that raises environmental awareness while supporting the village community's economic growth (KIFC, 2021; Eco Edu Forest, n.d.; HighlandCamp, 2023). Spanning approximately 9,257 hectares, mostly pine forest, it's used for educational activities, research, environmental preservation, and ecotourism. Supported by various institutions, it's equipped with guest houses, dormitories, classrooms, halls, cafeterias, prayer rooms, toilets, information centers, a wood museum, a mini laboratory, a suspension bridge, and camping and trekking areas. Activities include environmental education, forestry training, forest interpretation, river tubing, outbound activities, and team building. Eco Edu Tourism Forest Sentul exemplifies a tourism area based on education and conservation, integrating ecological and recreational functions sustainably. It acts as an open-air laboratory for students, researchers, and the public to learn about biodiversity, forest conservation, and sustainable environmental management. Its natural landscape, pine trees, and facilities like an information center, wood museum, suspension bridge, and forest education trails make it ideal for educational and environmental interpretation tourism. Its uniqueness lies in integrating learning programs with direct outdoor experiences, offering both natural beauty and applicable ecological insights. As part of Karang Tengah Village, it strengthens the village's image as adaptive to sustainability issues and innovative in utilizing forest resources for educational and economic tourism (Eco Edu Forest, n.d.; KIFC, 2021; HighlandCamp, 2023). Its presence strategically impacts the development of environment-based tourism villages in Karang Tengah, previously dependent on agriculture and forestry. It creates jobs (guides, cleaners, vendors) and empowers locals through conservation training and nature-based skills. Collaboration between managers and the community fosters collective awareness of forest ecosystem preservation. Indirectly, tourists contribute to the local economy and expand social networks. Eco Edu Tourism Forest makes Karang Tengah Village a concrete example of sustainable development, harmonizing ecological, educational, and economic aspects, serving as a replication model for similar villages (Eco Edu Forest, n.d.; KIFC, 2021; HighlandCamp, 2023).

c. Agrowisata Kebun Kopi (Coffee Plantation Agritourism) Agrowisata kebun kopi (coffee plantation agritourism), despite utilizing natural landscapes and mountain air, is fundamentally classified as a man-made attraction. This categorization is due to the intensive human development, arrangement, and management involved in coffee cultivation (planting, maintenance, harvesting, and tourist facilities), rather than it being a naturally evolving ecosystem. Therefore, coffee plantation agritourism is not considered a pure natural attraction but rather a man-made attraction that integrates natural elements with human engineering and facilities (Ritchie & Crouch, 2003). According to Ritchie and Crouch (2003), man-made attractions encompass elements developed and managed by humans, including landscape design, visitor facilities, and educational and interpretive activities. The coffee plantations designated as agritourism destinations in Karang Tengah Village are intensively managed, featuring guided trekking paths, harvesting areas, roasting facilities, and structured information centers. Consequently, coffee plantation agritourism fulfills the characteristics of a man-made attraction as it involves the engineering of space and supporting facilities that do not occur spontaneously in nature (Ritchie & Crouch, 2003). In addition to being classified as a man-made attraction, coffee plantation agritourism also accommodates culinary and cultural tourism, as visitors not only learn about cultivation processes but also taste various local specialty coffees. According to Richards (2002), traditional foods and beverages like coffee are crucial components of the tourism experience, introducing local culture and strengthening community economies. In this context, coffee plantation agritourism integrates aspects of agricultural education, taste appreciation, social interaction, and community involvement into an attractive multi-dimensional tourism package that combines man-made attractions with socio-culinary elements (Richards, 2002). The residents of Karang Tengah Village maintain traditional communal cultivation and processing of Robusta and Arabica coffee. Tourists can directly participate in the coffee bean picking process, traditional grinding, and sun-drying, which are still carried out traditionally, offering an agritourism experience rich in local cultural value.

B. Amenities

Generally, every tourist destination in Karang Tengah Village, Bogor, is equipped with basic facilities to ensure visitor comfort. These include adequate parking areas for both two-wheeled and four-wheeled vehicles, toilets and shower rooms, and mushollas (prayer rooms) for those wishing to perform religious obligations. At almost all locations—from Curug Cisadon, Curug Putri Kencana, Curug Leuwi Hejo, to Curug Love—simple stalls or small cafes are available, offering local food and beverages. To support relaxation and rest activities, many tourist objects provide gazebos or traditional huts along the trekking paths. Some places, such as Curug Putri Kencana and Leuwi Hejo, also offer camping areas and accommodation in the form of villas or bungalows. At Pemandian Air Panas Lembah Alam Tirta (Lembah Alam Tirta Hot Spring), in addition to therapeutic hot spring pools with adjustable temperatures, visitors can utilize additional facilities like an on-site restaurant and poolside gazebos.

C. Accessibility

Generally, Karang Tengah Village is accessible via the main Jagorawi Toll Road, exiting at the Sentul Selatan toll gate, then continuing towards Sentul City and Babakan Madang via the well-paved Bogor–Ciawi main road. After passing JungleLand and the Sentul public minivan (angkot) terminal, visitors follow signs towards Jalan Citaringgul or Hambalang, then enter village roads, typically 5–6 meters wide. A significant portion of these village roads has been improved with concrete or asphalt thanks to the 2022 Samisade fund (750 meters in Kampung Wisata Alam Gunung Pancar and 300 meters in Kampung Landeuh), ensuring that roads leading to the village are now relatively smooth and easily passable by private vehicles and local transport.

For public transportation, angkot route 44B (Citeureup–Babakan Madang–Karang Tengah–Pangkalan Cipanas) is the primary option; the nearest stop is on Jalan Raya Gunung Pancar, with the first bus operating at 05:16 AM and the last at 11:13 PM WIB. From the drop-off point, local motorcycle taxis (ojek) or pick-up vehicles are available to transport visitors to various tourist spots, especially those routes inaccessible to sedans, as recommended by the Sentul Bogor digital map managers. For tourists with private vehicles, parking areas are available at most destinations, though the width of these areas and road surfaces may vary.

Road conditions between destinations are generally paved up to the parking areas, but many sections are narrow and uphill, particularly towards Pemandian Air Panas Kawah Merah (Red Crater Hot Spring) and Curug Cisadon. Beyond the ticket counter for these, the access road changes to a rocky dirt path requiring 4x4 vehicles or dirt bikes. For locations like Hutan Pinus Gunung Pancar (Mount Pancar Pine Forest) and Pemandian Air

Panas Gunung Pancar (Mount Pancar Hot Spring), the paved uphill roads have moderate inclines, safe for passenger vehicles, and are served by angkot 05 or ojek from Sentul City terminal. Conversely, tourist attractions within the Sentul corridor—such as JungleLand and Sentul Eco Edu Tourism Forest—are located along wide, smoothly paved Sentul roads with clear directional signs, making them easily reachable by tourist buses and private vehicles alike.

Furthermore, at each tourist attraction, directional and interpretative signboards are installed to help visitors navigate trekking paths and understand the local ecological and cultural value. Footpaths are generally well-maintained with wooden or natural stone steps, and safety fences are provided in descending areas. In some locations, visitors can hire local guides who not only explain routes but also share stories about local traditions and the environment. Additional facilities like gazebos and "Instagrammable" photo spots with natural backdrops are also provided.

D. Ancillary

As a developing village in the Babakan Madang region, Karang Tengah Village benefits from several institutional bodies crucial for supporting and managing local governance, community empowerment, and the development of local potential. These key institutions include the Village Government, which acts as the highest executive body responsible for village administration, development, community fostering, and empowerment, as stipulated by Law Number 6 Year 2014 concerning Villages. Complementing this is the Village Consultative Body (BPD), the legislative arm at the village level. The BPD partners with the Village Head in drafting Village Regulations, representing community aspirations, and overseeing policy implementation and budget utilization, with its formation and duties outlined in Article 56 of Law Number 6 Year 2014, and further reinforced by Bogor Regent Regulation Number 14 Year 2019 for overseeing Village Fund allocation.

Beyond governance, economic development is driven by the Village-Owned Enterprise (BUMDes) Cipta Mandiri Sejahtera, officially registered with the Bogor Regency BUMDes registry. This entity is established to manage village economic potential, including tourism and agricultural units, aiming to boost village income and enhance community welfare, in line with Articles 87-89 of Law Number 6 Year 2014. Professional tourism guidance is provided by the Paguyuban Local Guide Sentul (PLGS), an organization comprising over 200 local guides in the Sentul area, including Karang Tengah Village, who meet professional standards for guiding tourists through the region's natural attractions.

Furthermore, environmental stewardship and sustainable resource management involve the Forest Village Community Institution (LMDH) Wana Sejahtera of Karang Tengah Village, which collaborates with Perhutani KPH Bogor through a Forestry Partnership Memorandum of Understanding (NKK). This LMDH actively participates in agroforestry, agritourism programs, and forest conservation alongside local communities, as reported by Perum Perhutani. Similarly, the Forest Farmer Group (KTH) Gombong Lestari in Karang Tengah Village is officially registered in SIMLUH (Agricultural Extension Management Information System). This KTH utilizes Perhutani land for social forestry activities, such as agroforestry, under initial permits regulated by KPH Bogor. Overseeing broader forest management is Perhutani, specifically Perum Perhutani KPH Bogor, a state-owned enterprise managing state forests in the Bogor region, including the Babakan Madang Forest Management Resort in Karang Tengah Village. Perhutani consistently disseminates guidelines for forest utilization and involves LMDH partners and communities in conservation and tree planting efforts, notably within the Sentul Eco Edu Tourism Forest area.

Community empowerment and social welfare are supported by several other village-level organizations. The Village Community Empowerment Institution (LPM) of Karang Tengah Village facilitates participatory development planning, mobilizes communal work ("gotong royong"), and oversees the implementation of village programs, ensuring alignment with the village's vision and mission by accommodating citizen aspirations and monitoring development activities. The Family Welfare Movement (PKK) Team, serving as a partner to the village government, focuses on improving family welfare. The PKK develops work plans, mobilizes "dasawisma" groups (ten-house groups), and implements 10 core PKK programs to support family health, education, and economic resilience in the village. Basic health services are provided by Integrated Service Posts (Posyandu), community-run health service units supported by the Puskesmas (community health center). Posyandu in Karang Tengah Village offer immunization, child weighing, nutrition counseling, and maternal health services through five service desks, improving access to basic health at the village level.

Finally, youth and social organizations contribute to village development. Karang Taruna, as a youth organization, comprises young people aged 17–30 years. In Karang Tengah Village, Karang Taruna facilitates youth empowerment programs, social activities, and capacity building for the younger generation to contribute to village development. Other active social organizations include Pemuda Pancasila, a paramilitary community organization established in 1959, which supports Pancasila ideology and empowers youth through social and cultural programs nationally and regionally. Additionally, LSM Merah Putih, also known as Laskar Merah Putih Indonesia Bogor Regency Branch Headquarters, operates in social and community advocacy with official legal status. Lastly, the HPI Bogor Regency (Indonesian Tour Guide Association) DPC is a professional association for tour guides, providing training, certification, and facilitating dialogue between local guides and local government to further develop the tourism sector in Bogor Regency.

E. Activities

Karang Tengah Village in Babakan Madang District, Bogor Regency, offers a diverse range of tourism activities that seamlessly blend natural adventure, relaxation, education, and local economic development. Visitors can engage in Trekking and Jungle Tracking through guided "Hiking Nature & Waterfall" packages, traversing hills and plantations around Mount Pancar Pine Forest, enjoying fresh mountain air and lush green landscapes. The region boasts eight distinct waterfalls, including Curug Putri Kencana, Curug Leuwi Hejo, and Curug Leuwi Asih. Waterfall Exploration and Camping are popular, with Curug Putri Kencana offering a large natural pool for swimming, camping areas, and challenging river tubing. For subterranean adventures, Cave Exploration at Geopark Goa Garunggang presents unique ancient rock formations, allowing visitors to undertake short cave treks or light climbing under the guidance of local experts for safety. Additionally, the village capitalizes on Mount Pancar's geothermal potential by offering Hot Spring Soaking, providing relaxation and health benefits in pools complemented by rest areas and simple food stalls.

For those seeking more active pursuits, Cycling and Mountain Biking allow visitors to rent mountain bikes and explore trekking paths in Mount Pancar Pine Forest and surrounding rice fields, enjoying panoramic views and cool mountain air. Horseback Riding is also available, offering a leisurely

experience on dedicated trails, ideal for families and children to enjoy amidst the pine forest. Thrill-seekers can opt for Rafting with light to medium difficulty levels, guided by experienced instructors and using standard safety equipment. Agro-tourism provides educational experiences on coffee plantations, vegetable gardens, and rice fields, where visitors can pick fruits, taste local coffee, and learn traditional food processing and agroforestry techniques. The Eco Edu Tourism Forest features Outbound and Team-Building facilities, including flying fox, paintball, rope bridges, and various team challenges, perfect for group activities, corporate training, or family gatherings.

For overnight stays and a closer connection with nature, Camping Grounds at Gunung Pancar provide spacious camping areas among thousands of pine trees, easily accessible via the Jagorawi Toll Road. Visitors can bring their own tents or rent equipment, enjoying tranquil nights and bonfires. A more luxurious option, Glamping at Hutan Pinus Gunung Pancar, offers semi-permanent tents with comfortable beds, blankets, and seating areas overlooking the pine forest, blending natural beauty with comfortable accommodation. Lastly, the village provides designated Picnic and Family Gathering areas, allowing visitors to relax and enjoy packed meals amidst the cool mountain air, suitable for various group activities.

F. Available Package

Karang Tengah Village, Babakan Madang District, Bogor Regency, offers a variety of tourism packages catering to different interests and group sizes. For basic nature exploration, there's the "Nature Waterfall Tour Package" priced at Rp 15,000 per person, offering light trekking to one waterfall point, suitable for families and beginners, and managed by Desa Wisata Karang Tengah. Similarly, the "Hiking Nature & Waterfall" package, also Rp 15,000 per person, features trekking routes through forests, rice fields, and one or two waterfalls, guided by local residents. More extensive trekking options are provided by CV. Pesona Trekking Sentul, starting with the "Easy" Trekking Package at Rp 175,000 per person, which includes a professional guide, Perhutani retribution, destination tickets, insurance, parking, trekking pole, mineral water, raincoat, first aid kit, standard documentation, and a Pesona souvenir/pin. Their "Medium" Trekking Package, starting from Rp 200,000 per person, offers the same inclusions but with a longer route (5–7 km) and more varied natural scenery.

For groups, CV. Pesona Trekking Sentul also provides a "Corporate" Package starting from Rp 250,000 per person, which adds ice breaking activities, group competitions, pickup transportation, and lunch/liwetan (traditional Indonesian rice dish) to the "Medium" package inclusions. Campa Tour offers a full-day "Curug Cibaliung & Surroundings" Trekking Package, which includes visiting multiple waterfalls and pools like Curug Cibaliung, Leuwi Lieuk, Leuwi Cepet, Curug Barong, and Leuwi Benjol, with prices and details adjustable upon request. Finally, PT Wana Wisata Indah manages "Camping & Outbound Packages at TWA Gunung Pancar," featuring options like joyful camping ("Camping Ceria"), individual camping, and basic leadership and discipline training programs (LDKS) within the TWA Gunung Pancar area in Karang Tengah Village.

Sustainable Tourism Planning Strategy in Karang Tengah Village, Babakan Madang District, Bogor Regency

Sustainable tourism, or "pariwisata berkelanjutan," embodies a tourism development concept designed to yield long-term positive impacts across environmental, social, cultural, and economic spheres for both local communities and visiting tourists. Its development is underpinned by four core pillars: sustainable management (tourism businesses), long-term economic sustainability (socio-economic aspects), cultural sustainability (preserving and developing local culture), and environmental sustainability. Leveraging these four pillars, sustainable tourism is poised to become a highly sought-after form of travel, where tourists not only enjoy their leisure but also adhere to protocols related to health, safety, comfort, and environmental preservation. Intriguingly, the concept of sustainable tourism is not new to Indonesia, evidenced by numerous existing sustainable tourism destinations. This trend towards sustainable tourism is a major project currently being undertaken by tourism managers in Karang Tengah Village, focusing on a village-based tourism model.

The understanding of sustainable development principles is fundamental for program implementers at the local level to grasp the interconnectedness between tourism development programs and the concept of a tourism village. This initial understanding requires knowledge of the definition of sustainable tourism development with a village tourism perspective, environmental aspects in development activities, the concept of environmental carrying capacity, and the relationship between carrying capacity and the sustainability of development activities. Despite its diverse tourism potential, Karang Tengah Village has not yet fully designed its sustainable tourism development. For Karang Tengah, key steps for the community and tourism management bodies include: designing dynamic and adaptive plans that are flexible enough to accommodate unforeseen factors and allow for adjustments during implementation, demonstrating that Karang Tengah's current planning is already dynamic. Secondly, focusing on local resources, meaning programs prioritize the utilization and enhancement of locally available resources for both current and future generations, while external resources serve as supplementary support. Karang Tengah's management predominantly leverages local resources, aiming for a cyclical process that benefits future generations. Thirdly, adopting a progressive approach, where sustainable tourism development continuously strives for increasing standards or measures, ensuring continuous improvement in quality of life as a goal, which translates to increased income or skills for the local community over time.

Despite these efforts, based on research findings, several principles of sustainable tourism development in Karang Tengah Village are not yet fully implemented. Participation remains a significant challenge, as local communities are largely passive observers in tourism activities rather than active participants in vision setting, resource management, and strategy implementation. This lack of participation is attributed to insufficient education and community awareness, a fact corroborated by the village head in an interview, who noted that most residents are unaware of tourism revenues, which should ideally be shared and managed by the village's BUMDes. Secondly, Stakeholder Involvement is present, with the village engaging NGOs, volunteer groups, local government, and community members. However, its implementation is not maximized; tourism activities are predominantly controlled by specific trekking operators, with benefits primarily enjoyed by a select few, rather than being shared with the village through BUMDes management. The head of BUMDes affirmed that sustainable tourism requires comprehensive collaboration beyond a few groups, highlighting a need for full coordination among volunteer groups and the community in decision-making and strategizing to enhance tourism appeal.

Thirdly, Local Ownership needs significant improvement. Sustainable tourism development should create quality job opportunities for local communities in tourism facilities (hotels, restaurants, etc.) that they can develop and maintain. Experience suggests that education, training, and easy access for local entrepreneurs are crucial for fostering local ownership and creating strong linkages between businesses and the community. In Karang

Tengah, community participation in tourism employment is minimal, meaning only a small fraction of residents benefit from local tourism revenues. Fourthly, Sustainable Resource Utilization is crucial. Tourism activities must avoid excessive, irreversible use of non-renewable resources, with fair benefit sharing ensured through local involvement in planning, development, and implementation. Tourism activities must also preserve and restore natural and man-made resources according to international criteria. Karang Tengah, being predominantly a natural tourism destination, demonstrates good management and preservation of its natural resources, positioning them as long-term assets for the village's prosperity across generations.

Fifthly, Accommodating Community Goals is vital to achieve a harmonious relationship between visitors, destinations, and local communities. Karang Tengah's community aims for family welfare with stable incomes, which sustainable tourism management can directly support by empowering residents and leveraging natural resources. This approach, centered on tourism, can significantly improve community welfare. Sixthly, Carrying Capacity (physical, natural, social, and cultural) must be considered, ensuring development aligns with local and environmental limits. Regular evaluation and adjustments are necessary, with facility scale reflecting acceptable usage limits. Karang Tengah, with its high natural carrying capacity, presents a significant opportunity for sustainable tourism development through tourism villages, which can elevate the village's status and prosperity. However, this potential is largely unrealized due to a lack of clear regulations and plans from the community, village government, and managers. The village head confirmed this, citing insufficient tourism-aware groups and the need for collaborative efforts to fully leverage the village's carrying capacity. Lastly, Monitoring and Evaluation are underdeveloped; while some current tourism activities are monitored, a specific focus on sustainable village-based tourism is absent. Accountability in tourism planning, particularly concerning local employment, income, and health, needs improvement. Currently, tourism revenues primarily benefit a select few, necessitating government intervention to prioritize local employment. Finally, Training programs are essential to equip communities with knowledge and skills in sustainable tourism, hospitality, and related fields, enabling greater participation. Promotion, especially through digital channels, is crucial to raise awareness and attract more tourists, increasing village income. Integrated marketing and improved human resources are key to leveraging Karang Tengah's potential as a thriving sustainable tourism destination. Overall, the implementation of sustainable tourism principles in Karang Tengah Village, especially regarding community participation and sufficient human resources, remains a significant challenge for the village government and local stakeholders.

SWOT analysis is employed to analyze the overall strengths, weaknesses, opportunities, and threats faced by Karang Tengah Village as a tourist destination. The following outlines the sequential process of analyzing tourism planning strategies in Karang Tengah Village. Based on the conducted research, the researcher incorporated input from tourists and insights from interviews with various stakeholders involved in the development of sustainable village-based tourism in Karang Tengah. This aims to formulate strategies for developing tourism planning components in Karang Tengah Village, ensuring that aspects deemed unsatisfactory by tourists can be further improved, thereby optimizing the quality of tourism components in the village in the future. The SWOT analysis technique is specifically used to determine tourism planning strategies in Karang Tengah Village based on a content analysis of tourist reviews from interview results.

1. Strengths a) Adequate Facility Components: Tourism in Karang Tengah Village boasts fairly adequate facility components, including ample parking, toilets, restaurants, prayer rooms, homestays, and gazebos. Access roads to tourist sites are also very sufficient, making it easy for tourists to reach attractions in Karang Tengah Village. b) Diverse Attraction Components: Tourist attractions in Karang Tengah Village offer diverse components such as pine forest views, flying fox rides, outbound facilities for adventure enthusiasts, unique photo spots, trekking activities, coffee plantation views, clear green water, and hot springs. c) Accessibility Components: Tourist attractions in Karang Tengah Village have good online accessibility, meaning their locations can be found through social media or navigation apps. Roads are wide enough for two cars, and the village is not far from the city center. d) Supportive Ancillary Service Components: Tourist attractions in Karang Tengah Village possess supportive ancillary service components, such as travel agencies and trekking services for tourists. e) Extensive Land Area: The tourist attractions in Karang Tengah Village are very diverse, and each location boasts a vast land area, offering unique characteristics for every tourist spot.

2. Weaknesses a) Physical Accessibility Components: Tourist attractions in Karang Tengah Village lack physical accessibility components, specifically directional signs to the attractions in the immediate vicinity along the roads. b) Poorly Maintained Facility Components: Some facilities at tourist attractions in Karang Tengah Village are not well-maintained, as directly observed by tourists. This includes slightly unhygienic toilets, leading to discomfort for visitors. These facilities require maintenance and rejuvenation to preserve their quality. c) Attraction Components Need Arrangement and Development: Tourists suggest that some attractions in Karang Tengah Village require better arrangement, particularly in trekking areas that have slippery and dangerous sections. There is also a need for better cleanliness of facilities to ensure tourist comfort. d) Staff Facility Components: Tourists believe that tourist attractions in Karang Tengah Village need to improve the quality of their staff components, as some employees are perceived to be discriminatory towards local and foreign tourists. e) Promotion Activities: Tourists suggest that tourist attractions in Karang Tengah Village need to engage in more social media promotion to attract a larger number of visitors.

3. Opportunities a) Strategic Location: Tourist attractions in Karang Tengah Village benefit from a strategic location, being close to the city center of Bogor. This proximity can effectively attract tourists seeking respite from urban crowds. b) Unique Tourist Attraction Concept: Tourist attractions in Karang Tengah Village feature a unique concept for tourist appeal, as similar concepts are relatively scarce in other areas. This is because Karang Tengah primarily offers natural tourism, which is highly favored by tourists, especially urban dwellers.

4. Threats a) Competitors: Tourist attractions in Karang Tengah Village must pay attention to competitors, specifically other tourist attractions with similar concepts located in other villages. Even if these attractions are outside the city, their development still needs to be monitored. b) Visitor Interest: Tourist attraction concepts like those in Karang Tengah Village may not attract many visitors if they only offer monotonous attractions.

Based on the four aspects—Strengths, Weaknesses, Opportunities, and Threats—that have been identified, the author combines these aspects using SWOT analysis to formulate a development strategy for tourism planning components based on interview reviews regarding tourist attractions in Karang Tengah Village. SWOT analysis is a method for tourism managers to understand the conditions of a tourist destination, encompassing both internal and external factors that can influence the site's condition. Following the SWOT analysis above, several alternative strategies can be developed by organizing the identified strengths, weaknesses, opportunities, and threats into the following SWOT matrix diagram.

<div> <div>Internal</div> <div>External</div> </div>	Strength <ol style="list-style-type: none"> 1. Facility Components 2. Attraction Components 3. Accessibility Components 4. Ancillary Service Components 5. Large and Adequate Land Area 	Weakness <ol style="list-style-type: none"> 1. Physical Accessibility Components 2. Poorly Maintained Facility Components 3. Attraction Components (needs clarification, likely referring to arrangement/development) 4. Staff Facility Components 5. Promotion Activities
Opportunity <ol style="list-style-type: none"> 1. Strategic Location 2. Tourist Attraction Concept (Unique/Niche) 	SO Strategy <ul style="list-style-type: none"> • Develop more varied tourist attractions according to consumer needs. • Improve relationships with tourists by providing excellent service. • Repair facilities and accessibility that are deemed inadequate for tourist use. 	WO Strategy <ul style="list-style-type: none"> • Empower communities with digital marketing skills to promote tourist sites to attract more visitors. • Improve distribution channels by collaborating with potential institutions or organizations, such as online travel agents.
Threats <ol style="list-style-type: none"> 1. Competitors 2. Visitor Interest (referring to potential decline or lack of new interest) 	ST Strategy <ul style="list-style-type: none"> • Conduct surveys on the strengths of competitors. • Empower the community to develop a tourism village to attract more interest to the tourist sites. 	WT Strategy <ul style="list-style-type: none"> • Improve communication with potential institutions and organizations for collaboration, such as village communities and BUMDes (Village-Owned Enterprises). • Provide bonuses to the marketing department if they can attract more tourists.

Based on the SWOT analysis table, a sustainable tourism planning strategy can be derived for Karang Tengah Village, informed by interviews with tourists and stakeholders. The village government and management should implement the following strategies. For SO (Strength-Opportunity) Strategies, it is crucial to develop more varied tourist attractions that align with consumer needs. This is essential for realizing sustainable village-based tourism, as diverse attractions will draw more visitors, ensuring long-term benefits. Management must also foster strong relationships with tourists by providing exceptional service, cultivating a positive image that leads to favorable reviews. Positive word-of-mouth is a vital asset for sustainable tourism, as it encourages more visitors. Furthermore, management should prioritize the repair and maintenance of facilities deemed inadequate for tourist use, as improving these amenities is a direct path to enhancing the village's appeal as a tourist destination.

For WO (Weakness-Opportunity) Strategies, a key step is to empower local communities with digital marketing skills to promote the village's tourist attractions. Observations indicate that most sites in Karang Tengah currently lack comprehensive promotion. Engaging the community in tourism activities is a suitable strategy for achieving village tourism, as it can significantly improve community welfare. Beyond community involvement, management should collaborate with village organizations like BUMDes (Village-Owned Enterprises), which have the authority to manage village funds. Business activities overseen by such village organizations are inherently more beneficial than those managed privately. Additionally, collaboration with external distribution channels that can potentially boost tourist interest, such as online travel agents, is highly recommended.

Regarding ST (Strength-Threats) Strategies, the village government and management need to conduct surveys to understand the strengths of their competitors. This is a crucial initial step in designing sustainable tourism, allowing them to compare potentials across various tourist sites and adopt successful competitive advantages. This knowledge will serve as a foundation for formulating sustainable village-based tourism plans. Most importantly, empowering the community to build a tourism village is paramount for sustainable tourism development, as tourists largely prefer attractions developed organically from within the village itself.

Finally, for WT (Weakness-Threats) Strategies, it is essential to enhance communication and collaboration with potential institutions and organizations, including the local community and BUMDes. Tourism managed through such collaborative efforts, particularly with BUMDes and the local community, is likely to yield maximum results, as sustainable village-based tourism fundamentally prioritizes community empowerment. Furthermore, offering bonuses to the marketing department for successfully attracting more tourists will boost the performance of employees involved in digital tourism marketing for Karang Tengah Village. Digital promotion is highly effective today, as tourists frequently seek travel information via social media. If management and the government effectively design and implement sustainable village-based tourism promotion, the influx of tourists to Karang Tengah Village will significantly increase.

4. Conclusion

This research aimed to reveal the existing conditions of Karang Tengah Village using the 6A approach and to design a sustainable tourism strategy using sustainable tourism concepts and SWOT analysis. The main conclusions from this analysis can be summarized as follows: Existing Conditions of Karang Tengah Village (6A Analysis): a. Attraction: Karang Tengah boasts rich natural attractions including waterfalls (Curug Putri, Curug Cisadon, Curug Leuwi Hejo), pine forests, and hot springs. Local cultural potential, such as handicrafts and communal traditions, further enhances its appeal. b. Accessibility: Access to the village is still limited by unpaved roads, minimal signposts, and sporadic public transportation, impacting visitor comfort. c. Amenity (Supporting Facilities): Accommodation, resting areas, and sanitation facilities near destinations are inadequate. The availability of food stalls, public toilets, and information posts also needs improvement. d. Ancillary (Institutional Support): Village tourism institutions like BUMDes and BPD are established, but their managerial capacity and inter-stakeholder coordination require strengthening through training and clear SOPs. e. Activities: Activities such as trekking, camping, and coffee agritourism are available, but diversification with homestay programs, handicraft workshops, or cultural festivals is needed to attract different tourist segments. f. Available Package: Currently offered tour packages are simple and single-destination focused. Developing integrated packages such as a "one-day trip" combining waterfalls, agritourism, and village culture is necessary to increase visitor stay duration and local economic circulation.

Sustainable Tourism Planning Strategy (Concept and SWOT Analysis): a. Strengths: The diversity of natural and cultural attractions, BUMDes involvement, and village policy support create opportunities for collaboration and co-branding. b. Weaknesses: Physical infrastructure and facilities are limited, and human resources lack the skills for effective tourism promotion and management. c. Opportunities: The rising trend of ecotourism and agritourism among millennials, coupled with support from village funds and expanding digital marketing networks. d. Threats: Competition from other tourist destinations in Sentul/Bogor; the risk of environmental damage if visits are not properly managed; and seasonal fluctuations in visitor numbers.

Based on these findings and conclusions, to optimize the implementation of the sustainable tourism strategy, the researcher proposes the following recommendations for the village government, BUMDes, and local community, aimed at supporting sustainable tourism development in Karang Tengah Village: 1. Infrastructure and Accessibility Improvement: Prioritize road repair and paving, adding directional signs, and street lighting. Implement scheduled village tourist shuttle services. 2. Institutional Strengthening and Human Resource Capacity: Facilitate BUMDes Cipta Mandiri Sejahtera with training in tourism management, homestay services, and guiding. BPD and tourism awareness groups should develop SOPs for inter-agency coordination and routine reporting for transparency. 3. Sustainable Environmental Management: Implement integrated waste management (reduce-reuse-recycle) at all destinations, including segregated bins and cleanliness campaigns. Reforest critical areas to maintain water quality and control erosion. 4. Product and Package Diversification: Design integrated "one-day trip" packages covering natural attractions, coffee agritourism, and cultural experiences. Organize annual cultural events or coffee harvest festivals. 5. Digital Marketing and Promotion Enhancement: Create multimedia promotional content (short videos, 360° virtual tours) for social media and OTAs. Partner with travel bloggers, influencers, and travel agencies. 6. Continuous Monitoring and Evaluation: Establish sustainable tourism KPIs (e.g., visitor satisfaction, number of visits, environmental sustainability index) and conduct surveys biannually. Hold quarterly coordination meetings among stakeholders. 7. Fund Utilization and Partnerships: Submit funding proposals for village funds (DD) and provincial/central sustainable tourism grants. Forge partnerships with universities for research/technical assistance and with private sectors for co-branding/sponsorship. By implementing these integrated recommendations, Karang Tengah Village is expected to enhance its tourism quality, appeal, and sustainability, while empowering local communities and preserving the environment long-term.

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