Jurnal Planologi
Vol. 23, No. 1, April 2026
Available: http://jurnal.unissula.ac.id/index.php/psa

E-ISSN: 2615-5257
P-ISSN: 1829-9172

Spatial Allocation for the Development of Tourism Support Facilities in Ambarawa District, Semarang Regency

Jihan Shonia Pardcipta[1*], Reny Yesiana[2]
[1]Master of Urban and Regional Planning, Faculty of Engineering, Diponegoro University;
[2]Spatial Planning and Land Management, Vocational School, Diponegoro University;
*Corresponding Author E-mail: jspardcipta@students.undip.ac.id

ABSTRACT

Tourism plays a significant role in supporting regional economic growth, yet its development must operate within certain limits to ensure sustainability. This study seeks to develop a spatial allocation plan for tourism-supporting facilities in Ambarawa District. A mixed-method approach was applied, combining qualitative descriptive analysis with quantitative spatial analysis using Geographic Information Systems (GIS). The results identify 595.16 hectares of land suitable for developing various supporting facilities, including accommodations, minimarkets, souvenir centers, eateries, the Serabi Ngampin culinary hub, ornamental plant and flower markets, MSME centers, and parking areas. The study's contribution lies in its integration of spatial analysis with stakeholder insights, bridging spatial and non-spatial perspectives in tourism planning. The findings underscore the need for stronger alignment between tourism planning and spatial planning instruments, the prioritization of facility provision based on locally identified needs, and the enhancement of community participation. Moreover, effective land-use control is essential to safeguard environmental quality and support sustainable tourism development.

Keywords: tourism, spatial planning; land suitability; tourism facilities; GIS

ABSTRAK

Pariwisata merupakan salah satu sektor yang potensial dalam meningkatkan pendapatan daerah. Meskipun demikian, pengembangan pariwisata harus mempertimbangkan keberadaan batasan-batasan agar tetap menerapkan prinsip berkelanjutan. Penelitian ini bertujuan menyusun rencana alokasi ruang untuk fasilitas penunjang pariwisata di Kecamatan Ambarawa. Metode penelitian yang digunakan adalah campuran antara analisis deskriptif kualitatif dan analisis spasial kuantitatif berbasis Sistem Informasi Geografis (SIG). Hasil penelitian menunjukkan bahwa terdapat 595,16 hektare lahan yang dapat digunakan untuk pengembangan fasilitas penunjang pariwisata, yang mencakup: akomodasi, minimarket, pusat souvenir, tempat makan, sentra kuliner Serabi Ngampin, pasar tanaman hias dan bunga, pusat UMKM, serta area parkir. Kebaruan penelitian terletak pada integrasi analisis spasial dengan masukan pemangku kepentingan, yang menghubungkan perspektif spasial dan nonspasial dalam perencanaan pariwisata. Temuan ini menegaskan pentingnya penyelarasan perencanaan pariwisata dengan instrumen tata ruang, prioritas penyediaan fasilitas sesuai kebutuhan lokal, serta peningkatan partisipasi masyarakat. Selain itu, pengendalian pemanfaatan lahan diperlukan untuk menjaga kelestarian lingkungan.

Kata kunci: pariwisata, penataan ruang, ketersediaan lahan, fasilitas penunjang pariwisata; SIG

1. INTRODUCTION

While human activity and population growth tend to increase continuously, land is a finite resource that is inherently limited and cannot be expanded. Effective spatial planning is necessary in this situation to guarantee that the land available can support the increasing intensity of activities while preserving environmental sustainability and the existence of other living things. Spatial planning refers to the process of organizing spatial components within a region to deliver benefits across political, economic, social, and cultural aspects and to stimulate regional development (Adisasmita, 2010). According to Regulation of the Government of the Republic of Indonesia Number 21 of 2021 on the Implementation of Spatial Planning, Implementation of Spatial Planning means an effort to achieve Spatial Planning goals through the implementation of Spatial Planning, Space Utilization, and Space Utilization Control.

Spatial data and information play a critical role in spatial planning, providing a comprehensive approach to planning models (Nijkamp & Scholten, 1993). These data help in understanding urban land conditions in terms of physical characteristics such as land cover and socio-economic dimensions (Yin et al., 2021). Spatial planning supported by science and technology can assist in managing resources while balancing economic, environmental, social, and cultural priorities (Huser, 2011). Incorporating spatial information into planning processes enhances strategy effectiveness, promotes resilience, and fosters equitable environments to improve community well-being.

The economic dimension is a key outcome expected from the implementation of spatial planning. Ideally, spatial planning seeks to harmonize economic, social, and environmental concerns. One economic sector with significant development potential in Indonesia is tourism. The tourism sector is considered a driver of economic growth at both national and regional levels, and it can contribute to the development of remote areas that possess tourism appeal (Budirahmayani & Khoirunurrofik, 2019; Fadisa et al., 2021; Hariyani, 2018; Rahmayani et al., 2022). Support for tourism development through policy is essential for economic growth as it generates job opportunities, raises household income, and enhances public prosperity (Sutiarso, 2018). Tourism development must comply with regulations and adhere to sustainability principles.

The Ambarawa District in Semarang Regency has significant tourism potential. This is evident in the variety of attractions within its administrative boundaries. The district features several historical landmarks from the Dutch colonial period. Due to its historical significance, the Ambarawa Urban Area has been designated as a strategic location for social and cultural

purposes within the Semarang Regency Spatial Plan for 2023–2043. In addition to cultural tourism, Ambarawa District offers natural attractions, recreational areas, and various points of interest. The district's location, surrounded by mountains and Rawa Pening Lake, enhances its scenic beauty. Additionally, culinary tourism flourishes here, as seen in the popular Ngampin serabi stalls.

Ambarawa's tourism potential is further supported by the presence of seven key tourist attractions listed in the Semarang Regency Tourism Development Master Plan for 2020–2025. These include the Ambarawa Railway Museum, Palagan Ambarawa Monument and Museum, Saint Mary Kerep Ambarawa Cave, Fort Willem I, Ngampin Serabi Culinary Area, Bejalen Tourism Village, and Eling Bening. Among them, the Ambarawa Railway Museum is the most frequently visited. Overall, visitor numbers across several of these attractions have shown an upward trend from 2020 to 2022 (see Figure 1).

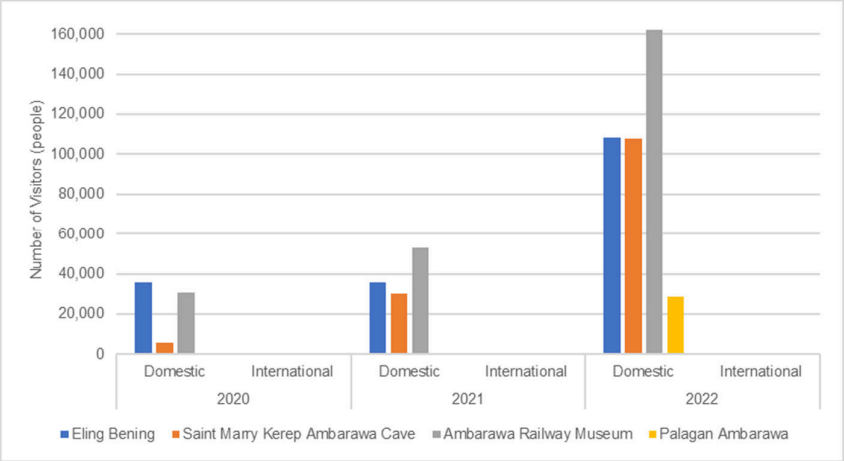


Figure 1 Number of Visitors to Key Tourist Attractions in Ambarawa District, 2020–2022

Source: Dinas Pariwisata Kabupaten Semarang, 2023

Given Ambarawa District's tourism potential, there is a need to integrate spatial planning with tourism development. Formulating a spatial allocation for tourism support facilities becomes essential. However, little attention has been given to developing a spatially explicit approach that links identified tourism support facility needs with GIS-based land availability analysis in Ambarawa District.

To address this gap, this study combines stakeholder-identified tourism facility needs with GIS-based land availability analysis to determine suitable development areas in Ambarawa District. This research offers an integrated spatial allocation framework that uses empirical data and spatial assessment to produce location recommendations that are consistent with existing

planning regulations, providing a clearer and more grounded basis for guiding tourism facility development.

2. METHODS

2.1 Study Area

Ambarawa District is one of the nineteen administrative districts within Semarang Regency. Geographically, it is located between 7°13'55.57" and 7°17'5.95" south latitude, and between 110°21'4001" and 110°26'14.62" east longitude. The total area of Ambarawa spans approximately 2,979.38 hectares, representing about 2.92 percent of the total area of Semarang Regency. Administratively, the district comprises 77 hamlets, 77 neighborhood associations (Rukun Warga/RT), and 346 community associations (Rukun Tetangga/RT) (Badan Pusat Statistik Kabupaten Semarang, 2023).



Figure 2 Administrative Map of Ambarawa District

Source: Authors, 2023

Ambarawa is bordered by Bandungan District to the north, Bawen District to the east, Banyubiru District and Rawa Pening to the south, and Jambu District to the west (see Figure 2 Administrative Map of Ambarawa District). Pasekan Village is the largest administrative unit within the district, while Kranggan Village is the smallest. In terms of topography, most of the area consists of lowland terrain with an average elevation of 521 meters above sea level. The district receives an average annual rainfall of 1,203 mm and experiences approximately 130 rainy days yearly (Badan Pusat Statistik Kabupaten Semarang, 2023).

2.2 Material and Methods

This study utilized both primary and secondary data sources. Primary data were obtained through field observations, ground verification, and interviews, while secondary data were collected from document reviews and relevant literature. These data served as the foundation for profiling and conducting the subsequent analyses. The Tourism Profile of Ambarawa District outlines its administrative role within Semarang Regency, the distribution of tourist attractions, existing tourism support facilities, development potential, land use patterns, and areas excluded from development, such as conservation area and limited development area.

Interviews were conducted to complement the data and to gather more in-depth information regarding tourism development plans in Ambarawa. Respondents were selected using purposive and snowball sampling methods, focusing on key stakeholders such as village officials, tourism village managers, and representatives from the Semarang Regency Tourism Office and Public Works Office. The list of interview participants is provided in the Table 1.

Table 1 List of Interview Respondents

No	Informant	Details	Number of Informants
1	Ambarawa District Officials	The District Secretary, who possesses insight into local conditions, potential, and development plans for the area	1
2	Village Officials	Village heads or secretaries with knowledge of conditions and development initiatives in their respective areas	10
3	Bejalen Tourism Village Manager	Provides information regarding the current status and management of the tourism village	1
4	Semarang Regency Tourism Office	Representatives from the Tourism Industry, Tourism Destinations, and Promotion and Marketing Divisions who offer perspectives on the role of tourism, availability of supporting facilities, community empowerment programs, promotional strategies, and broader development plans within the regency	3
5	Public Works Office	Officials from the Spatial Planning and Land Division, who provide insights on spatial planning related to Ambarawa District, its strategic position, and the challenges and opportunities associated with its development	1

Source: Authors, 2023

The analysis began by identifying tourism and other economic activities closely related to the tourism sector. After gaining a comprehensive understanding of the tourism and economic dynamics in the study area, the research evaluated the need for tourism support facilities. To assess the needs for tourism support facilities, we conducted a review of relevant literature and performed interviews with stakeholders to identify future facilities and/or infrastructures requirements.

Land availability was generated through an overlay process, in which conservation areas and limited development areas were combined and subtracted from the total land area. The remaining polygons represent land that is physically available for development. Conservation areas were defined as land not eligible for development because of protective functions; these included water bodies and their buffer zones, disaster-prone areas, Protected Rice Fields (Lahan Sawah yang Dilindungi/LSD), and other protective functions recorded in the Regional Spatial Plan. Existing land use maps were clipped to these conservation extents to remove ineligible parcels.

Areas classified as limited development comprised public facilities buildings, transportation area, green open space, , paved areas, ponds, and other developed lands are categorized as limited development area, meaning that they are not recommended for new development projects (Yesiana et al., 2023). These classes were reclassified from the land use dataset and subsequently removed from the development candidate set.

Conversely, development land refers to areas that remain available and hold the potential to accommodate various types of future development. The land availability assessment ultimately serves as a basis for space allocation planning, specifically to support the provision of facilities needed to strengthen the tourism potential of the Ambarawa District.

Fieldwork was conducted to observe existing tourism facilities and land conditions before the spatial analysis. These direct observations were used to qualitatively validate the spatial datasets and to ensure the consistency between mapped features and current on-site conditions. Although no quantitative validation was conducted, the field reference served to substantiate the analytical process and provide contextual assurance to the results. This aspect should be further addressed in future research through more systematic validation procedures.

The conceptual framework that guided the formulation of the spatial allocation for tourism support facilities in Ambarawa District is illustrated in Figure 3.

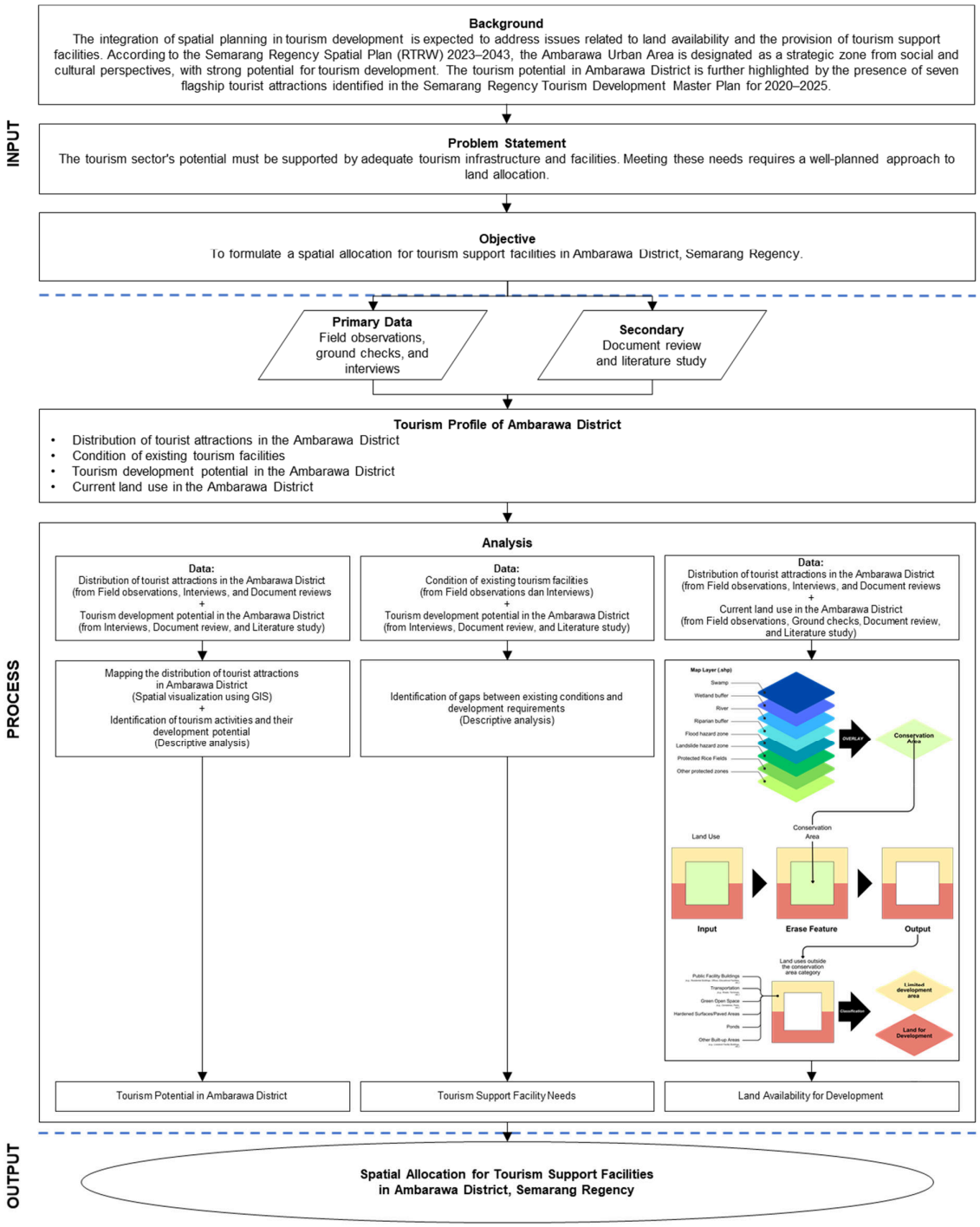


Figure 3 Conceptual Framework

Source: Authors, 2023

3. RESULT AND DISCUSSION

3.1 Tourism Potential in Ambarawa District

According to Law of the Republic of Indonesia Number 10 of 2009 on Tourism, a tourist attraction is defined as anything that possesses uniqueness, beauty, and value in the form of natural wealth, cultural heritage, or man-made creations that serve as points of interest for visitors. Natural attractions encompass both untouched natural resources and cultivated environments that have the potential to draw tourists. These include flora and fauna, unique ecosystems, natural phenomena, and the cultivation of natural resources. Cultural attractions include museums, historical sites, traditional ceremonies, performing arts, and handicrafts. Additionally, there are attractions designed for tourists with specific interests, often categorized as special interest tourism.

Known as a historic town, Ambarawa District holds numerous remnants from the Dutch colonial era. This urban area also has several monuments and landmarks commemorating the Indonesian struggle for independence. Given its historical significance, it is no surprise that Ambarawa has been designated a strategic area in terms of social and cultural interests, as stated in Semarang Regency Regional Regulation Number 6 of 2023 concerning the Spatial Plan of Semarang Regency for the years 2023–2043. Semarang Regency Regional Regulation Number 6 of 2023 concerning the Spatial Plan of Semarang Regency for the years 2023–2043. These historical landmarks serve as unique attractions contributing to Ambarawa's historic town identity.

However, Ambarawa’s appeal is not limited to cultural tourism alone. The area offers a variety of attractions, including natural, man-made, and other forms of tourism. Surrounded by mountains and home to Rawa Pening Lake, the district boasts natural landscapes with high visual appeal. Additionally, it features culinary potential, such as the traditional *serabi* (traditional rice pancake), which is widely sold along the Semarang–Yogyakarta road in Ngampin Village. Based on Figure 4 Map of Tourist Attraction Distribution in Ambarawa District, it is evident that tourism destinations are spread across all villages and urban villages (desa and kelurahan) within the Ambarawa District. However, a concentration of attractions can be observed around Kranggan Urban Village. A map illustrating the distribution of tourist attractions in Ambarawa District is provided below.

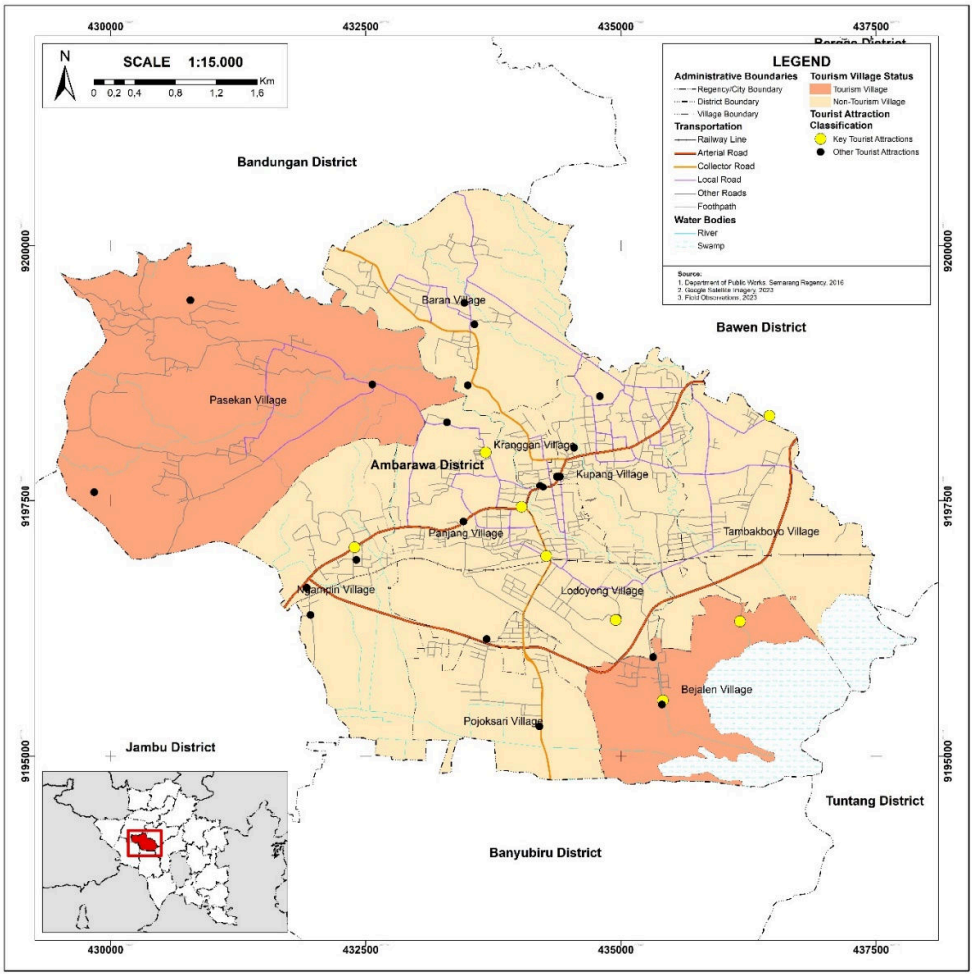


Figure 4 Map of Tourist Attraction Distribution in Ambarawa District

Source: Authors, 2023

Several tourism sites in Ambarawa District can be classified into various categories, including natural tourism, cultural tourism, artificial or man-made tourism, and other types of tourism. The following table presents the classification of tourist attractions in Ambarawa District.

Table 2 Classification of Tourist Attractions in Ambarawa District

No	Type	Tourist Attractions
1	Natural	• Kampoeng Rawa (Bejalen Tourism Village); • Kampung Pelangi (Bejalen Tourism Village); • Bukit Srobi (Pasekan Tourism Village); • Bengkok Village (Pasekan Tourism Village);
2	Cultural	• Ambarawa Railway Museum; • Palagan Ambarawa; • Saint Mary Kerep Ambarawa Cave; • Fort Willem I; • Ngampin Cemetery; • The Tomb of Dr. Cipto Mangunkusumo;

No	Type	Tourist Attractions
		• The Tomb of Kiai Ghozali; • Kadipiro Monument; • The Tomb of Ndang Kiai Tunggul Wulung; • Heritage House I Pemuda Street, Panjang Village • Heritage House II Lodoyong Village • Heritage House III Kupang Village • Heritage House (Former Paper Umbrella Factory) • Joglo House Kranggan Village • Chinese Temple Kranggan Village • The Tomb of Kyai Lembah • Former Assistant Regent's Official Residence, Ambarawa • Former PT. KAI Head's Official Residence • Ladiman Monument • Jago Church Panjang Village • Heritage House IV Ambarawa Village • The Tomb of Kiai Bagus • The Tomb of Kiai Mahfudh Salam.
2	Man-Made	• Eling Bening; • Bu Sri Swimming Pool; • Baran Permai Swimming Pool; • Docah Ambarawa; • Minapolitan (in Ngampin, Bejalen, Pojoksari, dan Panjang).
4	Culinary	• Serabi Ngampin Ambarawa; • Ambarawa Culinary Market.

Source: Authors, 2023

Ambarawa District possesses diverse tourism potential encompassing natural, cultural, man-made, and culinary attractions. In Bejalen Tourism Village, Kampoeng Rawa represents a major natural attraction that integrates scenic landscapes, aquatic recreation, and local culinary experiences centered on freshwater fish farming (Badan Otorita Borobudur, 2021; Ikhsan, 2021). Nearby, Kampung Pelangi offers visual and recreational activities. Pasekan Tourism Village also demonstrates potential for nature-based tourism, although sites such as Bukit Srobi and Bengkok Village have closed. One of the primary factors contributing to the closure of these attractions in Pasekan Village is the lack of human resources for their management (KE/P04/R09/DP).

Cultural tourism remains the district's primary strength, supported by numerous historical sites from the Dutch colonial era. Key attractions include Fort Willem I, the Ambarawa Railway Museum, Palagan Ambarawa Monument, and religious sites such as Gua Kerep Ambarawa and Jago Church, which attract both educational and pilgrimage visitors. Several heritage buildings also present opportunities for future cultural tourism development.

Man-made tourism, encompassing destinations designed for recreational, leisure, and sports activities, is prevalent across several villages in Ambarawa District. One of the prominent man-made tourist attractions is Eling Bening (Putra, 2020), located on the border of

Tambakboyo Sub-district (Ambarawa District) and Bawen District. Eling Bening is among the leading tourist destinations in the Semarang Regency Tourism Development Area (KPPK) 2. Complementing these attractions, culinary tourism, such as the Serabi Ngampin area and the Ambarawa Culinary Market, plays an important role in reinforcing the district's tourism identity and supports local economic activity.

3.2 Tourism Support Facility Needs

Tourism activities can operate smoothly when supported by facilities that enhance visitors' convenience and comfort. For instance, during a tourism trip, visitors require dining options to address hunger and thirst. Another example is the need for overnight accommodation when undertaking tourism trips over an extended period.

In this analysis, the identification of tourism support facility needs is based on the results of interviews, which were then validated through field observations. The table below compares the interview findings with field observations.

Table 3 Tourism Support Facility Needs Based on Interview Findings and Field Observations

No	Interview Findings	Field Observations	Identified Needs
1	Fort Willem I currently uses a shared parking space.	 The parking area, located in front of shops and Dr. Gunawan Mangunkusumo Hospital, spans approximately ±2,200 m^2	As there is no designated parking area at Fort Willem I, and visitors typically use the hospital parking lot, a dedicated parking area for the site is needed
2	Several gazebos are available in Bejalen Tourism Village but are currently in poor condition.	 The gazebos are in fair condition, though their paint has faded	Refurbishment and maintenance of tourism support facilities in Bejalen Tourism Village are needed
3	The Serabi Ngampin stalls are situated along the roadside, and the shoulder is used for parking. There is a proposal to relocate them into a dedicated culinary center at an unused Plantation Official Residence.	 The Serabi Ngampin stalls are located along the Semarang–Yogyakarta road.	A permanent centralized location is needed to accommodate serabi sellers.

No	Interview Findings	Field Observations	Identified Needs
		 The proposed site for Serabi Ngampin culinary hub is not spacious enough	
4	There is no central souvenir shop featuring products specific to Ambarawa. However, gift galleries are available at the Kampoeng Rawa and Eling Bening tourist destinations. Pauline Bakery is the most well-known spot for visitors to buy souvenirs.	 Pauline Bakery is located on the Bawen–Ambarawa road	Establishment of a dedicated souvenir center is needed to promote local products
5	There are nine non-star-rated hotels in Ambarawa.	 Hotels and other types of accommodation are easily found in the town center and eastern area	Accommodation facilities should be added near the developing tourist attractions in the western and northern areas
6	The availability of restaurants is considered adequate.	 Restaurants and eateries are distributed throughout Ambarawa District	Although the current availability is sufficient, new dining facilities may be required near future tourism developments
7	There is a local desire to build a "Kranggan Mart" to create employment opportunities for the surrounding community.	 Minimarkets are easily found in the town center and southern parts of Ambarawa District	There is a need to provide commercial and service facilities in the northern part of Ambarawa District or near developing tourist attractions
8	Numerous flower vendors along the Ambarawa–Bandungan Road require better organization and formalization.	 Many flower shops or ornamental plant vendors are found along the Ambarawa–Bandungan Road	A dedicated ornamental plant and flower market is needed in Baran Village
9	Several villages have potential for micro, small, and medium enterprises (MSMEs). MSME stalls	No MSME centers were identified during the observation	There is a need to establish a dedicated MSME center to

No	Interview Findings	Field Observations	Identified Needs
	are present at Saint Mary Kerep Ambarawa Cave, but a dedicated MSME center is needed to promote and market community products.		promote and market community MSME products

Source: Interview Findings, 2023; Field Observations, 2023; Google Street View, 2023

Based on the table above, the results from interviews and field observations indicate that several facilities are necessary to support tourism activities in Ambarawa Subdistrict. These facilities include accommodations, minimarkets, a souvenir center, eateries, the Serabi Ngampin culinary hub, an ornamental plant and flower market, an MSME center, and parking areas. Therefore, these facilities should be regarded as key inputs for the following stages of analysis.

3.3 Land Availability for Development

The analysis of land availability aims to identify areas suitable for future development. The available land is calculated by subtracting areas designated for conservation and limited development from the total land area. Conservation area refers to areas that must be preserved due to their ecological or protective functions and are not eligible for development. This includes water bodies and their buffer zones, disaster-prone areas, Protected Rice Fields (Lahan Sawah yang Dilindungi/LSD), and other protected zones as outlined in the Regional Spatial Plan (Rencana Tata Ruang Wilayah/RTRW).

Meanwhile, limited development area refers to areas that are not recommended for development due to existing uses or land functions. These include public service buildings, transportation infrastructure, green open spaces, hardened surfaces or paved areas, ponds, and other built-up areas.

The land availability analysis in Ambarawa District indicates that 595.16 hectares of land are potentially available for development. Among the villages, Pasekan Village has the largest share of available land, covering 222.17 hectares (37.33 percent), while Bejalen Village has the smallest, with only 0.03 hectares (0.01 percent).

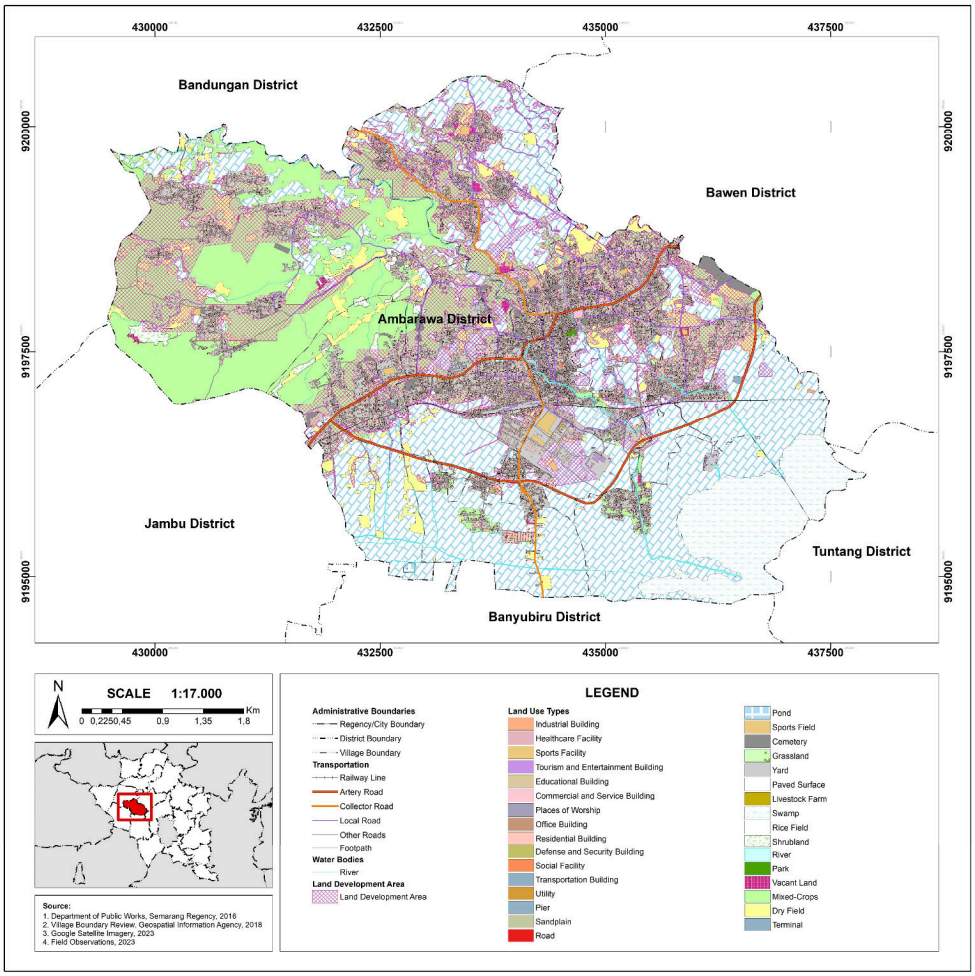


Figure 5 Overlay Map of Land Development Area in Ambarawa District

Source: Authors, 2023

Based on Figure 5 Overlay Map of Land Development Area in Ambarawa District, it can be observed that most of the areas identified as suitable for development are currently open spaces. However, some areas are also utilized for agriculture and livestock purposes. Approximately 69.04 percent of the potential development area is utilized for mixed-crops cultivation. The percentage distribution of development land use is illustrated in the pie chart below (see Figure 6).

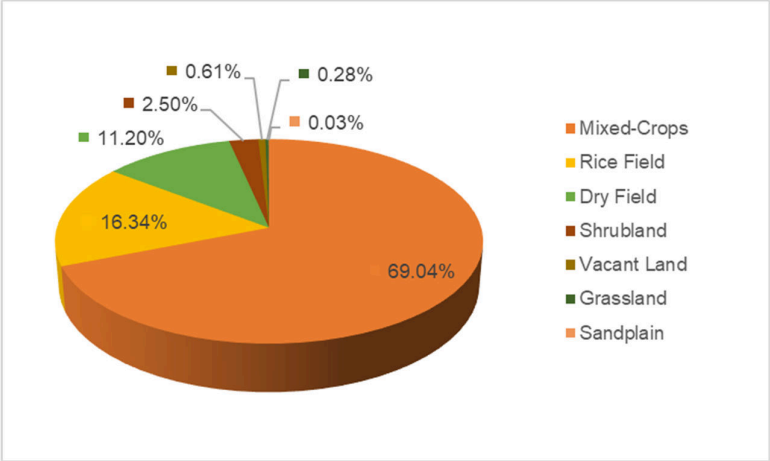


Figure 6 Percentage of Land Development Area by Type in Ambarawa District 2023

Source: Authors, 2023

Rice fields rank second among the types of land use suitable for development, accounting for 16.34% of the total. These rice fields refer to areas not designated as Protected Rice Fields (Lahan Sawah yang Dilindungi/LSD) in Semarang Regency. Meanwhile, dry fields or tegalan occupy the third position, comprising 11.20% of the potential development area. A detailed breakdown of land development by type in Ambarawa District is presented in the following table.

Table 4 Land Development Area by Type in Ambarawa District 2023

No	Type of Land Use	Area (ha)	Percentage (%)
1	Sandplain	0.17	0.03
2	Grassland	1.67	0.28
3	Rice Field	97.24	16.34
4	Shrubland	14.85	2.50
5	Vacant Land	3.66	0.61
6	Mixed-Crops	410.88	69.04
7	Dry Field	66.69	11.20
	Total	**595.16**	**100.00**

Source: Authors, 2023

The largest area of land available for development is currently utilized for mixed-crops cultivation, totaling 410.88 hectares. This is followed by 97.24 hectares of rice fields, 66.69 hectares of dry fields (tegalan), 14.85 hectares of shrubland, 3.66 hectares of vacant land, 1.67 hectares of grassland, and 0.17 hectares of sandplain.

3.4 Spatial Allocation for Tourism Support Facility Development

Most of the tourism support facilities required in Ambarawa District are economic facilities, as this urban area is generally already equipped with adequate basic infrastructure. These economic facilities should be prioritized in future development to support the district's

tourism potential (Dalimunthe et al., 2020). The tourism support facilities that require spatial allocation include parking area, serabi culinary hub, souvenir center, accommodation facility, eatery, minimarket or convenience store, ornamental plant and flower market, and an MSME center. These tourism support facilities should ideally be near tourist attractions to enhance visitor accessibility. Key criteria for locating these facilities are detailed in the table below.

Table 5 Criteria for Determining the Location of Tourism Support Facilities

No	Facility	Criteria	Reference
1	Souvenir Center	• Easy access • Located near tourist attractions	Regulation of the Minister of Tourism of the Republic of Indonesia No. 3 of 2018 on Technical Guidelines for the Management of the Physical Special Allocation Fund in the Tourism Sector
2	Culinary Center	• Easy access • Does not disrupt traffic flow • Accessible by tourism buses	Regulation of the Minister of Tourism of the Republic of Indonesia No. 3 of 2018 on Technical Guidelines for the Management of the Physical Special Allocation Fund in the Tourism Sector
3	Hotel	• Easily accessible by public and private transportation • Four-wheeled vehicles can enter the hotel area	Decree of the Director General of Tourism No. 14/U/II/88 on the Implementation of Hotel Business Provisions and Classification
4	Minimarket	• Permitted within the primary local road network system in residential areas • Chained minimarkets are only allowed to be located on primary arterial roads	Regional Regulation of Semarang Regency No. 2 of 2018 on the Structuring and Development of Traditional Markets, Shopping Centers, and Retail Stores
5	Eatery	• Easy access • Located near tourist attractions	Waluya (2012)
6	Parking Area	• Off-street parking should be designated as a separate activity • Provided support activities in the main building	Regional Regulation of Semarang Regency No. 2 of 2018 on the Structuring and Development of Traditional Markets, Shopping Centers, and Retail Stores

Source: Authors, 2023

In general, the placement of tourism support facilities should prioritize accessibility to ensure convenience for both domestic and international visitors. Facilities located near primary transportation routes and within proximity to major tourist attractions are more likely to be utilized effectively and contribute to an enhanced visitor experience. The criteria outlined above serve as a strategic framework to guide the spatial allocation of such facilities, ensuring that development efforts are well-aligned with tourism demand, spatial efficiency, and local planning regulations. Integrating these considerations into future development plans can support sustainable tourism growth and improve the overall quality of tourism services in Ambarawa District.

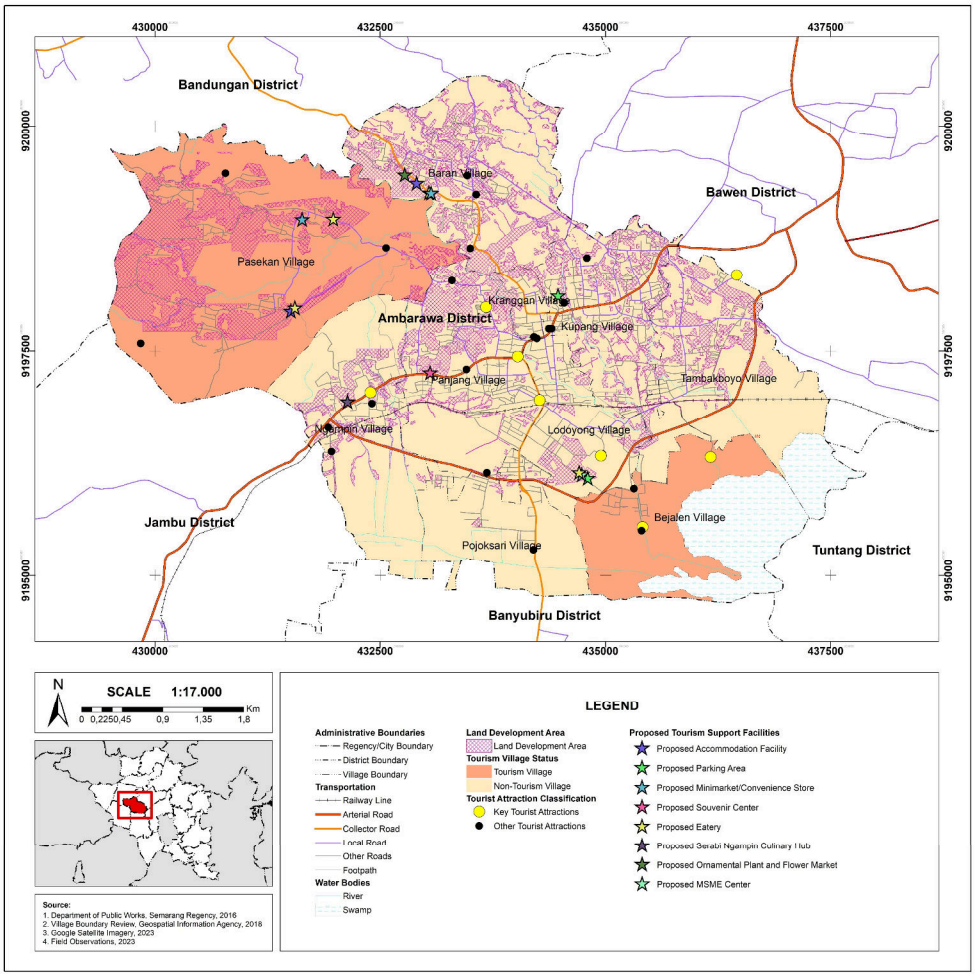


Figure 7 Map of Proposed Spatial Allocation for Tourism Support Facilities in Ambarawa District

Source: Authors, 2023

The proposed spatial allocation of tourism support facilities in Ambarawa District was developed based on the distribution and current condition of existing facilities, an analysis of tourism support facility needs, and the location criteria outlined in the Table 5. These factors were integrated into a comprehensive development plan, as illustrated in the Map of Planned Spatial Allocation for Tourism Support Facilities in Ambarawa District.

The proposed facilities include commercial and service infrastructure, along with transportation-related elements, such as accommodations, minimarkets, a souvenir center, restaurants, Serabi Ngampin culinary hub, an ornamental plant and flower market, an MSME center, and parking areas. Accommodations, minimarkets, and eateries are allocated to support future tourism activities in Pasekan Village and Baran Village. Serabi Ngampin culinary hub is designated for Ngampin Village, while the ornamental plant and flower market is planned for

Baran Village. The souvenir center is proposed in Panjang Village due to its strategic location near the main road and the Palagan Ambarawa Museum, which is designated as a future shuttle hub. Around Fort Willem I, where feasible, the development of a parking area, an MSME center offering food and souvenirs, and a cafeteria or eatery is recommended. This preliminary spatial allocation is based on the assumption that land acquisition can be achieved as needed. Any additional requirements that do not involve spatial allocations will be addressed through maintenance efforts. This includes the upkeep of gazebos in Bejalen Tourism Village to ensure their long-term functionality.

This study confirms that the spatial allocation framework for tourism support facilities in Ambarawa aligns with global principles of sustainable and community-based tourism. Comparable to Serbia and Italy, where community-led facility planning enhances local empowerment (Turčinović et al., 2025), Ambarawa adopts a participatory approach through MSME centers, culinary hubs, and small-scale accommodations. In Asia, Ambarawa's findings resonate with models integrating spatial analysis and community engagement. Taiwan's GIS-based facility planning (Chen et al., 2022) and Malaysia's GIS-SMCDA model (Marzuki et al., 2023) showcase precise, data-driven approaches to sustainability, while Thailand and Vietnam emphasize policy coordination (Lin et al., 2023; Nguyen, 2021; Suntararak & Boonyanmethaporn, 2024). In contrast, Ambarawa advances a framework where spatial allocation derives from stakeholder needs and negotiated priorities.

Table 6 Comparative Overview of Tourism Facility Planning Practices

No	Country/Region	Best Practices	Relevance
1	Serbia and Italy	Community-led facility planning enhances local competitiveness and empowerment through participatory governance and small-scale entrepreneurship (Turčinović et al., 2025).	Similar to Ambarawa's MSME-based and community-driven approach, where local involvement in tourism facility provision fosters equitable economic benefits. However, Ambarawa operates with more limited institutional capacity, requiring adaptive and incremental governance strategies.
2	Taiwan	GIS-based spatial analysis and multi-criteria evaluation ensure optimal facility placement near public infrastructure and attractions, improving accessibility and land-use efficiency (Chen et al., 2022).	Aligns with Ambarawa's spatial reasoning that integrates accessibility and attraction proximity. Ambarawa's analysis remains qualitative, based on local observation and stakeholder dialogue rather than algorithmic spatial modeling.
3	Malaysia	GIS–SMCDA (Spatial Multi-Criteria Decision Analysis) model integrates spatial data and sustainability indicators to identify suitable eco-tourism development zones in Pahang (Marzuki et al., 2023).	Provides a relevant methodological reference for future refinement of Ambarawa's model. While Malaysia applies advanced geospatial computation, Ambarawa contributes an empirical example of how participatory spatial

No	Country/Region	Best Practices	Relevance
			reasoning can operate effectively under limited data and technological capacity.
4	Thailand	Infrastructure planning for wellness and rural tourism emphasizes multi-criteria decision-making, visitor comfort, and conservation-based growth supported by integrated policy frameworks (Suntararak & Boonyanmethaporn, 2024).	Reflects the same sustainability logic as Ambarawa's tourism development strategy, which prioritizes visitor comfort and balanced spatial distribution, though implemented with limited quantitative assessment and policy integration.
5	Vietnam	Sustained investment in essential tourism infrastructure, together with adaptive and stakeholder-driven recovery strategies, forms an effective foundation for strengthening destination competitiveness and resilience. (Lin et al., 2023; Nguyen, 2021).	While Vietnam demonstrates the importance of strong policy direction and sustained infrastructure investment, the Ambarawa case adapts these insights through a bottom-up process that incorporates local stakeholder input in identifying facility needs.

Source: Authors, 2025

The findings indicating that Ambarawa District requires a parking area, a Serabi culinary hub, a souvenir center, accommodation facilities, eateries, minimarkets or convenience stores, an ornamental plant and flower market, and an MSME center are consistent with evidence from Vietnam, where Nguyen (2021) highlights the need to prioritize transport and communications infrastructure, the hotel and restaurant industry, and recreational facilities. The absence of communication-related facilities in the present study therefore becomes an important point for future consideration. In terms of spatial distribution, the results correspond to the conclusions of Marzuki et al. (2023), particularly regarding the exclusion of conservation land from development zones. This perspective is further expanded by Chen et al. (2022), who emphasizes that tourism support facilities more effectively when located near public services in order to optimize service coverage. In this study, facility allocation was guided by the proximity of tourist attractions and existing road access. Moreover, Turčinović et al. (2025) support the relevance of community participation by demonstrating its contribution to strengthening sustainable tourism development, while findings from Suntararak & Boonyanmethaporn (2024) similarly show that the provision of well-planned facilities, supported by adequate infrastructure and policy frameworks, can enhance tourism potential. Overall, these comparisons indicate that the findings from Ambarawa are broadly aligned with international studies, although there remains room to deepen the spatial analysis and to expand the range of facilities.

The novelty of this research lies in its distinct geographical focus on a small historic town characterized by spatial limitations and in its integration of land availability analysis with stakeholder-based identification of facility needs through qualitative interviews. This approach

effectively bridges the physical and institutional dimensions of planning, translating local qualitative insights into spatially applicable strategies. Although the analysis remains primarily descriptive and lacks quantitative validation, the proposed framework offers a transferable model for small historic towns aiming to enhance coordination between tourism and spatial planning, guide investment in tourism facilities, and foster community-based tourism.

4. CONCLUSIONS

This study emphasizes the significant tourism potential of Ambarawa District. Its strategic location, easy access from major neighboring cities, and various attractions—including natural, cultural, man-made, and culinary tourism—contribute to this potential. The district's historical relics and natural landscapes create a strong foundation for enhancing its appeal as a tourism destination. However, realizing this potential necessitates strategic spatial planning to address land availability constraints and ensure the provision of adequate tourism support facilities.

The analysis identifies 595.16 hectares of land suitable for development, primarily consisting of mixed-crop areas and rice fields, while excluding protected zones. Guided by national and regional regulations, the proposed spatial plan ensures that the development of tourism-support facilities aligns with accessibility, traffic, and spatial planning standards. The plan prioritizes the provision of key facilities such as accommodations, minimarkets, a souvenir center, eateries, the Serabi Ngampin culinary hub, a flower market, an MSME center, and parking areas, and also recommends maintenance of existing facilities to sustain their functionality without additional land use.

In conclusion, this study can contribute to the scientific understanding of how spatial analysis can be integrated with tourism facility planning at the local scale. By combining stakeholder-based facility identification with GIS-based land suitability assessment, it advances a practical framework for spatial allocation that bridges empirical data and planning policy. This integrative approach demonstrates that data-driven spatial approach can enhance decision-making accuracy in determining tourism support facility locations, particularly in areas with limited land availability such as Ambarawa District.

The findings offer several policy implications. First, local governments should strengthen the integration of tourism planning with spatial planning instruments to ensure that supporting facilities are allocated to land that meets suitability and regulatory criteria. Second, the provision of key facilities such as parking areas, culinary centers, MSME spaces, and

accommodation should be prioritized in accordance with local needs identified through stakeholder engagement. Third, sustained community participation is essential for ensuring that facility development aligns with local values and contributes to long-term sustainability. Finally, effective land-use control is required to maintain spatial integrity and prevent development pressure on conservation and ecologically sensitive areas. Despite these contributions, the study is constrained by limited spatial data and insufficient quantitative validation. Future research should consider incorporating expert weighting, more advanced spatial analysis, and additional quantitative techniques to enhance data reliability and strengthen the linkage between spatial planning and the implementation of tourism development strategies.

5. REFERENCES

Adisasmita, R. (2010). *Pembangunan Kawasan dan Tata Ruang*. Graha Ilmu.

Badan Otorita Borobudur. (2021). *Kampoeng Rawa, Perpaduan Wisata Alam dan Kuliner di Ambarawa*. Badan Otorita Borobudur. https://bob.kemenparekraf.go.id/37170-kampoeng-rawa-perpaduan-wisata-alam-dan-kuliner-di-ambarawa/

Badan Pusat Statistik Kabupaten Semarang. (2023). *Kecamatan Ambarawa dalam Angka 2023*. Badan Pusat Statistik Kabupaten Semarang.

Budirahmayani, A., & Khoirunurrofik, K. (2019). Tourism and Economic Growth: Spatial Perspective. *Achieving and Sustaining SDGs 2018 Conference: Harnessing the Power of Frontier Technology to Achieve the Sustainable Development Goals (ASSDG 2018)*, *216*, 7–24. https://doi.org/10.2991/assdg-18.2019.2

Chen, Y.-C., Yao, H.-L., Weng, S.-D., & Tai, Y.-F. (2022). An Analysis of the Optimal Facility Location of Tourism Industry in Plain Region by Utilizing GIS. *SAGE Open*, *12*(2), 1–14. https://doi.org/10.1177/21582440221095020

Dalimunthe, D. Y., Valeriani, D., Hartini, F., & Wardhani, R. S. (2020). The Readiness of Supporting Infrastructure for Tourism Destination in Achieving Sustainable Tourism Development. *Society*, *8*(1), 217–233. https://doi.org/10.33019/society.v8i1.149

Dinas Pariwisata Kabupaten Semarang. (2023). *Jumlah Pengunjung Wisata di Kabupaten Semarang*. Satu Data Indonesia Kabupaten Semarang. https://data.semarangkab.go.id/ckan/dataset/jumlah-pengunjung-wisata-di-kabupaten-semarang

Keputusan Direktur Jenderal Pariwisata Nomor 14/U/II/88 tentang Pelaksanaan Ketentuan Usaha dan Penggolongan Hotel, 1 (1988).

Keputusan Direktur Jenderal Perhubungan Darat Nomor 272/HK.105/DRJD/96 tentang Pedoman Teknis Penyelenggaraan Fasilitas Parkir, 1 (1996).

Fadisa, N., Syamsurizaldi, & Koeswara, H. (2021). Pembangunan Pariwisata Berkelanjutan pada Kawasan Geopark Ngarai Sianok Maninjau di Kota Bukittinggi. *Jurnal Administrasi Publik Dan Pembangunan*, *3*(2), 73–78. https://doi.org/10.20527/jpp.v3i2.3985

Hariyani, H. F. (2018). Tourism Sector Performance on Indonesia's Economic Growth. *Jurnal Ekonomi Pembangunan*, *16*(1), 45–56. https://doi.org/10.22219/jep.v16i1.8184

Huser, B. (2011). Integrated Spatial Planning. *GEOMATICA*, *65*(3), 255–265. https://doi.org/10.5623/cig2011-042

Ikhsan, M. F. N. (2021). *Santap Siang Sambil Memancing Bersama Keluarga di Rawa Pening*. Bisnis.Com. https://semarang.bisnis.com/read/20210514/535/1393918/santap-siang-sambil-memancing-bersama-keluarga-di-rawa-pening

Peraturan Menteri Pariwisata Republik Indonesia Nomor 3 Tahun 2018 tentang Petunjuk

Operasional Pengelolaan Dana Alokasi Khusus Fisik Bidang Pariwisata, 1 (2018).

Lin, W.-C., Wu, C. K., Le, T. K. T., & Nguyen, N. A. (2023). Assessment of Vietnam Tourism Recovery Strategies after COVID-19 Using Multi-Criteria Decision-Making Approach. *Sustainability*, *15*(10047), 1–22. https://doi.org/10.3390/ su151310047

Marzuki, A., Bagheri, M., Ahmad, A., Masron, T., & Akhir, M. F. (2023). Establishing a GIS-SMCDA model of sustainable eco-tourism development in Pahang, Malaysia. *Episodes Journal of International Geoscience*, *46*(3), 375–387. https://doi.org/10.18814/epiiugs/2022/022037

Nguyen, Q. H. (2021). Impact of Investment in Tourism Infrastructure Development on Attracting International Visitors: A Nonlinear Panel ARDL Approach Using Vietnam's Data. *Economies*, *9*(131), 1–19. https://doi.org/10.3390/ economies9030131

Nijkamp, P., & Scholten, H. J. (1993). Spatial information systems: design, modelling, and use in planning. *International Journal of Geographical Information Systems*, *7*(1), 85–96. https://doi.org/10.1080/02693799308901941

Undang-Undang Republik Indonesia Nomor 10 Tahun 2009 tentang Kepariwisataan, 1 (2009).

Peraturan Pemerintah Nomor 21 Tahun 2021 tentang Penyelenggaraan Penataan Ruang, 1 (2021).

Peraturan Daerah Kabupaten Semarang Nomor 2 Tahun 2018 tentang Penataan dan Pembinaan Pasar Rakyat, Pusat Perbelanjaan dan Toko Swalayan, 1 (2018).

Peraturan Daerah Kabupaten Semarang Nomor 8 Tahun 2019 tentang Rencana Induk Pembangunan Kepariwisataan Kabupaten Semarang Tahun 2020-2025, 1 (2019).

Peraturan Daerah Kabupaten Semarang Nomor 6 Tahun 2023 tentang Rencana Tata Ruang Wilayah Kabupaten Semarang Tahun 2023-2043, (2023).

Putra, D. T. (2020). Infrastruktur Pendukung Potensi Daya Tarik Wisata Berdasarkan Segmen Wisatawan di Eling Bening Ambarawa Kabupaten Semarang Jawa Tengah. *Gemawisata: Jurnal Ilmiah Pariwisata*, *16*(3), 159–172.

Rahmayani, D., Oktavilia, S., Suseno, D. A., Isnaini, E. L., & Supriyadi, A. (2022). Tourism Development and Economic Growth: An Empirical Investigation for Indonesia. *Economics Development Analysis Journal*, *11*(1), 1–11. https://doi.org/10.15294/edaj.v11i1.50009

Suntararak, P., & Boonyanmethaporn, W. (2024). Building the future of rural-based wellness tourism : Infrastructure and policy considerations for rural Thailand. *Journal of Infrastructure, Policy and Development*, *8*(14), 1–18. https://doi.org/10.24294/jipd9387

Sutiarso, M. A. (2018). Pengembangan Pariwisata yang Berkelanjutan Melalui Ekowisata. *OSFPreprint*, *September*, 1–11. https://doi.org/10.31219/osf.io/q43ny

Turčinović, M., Vujko, A., & Stanišić, N. (2025). Community-Led Sustainable Tourism in Rural Areas : Enhancing Wine Tourism Destination Competitiveness and Local Empowerment. *Sustainability*, *17*(2878), 1–23. https://doi.org/10.3390/ su17072878

Waluya, B. (2012). Sarana dan Prasarana Pariwisata. In *Universitas Pendidikan Indonesia* (pp. 1–7). Universitas Pendidikan Indonesia. http://file.upi.edu/Direktori/FPIPS/JUR._PEND._GEOGRAFI/197210242001121-Bagja_Waluya/Geografi_Pariwisata/Kriteria_Prasarana_dan_Sarana_Pariwisata.pdf

Yesiana, R., Septiarani, B., Astuti, K. D., Anggraini, P., Pardcipta, J. S., Pradana, G. A., & Pandie, A. R. (2023). Strengthening City Branding Through Investment in Ambarawa Urban Area, Semarang Regency. *IOP Conference Series: Earth and Environmental Science*, *1264*(1), 12006. https://doi.org/10.1088/1755-1315/1264/1/012006

Yin, J., Dong, J., Hamm, N. A. S., Li, Z., Wang, J., Xing, H., & Fu, P. (2021). Integrating remote sensing and geospatial big data for urban land use mapping: A review. *International Journal of Applied Earth Observation and Geoinformation*, *103*, 102514. https://doi.org/10.1016/j.jag.2021.102514