



Mapping the Structure of Tourist Space in the North Bandung Conservation Area

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Abstract

Sustainable land management is a concept that is integrated between various aspects. This research uses a quantitative approach with the aim of mapping the tourism spatial structure in the North Bandung Conservation Area (KBU). It is recorded in West Java Provincial Government data (2021) that 20.4% of (TAOs) in West Java is in the North Bandung area. So this has great potential in terms of the number of tourist visits. Apart from that, the geographical position of the North Bandung area which is close to other metropolitan cities means that (TAOs) in this area increasingly has large tourist market potential. As a result, the development of tourism and its supporting facilities will also accelerate. This condition will certainly encourage land conversion activities. The occurrence of land conversion in KBU requires control in the implementation stage of space use patterns. The results of the analysis show that creating appropriate zoning in the tourist space structure is an important step in maintaining the authenticity of nature and culture in the North Bandung area. The use of tourist areas in this zone places more emphasis on the ecotourism aspect, with development potential covering an area of 16331.20 hectares located in zone I A (prohibited zone). The next development direction is level I and II buffer zones. The buffer zone is a zone that can be used for the construction of secondary or conditional facilities.

Abstrak

Pengelolaan lahan berkelanjutan merupakan sebuah konsep yang terintegrasi antara berbagai aspek. Penelitian ini menggunakan pendekatan kuantitatif dengan tujuan untuk memetakan struktur ruang wisata di Kawasan Konservasi Bantung Utara (KBU). Tercatat dalam data Pemerintah Provinsi Jawa Barat (2021) sebesar sebesar 20,4% ODTW di Jawa Barat terdapat di Kawasan Bandung Utara. Sehingga hal tersebut menjadi potensi yang besar dalam hal jumlah kunjungan wisatawan. Disamping itu posisi geografis Kawasan Bandung Utara yang memiliki jarak yang dekat dengan kota metropolitan lainnya menjadikan ODTW di kawasan ini semakin memiliki potensi pasar wisatawan yang besar. Hasilnya perkembangan pariwisata dan fasilitas pendukungnya juga akan semakin pesat. Kondisi ini tentu akan mendorong kegiatan alih fungsi lahan. Terjadinya alih fungsi lahan di KBU memerlukan pengendalian dalam tahap pelaksanaan pola pemanfaatan ruang. Hasil analisis menunjukkan bahwa pembuatan zonasi yang tepat dalam struktur ruang wisata merupakan langkah penting dalam menjaga keaslian alam dan budaya di kawasan Bandung Utara. Pemanfaatan kawasan wisata di zona ini lebih menekankan kepada aspek ekowisata, dengan potensi pengembangan seluas 16331,20 Ha yang berada pada zoana I A (zona terlarang). Arahan pengembangan selanjutnya ialah zona penyangga tingkat I dan II. Zona penyangga merupakan zona yang dapat dimanfaatkan untuk pembangunan fasilitas sekunder ataupun kondisional.

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INTRODUCTION

The North Bandung Area (KBU) is one of the most strategically located areas in terms of social, economic, and physical conditions. This is because of its location in the Bandung Basin, which is the capital and the center of activities. As a highland area, KBU boasts diverse ecosystems, leading to high tourism attractiveness. Tourism is one of the fastest-growing service industries with plenty of opportunities for further development. On the other hand, KBU also serves an ecological function as a groundwater conservation area. This is based on West Java Regional Regulation No. 2 of 2016 concerning guidelines for controlling the utilization of space in the North Bandung area as a strategic area in West Java.

The rapid growth of the tourism sector will undoubtedly drive land use conversion activities, both for the development of main facilities and supporting tourism infrastructure. It is well known that uncontrolled land use conversion will impact groundwater availability. Several previous studies have highlighted the complexity of the relationship between tourism development and environmental preservation, particularly in the context of groundwater conservation. The findings of these studies indicate that without a wise approach, tourism development has the potential to harm natural conservation, including groundwater. (Bramwell et al., 2017; Gelbman, 2022; Ruhanen et al., 2019). Therefore, understanding these challenges is crucial for formulating balanced policies between tourism development and environmental protection in groundwater conservation areas.

Based on this, a study on mapping the tourism spatial structure in the North Bandung Area becomes necessary. Mapping the tourism spatial structure in the North Bandung Area is not just about

determining locations for tourism infrastructure development but also about protecting and preserving the existing natural diversity.

Currently, studies on the North Bandung area predominantly focus on land use conversion and its relation to disasters in general. (Wijayakusuma, B. 2023; Samodro et al., 2020; Yasmira, 2014) are more focused on land use conversion that may lead to disasters, environmental damage due to population growth, land cover changes, and groundwater conservation with conservation index analysis in some areas of KBU, land conservation from the aspect of cropping patterns, as well as solutions based on licensing aspects for handling KBU. In this regard, there is a lack of research specifically addressing the impacts of land use conversion resulting from tourism sector development.

Mapping the tourism spatial structure will provide the necessary framework for developing comprehensive and sustainable strategies. This strategy is important in developing sustainable destination (Subakti et al., 2020). Through this approach, areas with high ecological value can be identified in terms of their spatial structure and patterns. Thus, this mapping will serve as an effective instrument in achieving the necessary balance between economic development, environmental conservation, and social well-being in the area. With an awareness of its urgency and complexity, mapping the tourism spatial structure in the North Bandung Area becomes a crucial step in addressing the future challenges faced by tourism and the environment

LITERATURE REVIEW

Tourism in Conservation Areas

Tourism in conservation areas is a complex phenomenon, where the development of tourism infrastructure

must be balanced with efforts for sustainable environmental conservation. Various studies have highlighted that tourism development in conservation areas can provide significant economic benefits. (Prayag, 2020). However, on the other hand, it can also cause negative impacts on the environment if not managed wisely, where these impacts can not only endanger the environment but also the economic sustainability and well-being of local communities. (Dolnicar, 2020; Koens et al., 2018; Ramkissoon, 2023). Therefore, tourism management in conservation areas requires a holistic approach, considering ecological, social, and economic aspects.

Tourism Business District (TBD)

The concept of the Tourism Business District (TBD) offers an integrated approach to tourism development in conservation areas. In TBD, various tourism facilities such as accommodations, restaurants, and shopping centers are concentrated within a well-managed area (Getz, 1993). This approach allows for efficient and sustainable management of resources while creating a comfortable and attractive environment for visitors. Through integrated management, TBD can help reduce pressure on the surrounding natural environment while increasing the economic contribution of tourism to the local community (Andriotis et al., 2024).

Approach to Tourism Facilities in Conservation Areas

The facilities approach in tourism development in conservation areas emphasizes the construction of environmentally friendly and sustainable infrastructure (Khairi & Darmawan, 2021). Through this approach, facilities such as well-maintained hiking trails, eco-friendly toilets, and tourist information centers can help preserve nature while providing a positive tourism experience for visitors.

The facilities approach also enables tourism managers to control the negative impacts of tourist visits, such as soil erosion, water pollution, and disturbance to wildlife (Rahmafitria et al., 2020).

Tourism, Land Conversion, and Water Conservation

Land use conversion from tourism to water conservation is an important strategy in efforts to maintain the sustainability of conservation areas. Previous research indicates that shifting land from intensive tourism use to water conservation functions can enhance the ecological resilience of the area and provide long-term benefits for local communities and the surrounding environment (Mubarokah & Hendrakusumah, 2022; Yusyaf et al., 2024). However, it is important to consider social and economic aspects in this land use conversion process and involve various stakeholders to achieve sustainable consensus.

RESEARCH METHOD

This journal employs a quantitative approach by calculating indicators using specific formulas based on literature review. Additionally, analysis is conducted through literature studies using data from reliable sources such as government agencies. Some secondary data sources used in the analysis include statistical data such as population figures, tourist numbers, distances between destinations, distances from destinations to supporting facilities, regional spatial planning documents (RTRW), books, and scientific journals with similar topics. Furthermore, field survey methods are employed to plot tourist facilities and observe phenomena in the field.

The spatial structure consists of regional hierarchy and connectivity between regions. To analyze the tourism

regional hierarchy in the North Bandung Area, the centralization analysis technique is used with the following formula:

$$C = (t/T) \dots\dots\dots (1)$$

Explanation:

- C : Weight of the function
- t : Total centrality value
- T : Total number of functions in the area under consideration

To analyze the level of interaction between regions in the North Bandung Area, the gravity analysis technique is used. (Azizbek, 2020) mentions that the gravity model is used to estimate the potential between regions, so the assumption is that the greater the attractiveness value (gravity) of a region, the greater the potential for interaction and centrality, and the more strategic the value of its location. The formula for calculating interactions between regions using the gravity model is as follows:

$$I_{12} = \frac{a P_1 P_2}{J^{b12}} \dots\dots\dots(2)$$

Explanation:

- I12 : Interaction (attraction) between region 1 and 2
- P1 : Mass (tourists) of destination 1
- P2 : Mass (tourists) of destination 2
- J12 : Distance between region 1 and 2
- a : Proportional constant (usually equals 1)
- b : Distance exponent (original model value is 2)

In analyzing connectivity within the tourism spatial structure, the Konig Shimbel technique is employed. This analysis technique can demonstrate the level of interconnectedness between regions. The formula for the connectivity analysis technique between regions.

In addition to the aforementioned analyses, spatial analysis using ArcGIS mapping software is also utilized. Several

spatial analysis techniques employed include overlay and network analysis.

RESULTS AND DISCUSSION

Utilization of Space as a Tourist Area in the North Bandung Area

North Bandung is an area abundant with various facilities, particularly in the tourism sector. The attractions offered encompass not only artificial amusement parks but also the natural beauty and local cultural heritage. One of the highly frequented tourist destinations in the region is the North Bandung Area (KBU). This is primarily due to the geographic allure of KBU, making it a magnet for tourists. Overall, the North Bandung Area presents a plethora of captivating tourist destinations. From stunning natural landscapes such as mountains, lakes, and tea plantations to historical heritage sites and a unique urban ambiance, the area caters to a wide range of visitor interests. By combining natural beauty, historical significance, and a diverse array of facilities, the North Bandung Area emerges as an enticing tourist destination that beckons prospective travelers to visit.

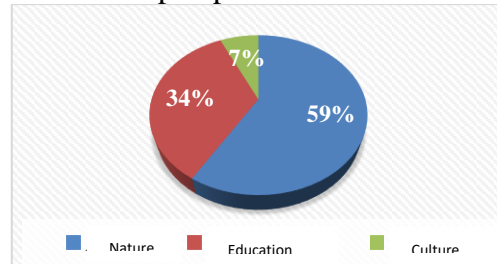


Figure 1. Percentage of TAOs Based on It's Characteristics

Source: Analysis (2023)

Based on the data, it can be concluded that tourist attraction objects (TAOs) in the North Bandung Area (KBU) are predominantly characterized by Nature and Education. The percentage of TAO characteristics in the North Bandung Area is 59% nature-themed, 34% education-themed, and 7% culture-

themed. The dominance of TAOs with nature and education characteristics is closely related to the geographic conditions of KBU, which are dominated by fault areas, thus offering abundant natural potential attractions such as waterfalls, pine forests, etc. In addition to TAOs with nature characteristics, another dominant aspect is also shown by TAOs with educational characteristics, where the attractions offered are educational landmarks and artificial structures.

Based on field observations, it was found that the characteristics of tourist destinations in KBU consist of three main aspects: educational tourism, natural landscapes, and local culture. Information regarding the list of frequently visited tourist destinations based on observation results can be seen in Table 1 and Figure 1.

Table 1. Tourist Attraction Object (TAOs) In KBU

No	Tourist Attraction Objects (TAOs)	Characteristics of TAOs
1	Alam Wisata Cimahi Resort	Nature
2	Bandung Treetop Adventure Park	Nature
3	Moko Hill	Nature
4	Dago Dreampark	Nature
5	Fairy Garden	Nature
6	Hobbiton Lembang	Nature
7	Jendela Alam	Nature
8	Punclut Areas	Nature
9	Orchid Forest Cikole	Nature
10	Ir. H. Djuanda Forest Park	Nature
11	Karaton Cliff	Nature
12	Grafika Cikole	Nature
13	Pasir Ipis	Nature
14	Batu Kuda	Nature
15	Pakuhaji Bandung	Nature
16	Wisata Puncak Bintang	Nature
17	Cimahi Square Park	Culture
18	Cipageran Buyut Village (Kabuci) Asih Putera	Culture
19	Bird Pavilion at Pramestha	Education
20	Farmhouse Susu Lembang	Education
21	Floating Market Lembang	Education
22	Kebun Begonia	Education
23	Lembang Mini City	Education
24	Manglayang Jungle Place	Education
25	Miniature Railway Park	Education
26	Rabbit Town	Education
27	Rainbow Garden Lembang	Education
28	Sendang Geulis Kahuripan	Education

Source: Analysis (2023)

Next, the data was analyzed using nearest neighbor analysis, revealing that the distribution pattern of TAOs in the North Bandung Area tends to cluster. This clustering is typically associated with the availability of facilities in the area, such as accommodations, roads, shopping centers, and others. This aligns with the opinion of (Jóźwiak & Sieg, 2021), stating that facilities play a crucial role in the development of tourist destinations, serving not only as supporting facilities but also as primary facilities capable of driving tourist activities in an area. To view the results of the nearest neighbor analysis on the distribution of TAOs in the North Bandung Area, refer to Figure 2.

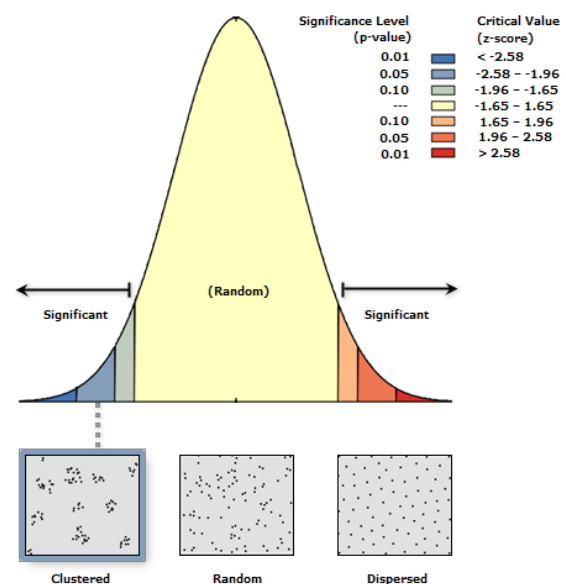


Figure 2. The distribution pattern of TAOs in the North Bandung Area
Source: Analysis (2023)

The distribution of Tourist Attraction Objects (TAOs) in the North Bandung Area

The North Bandung Area holds great potential for developing tourist attraction objects (TAOs) with characteristics of education, nature, and culture. This is supported by the favorable geographical conditions and the

availability of facilities. For example, the presence of quality educational institutions in this area, such as universities and schools, can be utilized to integrate tourism activities with education. For instance, the development of interactive museums, nature research centers, or botanical gardens can provide enjoyable learning experiences for visitors while raising awareness of the importance of environmental conservation. The development of education-themed tourist attractions in conservation areas can play a significant role in raising public awareness of the importance of nature and environmental preservation. Through integrated educational programs, visitors can learn about biodiversity, ecosystems, and principles of environmental conservation. This will help create a generation that is caring and responsible towards the environment.

Based on nearest neighbor analysis, it is found that the distribution of education-themed tourist attraction objects tends to be scattered, but spatially, most education-themed TAOs are located in the central area. For a clearer picture, refers to [Figures 3](#).

In addition to education-themed Tourist Attraction Objects (TAOs), the North Bandung Area (KBU) also boasts abundant natural diversity, including mountains, lakes, waterfalls, and tea plantations. This serves as potential for developing nature-themed TAOs. Developments such as hiking trails, camping areas, or attractive natural photography spots can enhance the appeal of this area as a natural tourist destination. There are 16 nature-themed TAOs in KBU, making this category dominant.

The development of nature-themed tourist attractions in the North Bandung Area should focus on the principles of sustainable ecotourism. This allows for the integration of education and environmental conservation awareness.

By prioritizing ecotourism principles, this area can build a reputation as an environmentally responsible destination and provide sustainable benefits to the local community.

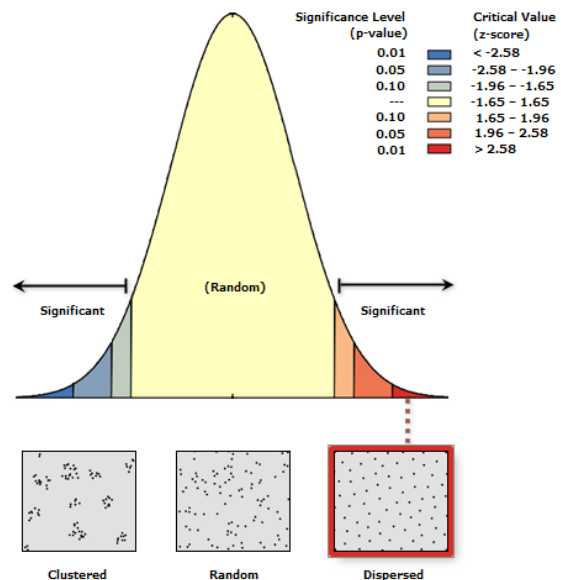


Figure 3. The distribution pattern of education-themed Tourist Attraction Objects (TAOs) in the North Bandung Area

Source: Analysis (2023)

In terms of distribution, nature-themed TAOs have a random distribution pattern. This occurs because nature-themed TAOs adapt to the natural resource potential available in the area. The North Bandung Area is characterized by terrain dominated by faults and highlands, so the potential for these TAOs will be along the fault lines. For more details, refers to [Figures 4](#).

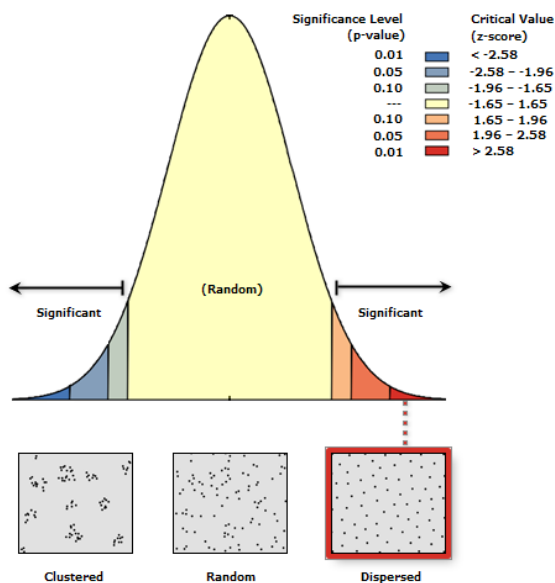


Figure 4. Map of the Distribution of Nature-Themed Tourist Attraction Objects (TAOs) in the North Bandung Area

Source: Analysis (2023)

Next is the Tourist Attraction Objects (TAOs) characterized by culture. The North Bandung Area (KBU) boasts several cultural heritage sites such as art, dance, music, and unique traditional crafts. The development of cultural-themed tourist attractions can leverage this richness to attract tourists interested in authentic cultural experiences. The development of cultural-themed tourist attractions in conservation areas can play a significant role in preserving local culture. By accommodating tourists interested in local culture, the local community can preserve their traditional practices and pass down knowledge and skills to younger generations. Visitors can also learn about the unique history and cultural traditions, enhancing understanding and appreciation of cultural diversity in the North Bandung Area.

The development of cultural-themed tourist attractions in conservation areas should ideally integrate the principles of ecotourism. Paying attention to environmental management and

respecting sensitive cultural aspects will help preserve both nature and cultural heritage. Overall, the development of cultural-themed tourist attractions in the North Bandung Area has the potential to attract tourists interested in rich and authentic cultural experiences. However, in terms of distribution, there are only a few cultural-themed Tourist Attraction Objects (TAOs) that have developed in the North Bandung Area. Based on nearest neighbor analysis, the distribution tends to be scattered. For more details, refers to Figures 5.

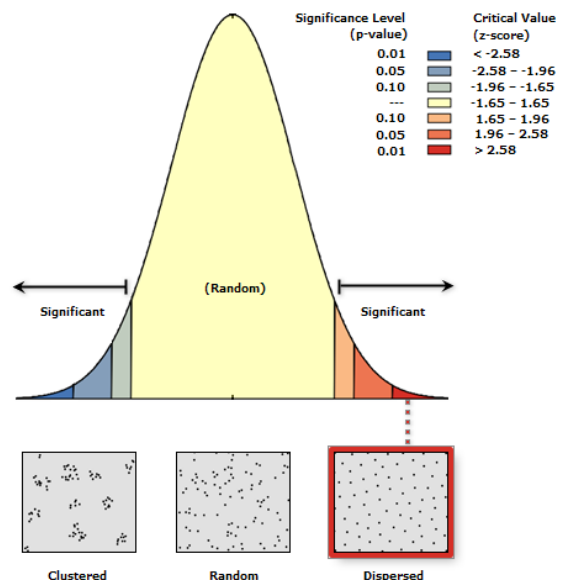


Figure 5. The distribution pattern of nature-themed Tourist Attraction Objects (TAOs) in the North Bandung Area

Source: Analysis (2023)

Tourist Facilities in the North Bandung Area

The development of tourist destinations correlates with the growth of supporting facilities in the area. This is consistent with the findings of research (Khairi & Darmawan, 2021) which state that supporting facilities are one of the factors that encourage tourists to decide to revisit those Tourist Attraction Objects (TAOs).

This also applies to tourist facilities in the conservation area of the North Bandung Area, which play a crucial role in enhancing accessibility for visitors. With good infrastructure such as roads, parking, and accommodation, tourists can easily access and enjoy the natural and cultural beauty of the area. Adequate facilities can also enhance the attractiveness of the area as a tourist destination, thus supporting local economic growth.

Overall, tourist facilities play a vital role in the development and management of the conservation area of the North Bandung Area. By improving accessibility, enhancing the quality of the tourist experience, providing education and environmental awareness, monitoring and supervising visitor activities, and empowering the local economy, tourist facilities can make a significant contribution to the preservation of nature and culture in the area. However, the development of facilities in conservation areas will inevitably face challenges, especially in addressing environmental issues such as carbon footprint generated from these activities (Shi & Yin, 2021).

The approach related to tourist facilities consists of several categories: primary facilities, which are the main attractions, secondary facilities that support the tourist experience, and additional facilities related to infrastructure and environmental management. Understanding these categories helps in the planning and development of tourist facilities that can meet the needs of visitors and enhance their tourism experience.

1. Primary Facilities

The primary tourist facilities in the North Bandung Area are the main attractions in the area. Based on the observation results, there are a total of 28 primary facilities consisting of 3 characteristics: natural, educational, and

cultural characteristics. In this case, primary facilities TAOs with natural characteristics are more dominant in their distribution compared to educational and cultural characteristics.

Based on further observation results, the commercialization status of each TAOs was analyzed. The commercialization status can be seen through the presence or absence of entrance ticket fees set for the TAOs. For more details, refers to [Table 2](#).

Table 2. The Commercialization Status of Tourist Attractions in KBU

No	Tourist Attraction Objects (TAOs)	Characteristics of TAOs	Commercialized
1	Alam Wisata Cimahi Resort	Nature	Yes
2	Bandung Treetop Adventure Park	Nature	Yes
3	Moko Hill	Nature	Yes
4	Dago Dreampark	Nature	Yes
5	Fairy Garden	Nature	Yes
6	Hobbiton Lembang	Nature	Yes
7	Jendela Alam	Nature	Yes
8	Puncut Areas	Nature	No
9	Orchid Forest Cikole	Nature	Yes
10	Ir. H. Djuanda Forest Park	Nature	Yes
11	Karaton Cliff	Nature	Yes
12	Grafika Cikole	Nature	Yes
13	Pasir Ipis	Nature	Yes
14	Batu Kuda	Nature	Yes
15	Pakuhaji Bandung	Nature	Yes
16	Wisata Puncak Bintang	Nature	No
17	Cimahi Square Park	Culture	No
18	Cipageran Buyut Village (Kabuci) Asih Putera	Culture	No
19	Bird Pavilion at Pramस्था	Education	Yes
20	Farmhouse Susu Lembang	Education	Yes
21	Floating Market Lembang	Education	Yes
22	Kebun Begonia	Education	Yes
23	Lembang Mini City	Education	Yes
24	Manglayang Jungle Place	Education	Yes
25	Miniature Railway Park	Education	Yes
26	Rabbit Town	Education	Yes
27	Rainbow Garden Lembang	Education	Yes
28	Sendang Geulis Kahuripan	Education	Yes

Source: Analysis (2023)

Based on the data, it can be concluded that the majority of primary facilities in the North Bandung Area are commercialized. This is based on the availability of entrance ticket fees. There are 24 or 86% of tourist attraction facilities that charge entrance fees, while the remaining 4 or 14% do not charge entrance fees. Among these, 2 facilities with natural characteristics do not charge entrance fees, while all cultural facilities do not charge entrance fees. On the other hand, all educational facilities charge entrance fees.

2. Secondary Facilities

Secondary tourism facilities in KBU have a significant impact on visitors' tourism experiences. With comfortable and varied accommodations, restaurants serving local cuisine, and adequate transportation services, visitors can feel more facilitated and spend longer periods enjoying the natural beauty and culture of the area. These secondary facilities help create a comfortable and adequate atmosphere during the tourism journey. Moreover, secondary tourism facilities in conservation areas also play a role in supporting the local economy.

With restaurants, cafes, souvenir shops, and accommodations operated by the local community, economic income can directly benefit the local community. This provides an opportunity for local residents to engage in tourism businesses and improve their welfare. Additionally, visitors also have the opportunity to purchase local products and support sustainable local economic development.

It's important to note that one of the issues related to the tourism industry and facilities is carbon footprint (Mishra et al., 2022). Therefore, planning should emphasize conservation aspects in the development of these secondary facilities, especially in the North Bandung Area, where its primary function is as a groundwater conservation area.

Several examples of sustainable development actions in the development of secondary tourism facilities include the use of renewable energy, recycling, organic materials usage, waste reduction, and planning the amount of built-up space in the area. This way, secondary facilities can contribute to reducing carbon footprint and responsible management of natural resources. With quality secondary tourism facilities in the North Bandung Area conservation area, visitors can enjoy a more comfortable tourism experience, support the local economy, enhance cultural understanding, improve affordability, and promote sustainable tourism practices. Government and stakeholders need to pay attention to the development of these facilities to provide optimal benefits for the local community while preserving the environment and culture in the area.

This research identifies several secondary facilities that support tourism activities in the North Bandung Area, including hotels/ accommodations, restaurants/ cafes, malls/ shopping centers, and souvenir shops. The number and distribution of these facilities can be seen in Table 3.

Table 3. Types and Quantity of Secondary Facilities in the North Bandung Area

No	Tourist Attraction Objects (TAOs)	Characteristics of TAOs
1.	Accommodation (Hotels and Lodgings)	31
2.	Restaurants and Cafes	172
3.	Malls/Shopping Centers	27
4.	Souvenir Shops	50
	Total	280

Source: Analysis (2023)

3. Conditional/ Supporting Facilities

Tourist supporting facilities such as money changers, ATMs, gas stations, public transportation, and post offices available in tourist areas play a crucial role in providing convenience for visitors. The ability to exchange currency, access funds,

and send letters or packages easily helps reduce financial issues and transactional needs that may arise during travel. These facilities also help visitors stay connected with their families or businesses outside the area. Additionally, there are supporting facilities such as public transportation that can reduce the need for private vehicles, thereby helping reduce traffic congestion and greenhouse gas emissions. These facilities support sustainable mobility and promote sustainability in tourism visits.

Overall, tourist supporting facilities such as money changers, ATMs, bus stops, gas stations, and post offices play an important role in enhancing comfort, accessibility, and security for visitors in the conservation area of North Bandung Region. With these facilities available, visitors can enjoy smoother travel, alleviate financial concerns, facilitate mobility, and access essential services during their visits. Governments and relevant stakeholders need to ensure the availability and quality of these facilities to support the success of tourism in the area. Spatially, the presence of conditional facilities tends to be centered in the southern and central parts of KBU. This is related to the level of development of its administrative regions, where the southern part is the administrative region of Bandung City, while the central part is the administrative region of Lembang City. For more details, refers to [Table 4](#).

Table 4. Types and Quantity of Conditional Facilities in the North Bandung Area

No.	Types	Total
1.	Post Office	7
2.	Bus Stop	18
3.	Gas Station	17
4.	Money Changer	12
5.	ATM	17
Total		71

Source: Analysis (2023)

Tourism Accessibility in the North Bandung Area

Good accessibility aspects, including the presence of roads and public transport routes, are crucial in increasing tourist participation in the North Bandung Area (KBU). With good and easily accessible roads, tourists can reach the area more quickly and efficiently. The availability of public transport routes also provides affordable transportation alternatives, allowing more people to visit the area. This will increase the number of visitors and provide greater economic benefits to the local community. With good accessibility aspects, the conservation area of the North Bandung Area can expand its tourist market reach. Tourists from various regions, both local and international, can easily access the area through adequate roads and public transportation. Additionally, with the availability of good roads and public transport routes, the use of private transportation can be reduced.

Overall, accessibility aspects, including the presence of roads and public transport routes, play a crucial role in the development of tourism in the conservation area of the North Bandung Area. Good accessibility not only increases tourist participation, expands market reach, and enriches tourist experiences but also promotes sustainable tourism. Currently, the accessibility conditions in the North Bandung Area are considered quite good, with various classes of roads available with good quality. For more details, refers to [Table 5](#).

Table 5. Classification of Road Facilities in the North Bandung Area

No	Road Clasification	Length (Km)
1	Main arterial road	2,55
2	Toll road	3,161
3	Provincial road	20,057
4	District street	72,166
5	Local road	626,717
6	Footpath	723,909
7	Another way	841,659

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No	Road Classification	Length (Km)
8	Public transportation way	14,57
	Total	71

Source: Analysis (2023)

The Tourism Spatial Structure in the North Bandung Area

The utilization of space in the North Bandung Area is one of the priority issues in sustainable development. This is because the North Bandung Area is an upstream area that has a groundwater conservation function. One of the rapidly growing sectors in the North Bandung Area is the tourism sector. This development has made the North Bandung Area one of the favorite tourist destinations, so that in its development, the tourism sector can form a tourism business district. The development of Tourism Business District (TBD) in the North Bandung Area is a very interesting issue to be analyzed from the perspective of sustainability. Sustainability is a key aspect that must be considered in the development of this region, considering the importance of maintaining a balance between economic growth and the preservation of nature and culture.

1. Tourism Business District (TBD) in the North Bandung Area

In the theory proposed by (Getz, 1993), it is explained that to understand the spatial model of visitor centers within a city area, several steps are taken. These steps include identifying tourism activities, which are then used as the core in analyzing various tourism facilities as supply elements available in a city. The aim is to meet the diverse demands and needs of tourists and local residents. The Tourism Business District is obtained by conducting overlay analysis using GIS. Information consisting of each tourism facility around the main attractions is inventoried, and then spatial analysis is conducted to determine the delineation of TBD in the North Bandung Area.

The North Bandung Area has great potential for developing a tourism business district as one of the strategies for tourism development in the region. With its beautiful natural landscapes, cool climate, and cultural diversity, the area attracts tourists from both domestic and international destinations. The development of a tourism business district here can drive local economic growth and provide social benefits to the surrounding communities. Developing a tourism business district in the North Bandung Area will create business opportunities for the tourism sector. Investments in infrastructure and supporting facilities such as hotels, restaurants, shopping centers, and entertainment venues will stimulate the growth of the local economy. With the increase in tourist visits, new job opportunities will be created, and the income of local residents will also rise. In addition to providing economic benefits, the development of a tourism business district in the North Bandung Area can also have positive impacts on the environment. Sustainable tourism management policies will help preserve the authenticity of the natural beauty of the area. Through conservation and education programs, tourists can be encouraged to be more aware of the preservation of the local environment and culture.

The development of a Tourism Business District (TBD) in the North Bandung Area will also provide opportunities for local businesses. The development of local crafts and creative industries such as weaving, ceramics, and regional cuisine can be a unique attraction for tourists.

With increasing demand for local products, businesses can enhance the quality and production capacity. The importance of government support in the development of tourism business districts in the North Bandung Area cannot be overlooked. The government needs to

implement policies that support infrastructure development, improve accessibility, and provide incentives for investors. Additionally, strict supervision of business operations and environmental management is necessary to ensure sustainable development.

In developing the Tourism Business District (TBD) in the North Bandung Area, it is important to consider cultural sustainability and local wisdom. Community involvement in decision-making and participation in tourism management will ensure harmonious integration between tourism and the local community. Additionally, effective promotion and marketing are needed to attract tourists without compromising cultural and environmental integrity.

Overall, the development of TBD in the North Bandung Area has great potential to boost the local economy, preserve the environment, and strengthen the region's cultural identity. Government support, community participation, and sustainability in tourism management and marketing will be key to success in developing this area. With the right strategies, the North Bandung Area can become a sustainable and long-lasting tourism destination. To see information on the zoning of TBD in the North Bandung Area spatially, refers to [Figure 6](#).

2. Tourism Space Utilization Zoning in North Bandung Area

Guidelines for spatial area utilization encompass development or expansion plans aimed at creating a structure and spatial pattern that aligns with the Regional Spatial Plan (RTRW) of the district or city. This plan involves the formulation and implementation of development or expansion programs and their financing, with the main timeframe being every five years until the end of the 20-year planning period. The objectives of national spatial planning include several aspects, such as creating a safe,

comfortable, productive, and sustainable national spatial area; maintaining harmony between natural and artificial environments; aligning the use of land, sea, air space, including space within the earth; and coordinating national, provincial, and district or city spatial planning.

Based on the data analysis conducted, it is found that the development strategy for spatial utilization in North Bandung Area as a tourism destination consists of Tourism Business District (TBD), Conservation Areas, and buffer zones. TBD serves as the tourism hub in the North Bandung Area, comprising three characteristics: educational, natural, and cultural. TBD has comprehensive secondary and conditional facilities, and new permits related to physical development are not allowed within TBD. To determine the zoning of spatial utilization for tourism in the North Bandung Area, please refers to [Table 6](#).

Table 6. Area Size of Tourism Spatial Patterns Based on Utilization Zoning

Utilization Zoning	Tourism Spatial Pattern (Ha)				Total (Ha)
	1	2	3	4	
Zone I A	0	0	16331,20	0	0
Zona I B	4005,05	415,05	0	0	0
Zona II	0	0	0	16811,5	0
Zona III	0	0	0	0	1575,9
Total	4005,05	415,05	16331,2	16811,5	1575,9

Note: Zone I A: Forbidden, Zone I B: No New Permits, Zone II: Strict Permit, Zone III: Moderate Permit.
(1: TBD Cultural Characteristic, 2: TBD Natural Characteristic, 3: Conservation Area, 4: Buffer Zone TK I, 5: Buffer Zone TK II)

Source: Analysis (2023)

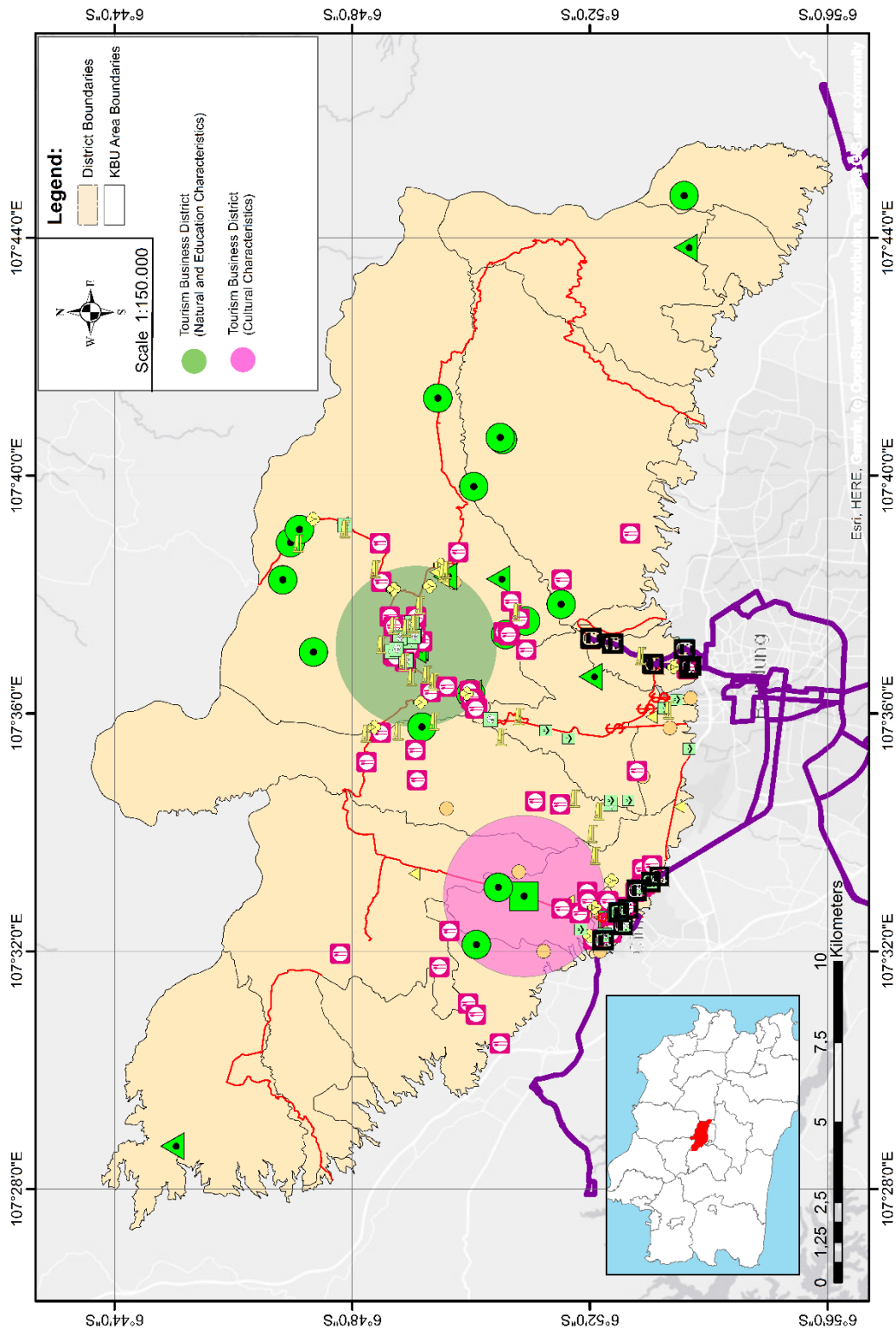


Figure 6. Map of TBD Zoning in the North Bandung Area
Source: Analysis (2023)

3. Spatial Structure in the North Bandung Conservation Area

North Bandung Area is a region that serves as a protective area for groundwater. It boasts beautiful geographical features, making it a sought-after tourist destination. Visitors to tourist destinations in the North Bandung Area are predominantly from the JABODETABEK area. These tourists tend to have a middle potential premium typology, meaning they are loyal visitors who frequent the area often, resulting in high rates of return visits.

One theory used to analyze regional development is the multiple nuclei theory proposed by Harris and Ullman in 1945. According to this theory, a city consists of several development centers, each characterized by distinct activities. For the North Bandung Area, the characteristic attractions developed predominantly focus on nature and education tourism, with environmental conservation being a primary indicator of its development. The development of tourism in the North Bandung Area serves as a magnet driving the development of other infrastructures. Residential areas are expanding towards the north, and several shopping centers are also growing around the area.

The North Bandung Area meets the criteria for forming a Tourism Business District (TBD). In this case, there are two TBDs: one characterized by natural and educational aspects, and the other by cultural characteristics. The facilities at these landmarks are already comprehensive, covering all secondary and conditional facilities. This spatial information can be seen in [Figure 7](#).

In an economic context, the development of TBD can be an opportunity to create jobs and stimulate the local economy. However, it is important to ensure that these economic benefits are distributed fairly and sustainably among the local community

(Winarso et al., 2003). Infrastructure development should consider ways to reduce environmental impacts, such as using renewable energy, sustainable transportation, and proper waste management

This area holds invaluable natural treasures, including forests, mountains, and rivers. In the development of TBD, efforts should be made to ensure that land use, infrastructure development, and tourism activities do not damage this unique natural ecosystem. Social and cultural aspects should also be considered. Involving the local community in decision-making and empowering them in the tourism industry can help maintain cultural sustainability and avoid detrimental gentrification.

Spatial planning also needs to consider green open spaces, ecological corridors, and protected areas that are essential for preserving biodiversity and ecosystem functions, thus strict tourism management and supervision are necessary to avoid excessive pressure on the environment and culture. Visitor control, activity regulations, and stringent licensing can help maintain balance.

The development of TBD in the Northern Bandung area should be directed towards sustainability, encompassing economic, environmental, social, and cultural aspects. Strong collaboration between the government, private sector, and local community is key to achieving this goal. With a mature approach, this area can serve as an example of how tourism can support sustainable development in conservation areas.

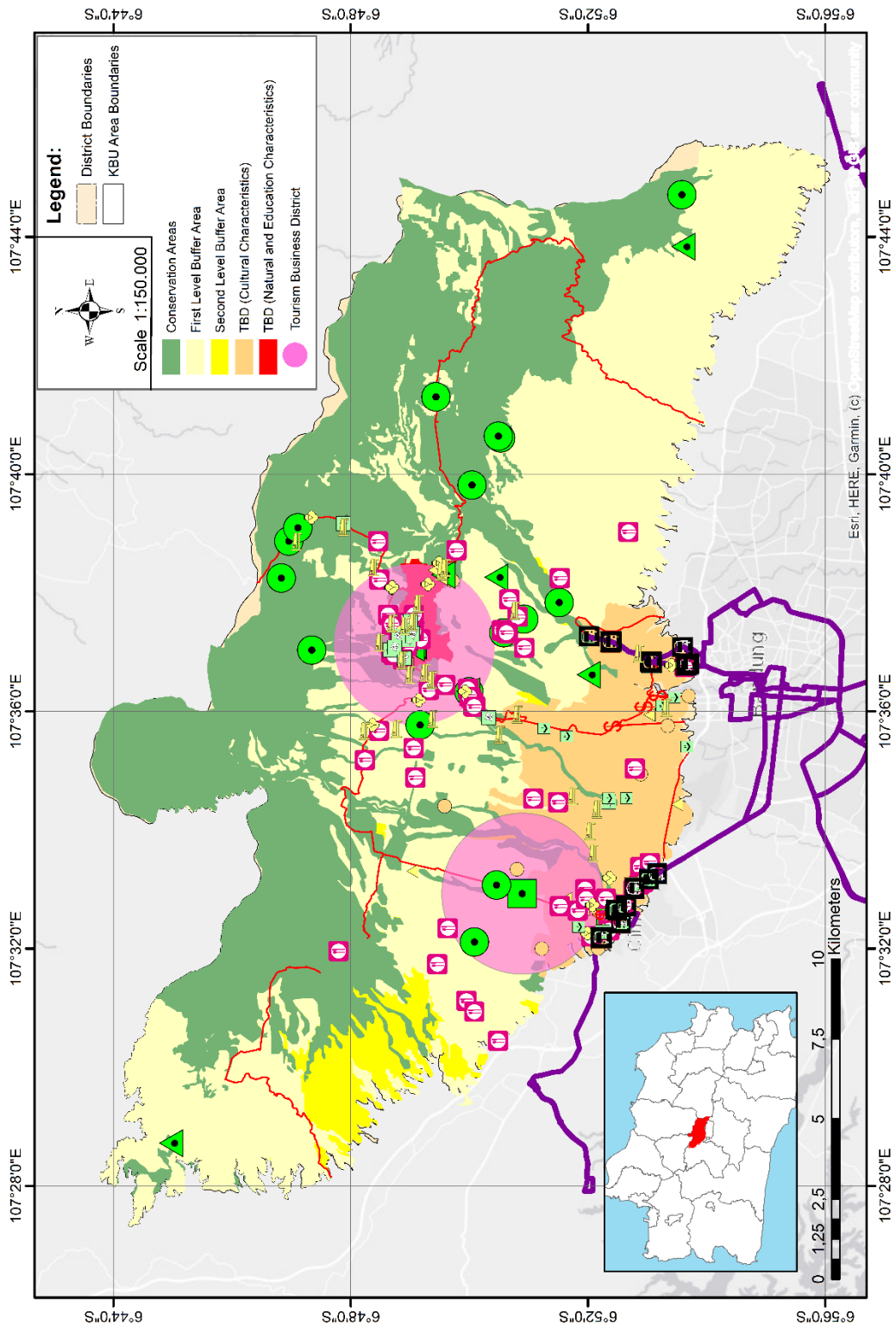


Figure 7. Map of the Tourism Spatial Structure in North Bandung Area
Source: Analysis (2023)

CONCLUSION

Based on the analysis results, effective and sustainable planning is key to the development of tourism in the region. Through clear zoning, well-regulated accessibility, and strategic location of facilities, the area can offer compelling and well-directed tourist experiences. The importance of sustainability in the spatial structure of tourism in North Bandung is also a primary focus of this analysis. By ensuring a balance between tourism and environmental preservation, and involving local community participation, the area can remain a sustainable and enduring tourist destination for the future.

Appropriate zoning in the spatial structure of tourism is a crucial step in preserving the natural and cultural authenticity of North Bandung. By dividing the region into tourism areas, nature conservation, agriculture, and settlements, conflicts between these sectors can be avoided, and tourist experiences can be more directed and satisfying. This necessitates well-regulated accessibility in North Bandung, which is also a key factor in the analysis of the spatial structure of tourism. With supportive infrastructure development such as roads, public transportation, and easily accessible accommodations, the area can attract tourists from various locations and enhance its tourism potential.

Furthermore, the location of facilities is another important consideration in the spatial structure of tourism in North Bandung. When choosing locations for hotels, restaurants, and other supporting facilities, it is important to respect local wisdom and cultural authenticity, thereby making tourist experiences more meaningful and minimizing negative impacts on the environment. Overall, the results of the analysis of the spatial structure of tourism

in North Bandung highlight the importance of effective, sustainable, and community-based planning. By considering clear zoning, regulating accessibility, strategic facility placement, and actively involving the community, the area can develop into an attractive, sustainable, and enduring tourist destination in the conservation area.

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