

An Assessment of The Suitability of Designated Tourist Sites in Kaduna State, Nigeria

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ABSTRACT

As the argument continues to favour tourism in the discussions surrounding income generation, it has become pertinent to ascertain the viability of areas designated as tourism sites. This paper assessed the suitability of designated tourist sites for tourism in Kaduna State. The tourist site suitability factors considered include: hotels, hospitals, transport terminals, police stations, community remoteness, elevation, slope, and roads. A Handheld global positioning system was used to capture the geographic coordinates of the designated tourist sites, which were overlaid on the base map of Kaduna State in order to map their distribution. The Analytical Hierarchy Process was deployed to assign weights to the factors. The Euclidean distance of the suitability factors was calculated using ArcGIS 10.8 software to establish their proximity to the tourist sites. The findings showed that 38%, 29%, and 33% of the tourist sites were located in senatorial zones 1, 2, and 3, respectively. Further findings revealed that 84% of the sites were owned by the government. About 69% of the sites were moderately suitable for tourism activities, while only 3.2% had high suitability. However, none of the sites were found in the very high suitability category, while 28% had low suitability for tourism activities. The study recommends that the Government should provide amenities like roads, electricity and incentivize investment in lodging options. Additionally, security should be prioritized so that tourists can feel safe and secured when visiting the sites.

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1 Introduction

Tourism as an exercise transcends the typical sectors in the economy. Its inputs connect the economic, social, cultural, and environmental aspects of society. It is a multilayered sector. The intangibility of tourism products makes it difficult to explain. World Tourism Organization (1991) views tourism as a social, cultural, and economic phenomenon, which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes. In 2019, tourism contributed 10% of global jobs and 34.2 billion Naira to the GDP of Nigeria (BabaMaaji et al, 2024).

Benckendorff (2014) posits that tourist sites, which are called attractions, are those things or places that excite tourists. These attractions could be people, events, places, and/or other things that fascinate tourists. Examples of such attractions include historical sites, natural and man-made sites, buildings, galleries, parks, sporting facilities, wildlife, and festivals among others. The author further explains that transportation, accommodation, and travel retail exist as part of this system because they make it possible for visitors to see the places that enthrall them. Benckendorf argues that the sites are an integral part of tourism. They make up the operation and spending involved in supplying products and facilities for visitors

by both private and public sectors. While some tourist sites provide entertainment, others provide knowledge and others ensure hospitality. These attractions vary from place to place; what is considered enchanting in one place may not be so considered in other places.

Suitability refers to the degree to which a particular location, resource, or system meets a defined set of requirements or conditions necessary for a specific purpose or use. In spatial analysis and environmental planning, it represents how appropriate a given area is for a designated activity based on physical, environmental, social, or economic factors (Malczewski, 2004). These attractions must have support facilities like hotels (any accommodation that tourists can pay for), healthcare services, roads, terminals, existing settlements, police stations among others.

For the tourism sector to grow, support facilities are needed. These support facilities, as defined by Murphy et al (2000), are infrastructure that include, accommodation, transport, and tourism sites among others. No doubt, as submitted by Lazoglou and Angelides (2020) the realization that resources are not attractions will to a large extent determine the success of tourism in an area. A given place may have many raw resources such as beautiful scenery, diversity of fauna and flora, and enchanting

antiquities. However, if these resources are inaccessible due to absence of facilities such as accommodation or perhaps political instability and a perceived lack of security, then some form of appropriate development will be required.

Kaduna State has the potential to be a premier tourism destination in Nigeria, and Africa as a whole. This potential is entrenched in its rich and diverse cultural and natural resource base. These resources, which have been duly listed as tourism sites by Kaduna State government, fall into protected ecosystems such as Kamuku game reserve, protected landscapes or natural sceneries like the Mastirga waterfall, Kagoro Hill. There are cultural sites, traditional festivals (such as the *Hawan Daushe*), and historic relics and monuments (Arewa House) (Atuk, 2014). Designating these locations as tourism sites is one issue, but it is not as salient as their suitability for such purposes. Analyzing the suitability of those sites for the intended purpose considering several accepted criteria forms the basis for the study. This study therefore, aimed to assess the suitability of areas designated as tourism sites. The objectives include to: i) locate and map the designated tourist sites ii) examine the proximity of the designated tourist sites to the required support facilities.

2 Materials and methods

2.1 Study area

Kaduna State as shown in Figure 1 is located between Latitudes $10^{\circ}20'0''\text{N}$ and $10^{\circ}38'0''\text{N}$ of the Equator as well as Longitudes $07^{\circ}22'0''\text{E}$ and $07^{\circ}32'0''\text{E}$ of the Greenwich meridian. It covers an area of 46,053 square Kilometers. The name Kaduna is believed to be a Hausa word, which is the plural form of *Kada* (Crocodile).

Kaduna State is the administrative headquarters of Northern Nigeria and plays host to many organizations and citadels of learning. Some of the companies and educational institutions in the area include: Kaduna Refining and Petrochemical Company, Peugeot Automobile Company, Nigerian Breweries, Nigerian Defense Academy, Ahmadu Bello University among others. The State is characterized by the tropical continental climate with distinct wet and dry seasons. The major drainage in the area is the River Kaduna (Abaje et al., 2015). The area is covered by indigenous species like *Isobertina doka*, *isobertinatomentosa*, *Uapaca togoensis*, *Loudetia simplex* among others. Exotic species like *eucalyptus rudis*, *Senna siamea*, and *eucalyptus tetradonta* can also be found there (Nwadiakor, 2001). The rock outcrops consist of Precambrian basement complex, Jurassic younger ring complex, and tertiary basal flows.

Kaduna, with a projected population of 10,740,130 in 2024 from 6,113,503 in 2006 (NPC, 2009) is ethnically diverse with numerous traditions and local festivals that

date back in time. Besides the display of culture and heritage of the people, traditional outfits, music and dance make these events unique experiences. People from all occupations and places are attracted to these events, which range from harvest festivals, investiture of new chiefs to durbar festivals. Examples of such events are the TukHam, Afam Festival, *Hawan Daushe* among others. These festivals are an exhibition of the peoples' cultures and beliefs as well as occasions for masquerade and dance. The music, dance and attires make these festivals memorable (James, 2011).

2.2 Data Sources

A list of the designated tourist sites numbering 50 was obtained from the Kaduna State Ministry of Business, Innovation and Technology and these sites were captured using a handheld GPS receiver (Garmin 76cxs). The coordinates of the sites were overlaid on the basemap of the study area to show their distribution. The factors adopted to determine the suitability were identified based on previous researches. These factors include roads, terminals, hotels, hospitals, police stations, slope, remoteness and elevation of the area.

2.3 Data Analysis

Normalization was done to determine the weight of the factors. Thereafter, the Euclidean Distance tool in ArcGIS was used to establish the proximity of the sites to the chosen factors. The process involved reclassification, surface analysis and buffer analysis. The raster data were assigned a designation of 1 (Not suitable) to 5 (very suitable) and the values given to each factor were multiplied by the total number of respondents and aggregated. The Analytical Hierarchy Process (AHP) which uses pair wise comparison to allocate weights to each factor, measuring their relative importance; allowing human judgment to be incorporated into the research was used.

The weighted multi-criteria analysis was performed to spatially integrate the factors. The five steps of the AHP that were deployed in this research were to model the problem in a hierarchy, establish a pairwise comparison matrix to evaluate priorities among factors, synthesize judgments to yield a set of overall priorities for the hierarchy and check consistency of the judgments and then a final decision was reached. This study adopted remoteness (Wu et al, 2015), tourism site (Wu et al, 2015), transport terminals (Harishnaika et al, 2023), elevation (Harishnaika et al, 2023), slope (Jovanovic et al, 2022), police station (Rosu et al, 2020), Hotel (Sivarajah & Yogaraja, 2019), and roads (Ambechat et al 2020) as the factors for determining suitability of the tourist sites.



Figure: 1: Kaduna State

Table 1: Normalized AHP Matrix

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The factor with the highest weight is transport terminal (0.2280), followed by slope with 0.177, and the slope is closely followed by road (0.164). The factor with the lowest weight is elevation (0.029). Transport terminals are regarded as the gateway to the tourists' sites from the place of origin to the destination. These terminals are the places where tourists' are received. The experience of tourists begin in these areas. The elevation is considered as the least important because it involves risk.

3 Results and Discussion

3.1 Location of the Tourist Sites

A close observation of Figure 2 reveals that the designated tourist sites are concentrated around the major towns in the State. It can also be seen that the metropolis and areas close to it have fewer natural sites. In fact, the only natural features in close proximity to the metropolis are the Pampada and Kujama Hills.

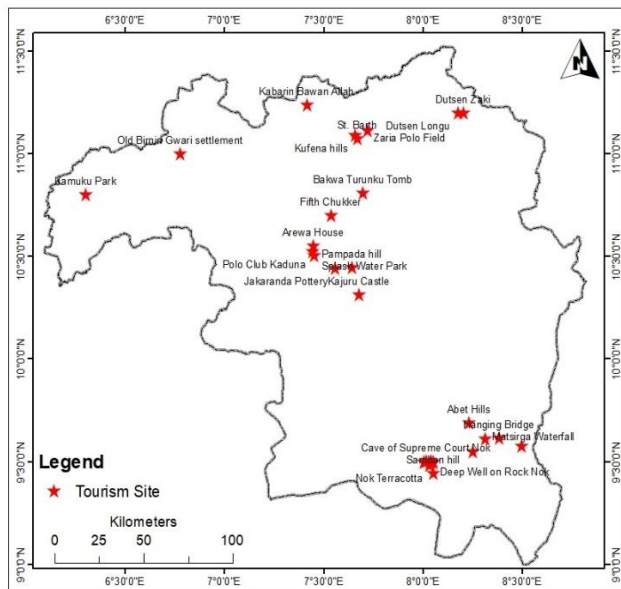


Figure 2 Location of Tourist Sites

3.2 Suitability Factors

3.3 Proximity to Health facilities

Table 2 displays the proximity of the designated tourist sites to health facilities in the area. The closer the sites to healthcare facilities, the more suitable they are for tourism activities.

Table 2: Proximity of Health Facilities to Tourists' Sites

Category	Potential	Ranking	Area (km ²)	%
>15km	Very Low Suitability	1	7277.61	16.15
8-15km	Low suitability	2	11382.31	25.26
4-8km	Moderate suitability	3	15061.12	33.43
1-4km	High suitability	4	10308.82	22.88
<1km	Very High Suitability	5	1022.03	2.27
Total			45051.90	100

Table 2 reveals that 33.43% of the sites fell under moderate suitable category followed by high suitability class with 22.88% while only a paltry 2.2% was found under very high suitability class. One tourists' site that enjoys close proximity to the Barau Dikko teaching hospital is Arewa House. Jakaranda and Kujama hill are only a few minutes away from the general hospital at Sabo area of the metropolis, and the Emirs' palace enjoys the advantage of being a few meters away from the hospital at Tudun Wada Zaria. These, among others, are the sites that constitute the 2.27% with very high suitability with reference to proximity to health facilities. Places like Fifth Chucker, Kangimi Dam, Nok caves, among others have been observed to have high proximity to health facilities. Sites like Kabarin Bawan Allah, Yar Kunama well, Gege among others are areas with low suitability due to the distance to health facilities. This is due to the fact that many communities are farther away from the locations of the health facilities. Figure 3 shows the reclassified distance of the health facilities.

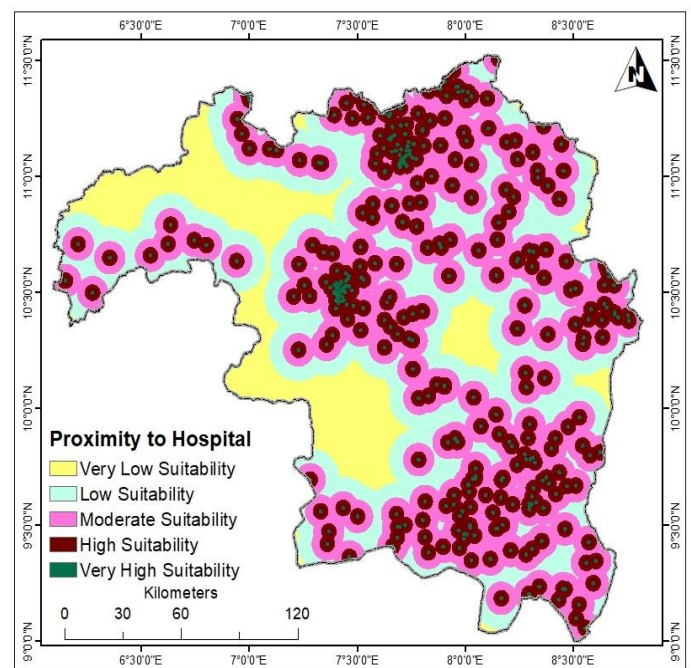


Figure 3: Reclassified distance of Health Centres to Tourist Sites

3.4 Proximity to Hotels

The proximity of designated tourist sites to hotels can be seen as displayed in Table 3.

Table 3: Proximity of Hotels to Tourist Sites

Category	Potential	Ranking	Area (km ²)	%
>10km	Very Low Suitability	1	43163.81	95.81
6-10km	Low Suitability	2	1015.19	2.25
3-6km	Moderate Suitability	3	535.24	1.19
1-3km	High Suitability	4	256.44	0.57
<1km	Very High Suitability	5	81.22	0.18
Total			45051.90	100

A cursory look at Table 3 reveals that only 0.18% and 0.57% of the sites had very high (less than 1km) and high (1 - 3km) proximity respectively to the designated sites. The findings further showed that a little over 1% had moderate proximity and almost 96% (between 6 and 10 km) had very low proximity to the sites. This shows that many of the areas do not have hotels that would provide accommodation for the relaxation of tourists who may want to visit those destinations. It is important to note that sites such as Fifth chucker, Arewa House, Jakaranda provide accommodation within their premises. This automatically improves the suitability of these areas. People visiting them do not have to look for accommodation elsewhere. Sometimes the quality of services in the hotel becomes an attraction in itself. The beauty of a site may not be enough to attract visitors. Other sites without hotels in the premises but are located close to hotels are Splash water park, which is close to Hotel 17 and ASAA Pyramid Hotel, another is Matsirga which is close to Wonderland Hotel. The proximity of designated tourist sites to hotels is shown in Figure 4.

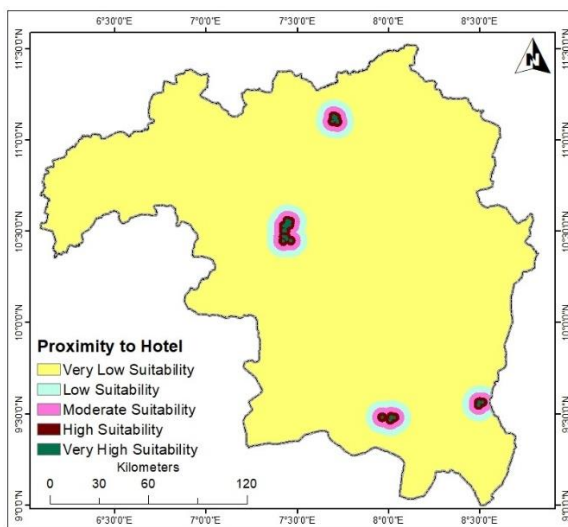


Figure 4: Reclassified distance of hotels to Tourists' Sites

3.5 Proximity to Police Stations

The proximity of the sites to police stations is seen on Table 4 and Figure 5

Table 4: Proximity of Tourists Sites to Police Stations

Category	Potential	Ranking	Area (km ²)	%
>10km	Very Low Suitability	1	34516.52	76.62
6-10km	Low Suitability	2	6065.49	13.46
3-6km	Moderate Suitability	3	3132.19	6.95
1-3km	High Suitability	4	1162.76	2.58
<1km	Very High Suitability	5	174.94	0.39
Total			45051.90	100

The proximity of the sites to police stations as seen in

Table 4 shows that 76.62% of the tourists' sites had very low proximity (greater than 10km distance) to the police station. It can also be observed that 6.95% of the sites had moderate proximity and less than 1% had very high proximity (distance of 1km) to the police stations. The sites within the metropolis (Arewa House, Jakaranda Pottery, Fifthchucker among others) had very high suitability when police stations are used as single factors because of the presence of police stations and – in some instances- military check points or bases. The Mastirga Waterfall has high suitability because of its relative closeness to the Kafanchan Police station. Kujama Hills, among others have moderate suitability. Areas like the Nok Museum have low suitability due to the fact that the police station is located in another community which is about 5 km away.

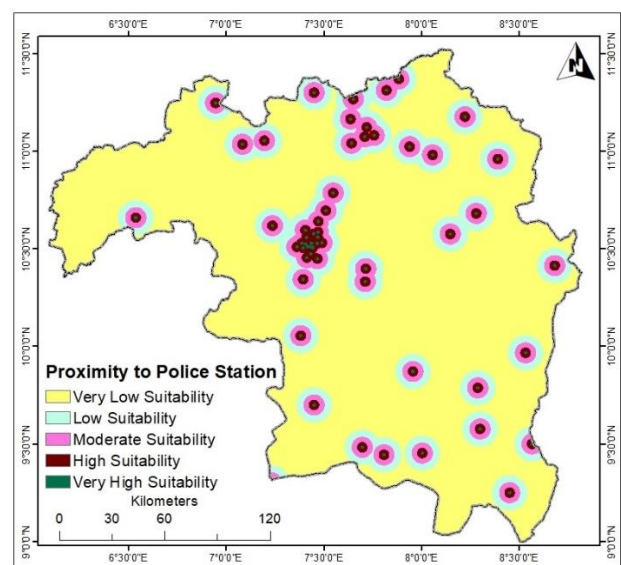


Figure 5: Reclassified distance of police stations to tourist sites

3.6 Elevation of Tourist Sites

Elevation of the designated tourist sites in the State is displayed on Table 6. The higher the elevation, the more suitable the site is for tourism activity.

Table 5: Elevation of Tourists' Site

Category	Potential	Ranking	Area (km ²)	%
<500	Very Low Suitability	1	5495.57	12.20
500-600	Low Suitability	2	9494.32	21.07
600-700	Moderate Suitability	3	19250.47	42.73
700-850	High Suitability	4	9678.57	21.48
>850	Very High Suitability	5	1132.96	2.51
Total			45051.90	100

Table 5 displays the elevation of the area. In the area under study, 42.73% had elevation of between 600 and 700 metres, 21.48% of the area lies between 700-850 meters and only 2.51% of the area is 850 metres above sea level. Areas like Kagoro Hill, Kufena Hill, Sambam hill, Pampada hill, among others have very highly suitable elevation for tourism. Places with high suitability are Kajuru Castle, Kujama hill among others.

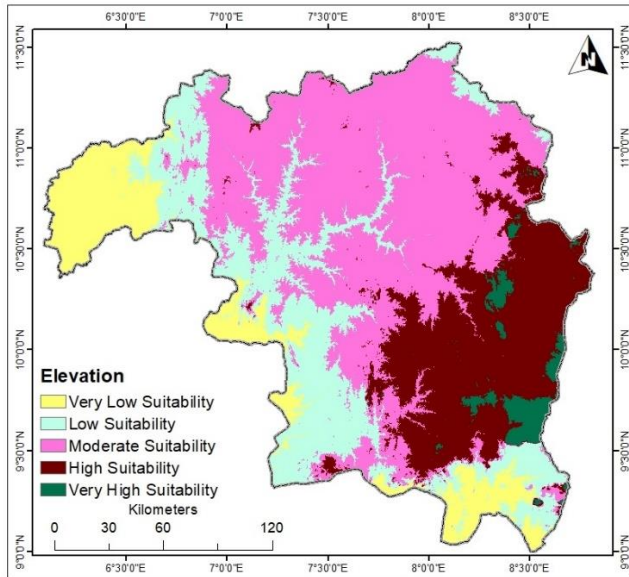


Figure 6: Reclassified elevation map of the area Tourist

3.7 Proximity to Settlements

Proximity of the designated sites to settlements is an important factor. The father away the site is from the settlement, the more suitable it will be for tourism activities. The proximity of the designated sites to settlements is displayed on Table 6.

Table 6: Proximity of Tourists' sites to Settlements

Category	Potential	Ranking	Area (km ²)	%
<1km	Very Low Suitability	1	3331.54	7.39
1-3km	Low Suitability	2	16852.42	37.41
3-5km	Moderate Suitability	3	12243.37	27.18
5-10km	High Suitability	4	10451.19	23.20
>10km	Very High Suitability	5	2173.39	4.82
Total			45051.90	100

As seen in Table 6, 44.8% of the sites had very high proximity to settlements. Another 27.18% had moderate proximity to settlements and only 4.82% had distances of above 10 km from the settlements. The attractions with the highest suitability in this category are the hard-to-reach areas far removed from settlements. Some of these include the Kamuku wild life park and dogon ruwa in Birnin Gwari, Yar Kunama well, Dusten Zaki, Kurmin Kogi, among others. They are followed by areas like Kajuru Castle and Fifthchukker that are a bit further away from settlements. The sites close to the metropolis such as Splash water park, Arewa House, and the Kujama granaries have very low suitability because they are surrounded by settlements. Remote areas attract tourists who want little contact with areas that have been altered by human activities.

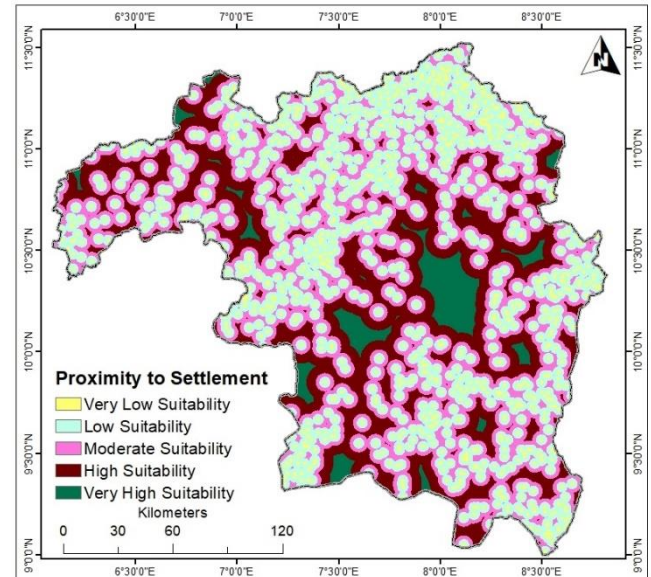


Figure 7: Reclassified distance of settlements to tourist sites

3.8 Slope of the tourist sites

Slope factor is very vital in tourism activities. The steeper the slope, the less suitable the site would be for tourism. Table 7 and Figure 8 present the slope of the sites.

Table 7: Slope Suitability for Tourism

Category	Potential	Ranking	Area (km ²)	%
>35	Very Low Suitability	1	39.72	0.09
20-35	Low Suitability	2	363.99	0.81
10-20	Moderate Suitability	3	1665.62	3.70
5-10	High Suitability	4	9090.40	20.18
0-5	Very High Suitability	5	33892.17	75.23
Total			45051.90	100

The finding reveals that 75.23% the tourists' sites had a slope angle ranging from 0-5 degrees, 20.18% had a slope angle ranging from 5-10 degrees while less than 1% have slope angle greater than 35 degrees. Slopes are important to tourists' because their convex or concave nature generates undulation which are visually appealing. Tourists favour such areas for activities like photography. Slopes can influence the shape of human settlements making such areas hubs for cultural tourism activities. Vineyard tourism also thrives in such areas because grapes grow well there. They are also indicators of safety because they can intensify the occurrence of natural hazards and increase risks. The gentler the slope, the safer it is and vice versa.

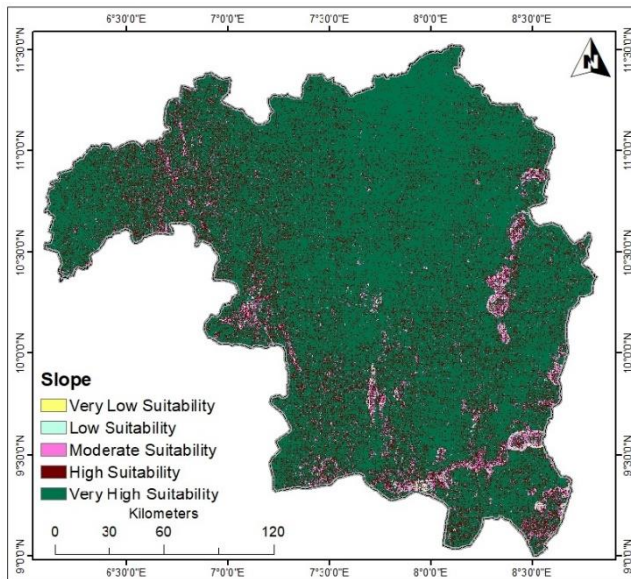


Figure 8: Reclassified slope map of the Area

3.9 Proximity to Transport Terminals

Proximity of tourist sites to transportation terminals plays an important role in tourism activities. The closer the site to transport terminals, the more suitable. Table 9 shows the proximity of the sites to transport terminals.

Table 8: Proximity of the tourists' sites to transport terminals

Category	Potential	Ranking	Area (km ²)	%
>12km	Very Low Suitability	1	36741.94	81.55
6-12km	Low Potential	2	5338.64	11.85
3-6km	Moderate Suitability	3	2147.57	4.77
1-3km	High Suitability	4	726.06	1.61
<1km	Very High Suitability	5	97.69	0.22
Total			45051.90	100

Only 0.22 % of the tourists' sites were in close proximity to terminals (less than 1km). Less than 2% of the tourists' sites had high proximity to terminals (from 1-3km). Nearly 82% of the sites have very low proximity to the transport terminals (i.e. a distance that is greater than 12km). The suitability of sites decreases as their distance to terminals increases. Tourists' sites such as Fifth Chukker, Splash waterpark, Mararaba Pottery and all sites within the metropolis have very high suitability due to their relative proximity to the train station, airport, the NDA and the many bus/car terminals often referred to as "motor parks" in the metropolis. The Mastirga waterfall, hanging bridge, Kagoro hills are other sites with very high suitability due to their proximity to the car parks. Kajuru Castle, Jacaranda and others have high suitability.

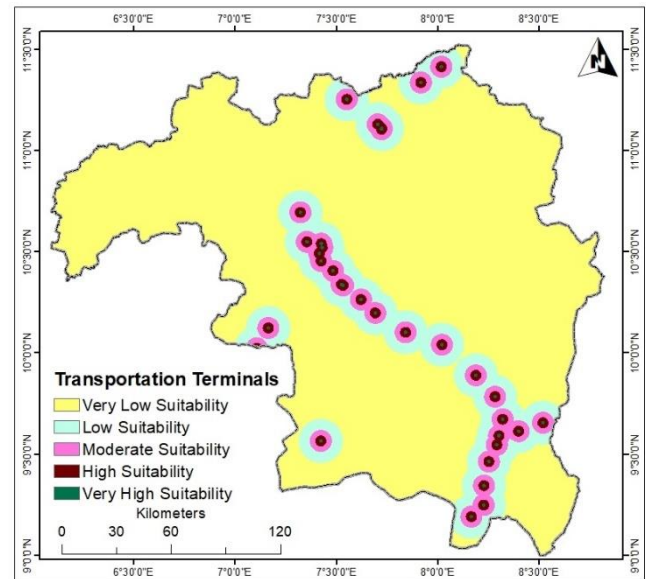


Figure 9: Reclassified distance of transport terminals

3.10 Proximity to Roads

Table 10 Figure 10 presents proximity of the sites to roads in the area.

Table 9: Proximity of Tourists Sites to Roads

Suitability	Rank	Area (Km ²)	%
Very Low Suitability	1	7661.55	17.01
Low Suitability	2	11644.28	25.85
Moderate Suitability	3	13392.43	29.73
High Suitability	4	8100.72	17.98
Very High Suitability	5	4252.92	9.44
Total		45051.90	100.00

The results displayed in Table 10 show 29.73% % of the tourists' sites have moderate proximity to roads. These sites are closely followed by 27.42% of the sites. Almost 43% of the sites have low proximity in relation to roads. The areas that have very high suitability include, Jakaranda, Fifthcuker, and Arewa House. These areas are within the metropolis or a short distance away from it. The relatively good roads in the area favours them. Others are the Emir's Place, Kagoro Hill, and hanging bridge. These are not found in the metropolis but have well-built roads connecting them to the city center. Areas like Kajuru Castle and Pampada hill have high suitability because they are close to major roads. Many of the sites in the interior areas of the state have mostly footpaths connecting them to tourists' sites. This shows that many of the sites are not easily accessible. Therefore, they attract few or no tourists.

The roads to areas like Nok Museum have seasonal accessibility. The sites in the areas are almost inaccessible in the rainy season because the road is not paved and the streams have no bridges for travelers to cross. The lack of

quality roads increase travel time for tourists which makes a site less desirable.

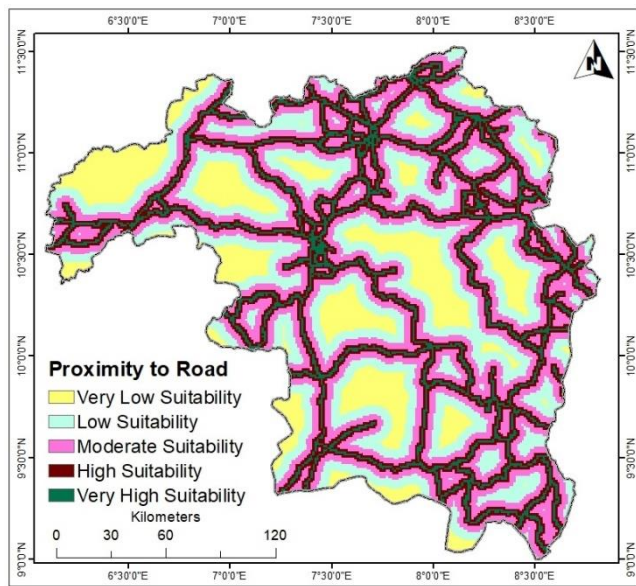


Figure 10: Reclassified distance of roads

3.11 Suitability of the Tourists Sites

Table 10 and Figure 11 display the suitability of the designated tourist sites based on the suitability factors adopted in this study.

Table 10: Suitability of Tourism Sites

Suitability	Area (km ²)	%
Very Low Suitability	4.82	0.01
Low Suitability	12622.19	28.02
Moderate Suitability	30981.32	68.77
High Suitability	1443.47	3.20
Very High Suitability	0.10	0.00
Total	45051.90	100.00

As displayed in Table 10, none of the sites fell under the very high suitability class. However, about 69% of the sites were classified as moderately suitable. Almost 28% of the sites fell under low suitability category while only a paltry 3% of the sites were highly suitable.

Those with the high suitability (3.2%) were places such as, Arewa House. These areas have the advantage of being in close proximity to urban centres that have relatively good facilities and services. For Fifth Chucker and Arewa house, they have the suitability advantages of being attractions that have their own accommodation, as well as being close to the city centre. Areas like Kabarin Bawan Allah, Dusten Longu, and Kangimi Dam have very low suitability because they are far from the places where services and facilities are available despite their beauty and other attraction criteria. This finding is different from the results of Babamaaji et al (2024) which revealed that 36% of tourist sites in northern Nigeria are

moderately suitable and 13% highly suitable for tourism.

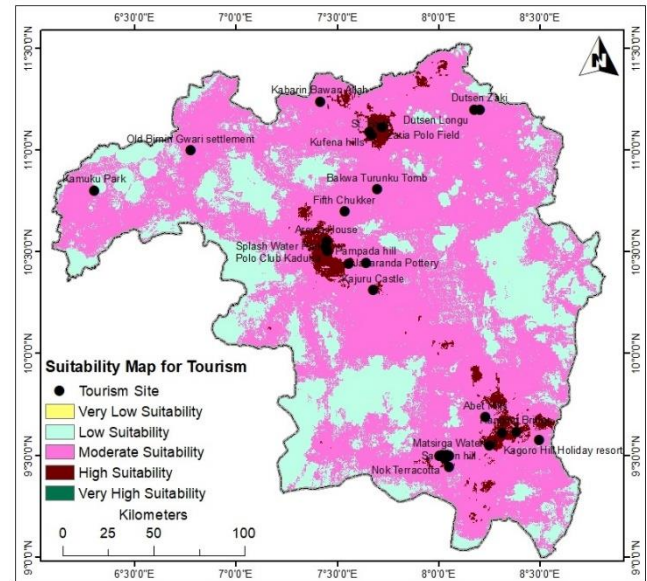


Figure 11: Suitability of Tourist sites in the study area

It is noteworthy that the 3.20% with high suitability are those sites in and around the three major towns of Zaria, Kaduna and Kafanchan. It can therefore be deduced that, many of the sites that are suitable for tourism are cultural rather than natural features. Although they are beautiful and captivating, the picturesque quality of natural landscapes which, according to researchers such as Iluyinh et al (2021) and Yusendra and Paramitisari (2018), often fascinate tourists are missing. Some of these sites were originally built for other purposes but were later designated as tourist sites due to their attractiveness. Conversely, the 28% with low suitability are those sites that are located in areas that are far from the towns where services and facilities are provided. Many of these sites have the advantage of being natural attractions but lack the facilities that will encourage tourists to visit such places and prolong their stay. Some of these areas are Kangimi Dam, Kabarin Bawan Allah, St Bartholomew's Church, Dusten Longu, Sambam Hill, Kujama Hill, Pampada Hills, Gurara Dam among others. The suitability map of the area is displayed on Figure 11.

4 Conclusion

Tourism is a vital component in the growth of economic activities. It attracts people, infrastructure and helps in the preservation of assets and customs. Tourists' sites are a component of a product bundle. The provision of support facilities is, therefore, of utmost importance because they are a crucial part of the tourism spectrum. It is worthy of note that only 3.2% of the designated sites had high suitability and about 69% have moderate suitability. No one of the sites had very high suitability. Furthermore, 96% of the sites are unable to track the flow of visitors and income. It is imperative that government provides

incentives for investors that can provide accommodation for tourists as well as generate power for their use. Additionally, roads should be rehabilitated and upgraded, and security enhanced for the comfort and relaxation of visitors.

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