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ASSESSMENT OF THE POTENTIAL UTILIZATION OF URBAN FORESTS AS A PUBLIC RECREATIONAL AREA (CASE STUDY IN KIBITAY URBAN FOREST, SUKABUMI CITY)

PENILAIAN POTENSI PEMANFAATAN HUTAN KOTA SEBAGAI KAWASAN REKREASI PUBLIK (STUDI KASUS DI HUTAN KOTA KIBITAY, KOTA SUKABUMI)

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ABSTRACT
The urban forest can provide social benefits as a public recreation area. Efforts to utilize the urban forest as a recreational area need to be carefully planned, so it is necessary to assess the recreational potential of the urban forest to produce effective planning. This study aims to reveal in depth the potential utilization of urban forest assets as a public recreation area based on the determination of outdoor recreation potential. The study method used is descriptive qualitative and quantitative with data collection techniques, including observation, interviews, and documentation studies. Based on the results of the assessment, it is revealed that the recreational potential of the Kibitay Urban Forest assets is included in the high recreational potential category by 64% because it has sufficient landscape feature value and high climate value and accessibility. This shows that the Kibitay Urban Forest has the potential to be used as a public recreation area, although recreational facilities are not fully adequate. Future research can consider conducting asset planning for Kibitay Urban Forest facilities in Sukabumi City as a public recreation area.
***Keywords**: Potential Assessment, Urban Forest, Public Recreation, Determination of Outdoor Recreation Potential*

ABSTRAK
Hutan Kota dapat memberikan manfaat sosial yakni sebagai kawasan rekreasi publik. Upaya pemanfaatan hutan kota sebagai area rekreasi perlu direncanakan dengan matang, oleh karena itu perlu adanya penilaian terhadap potensi rekreasi pada hutan kota agar menghasilkan perencanaan yang efektif. Tujuan penelitian ini yaitu untuk mengungkapkan secara mendalam mengenai potensi pemanfaatan aset hutan kota sebagai tempat rekreasi publik. Metode penelitian yang digunakan adalah deskriptif kualitatif dan kuantitatif dengan teknik pengumpulan data yaitu observasi, wawancara, dan studi dokumentasi. Berdasarkan hasil penilaian, diketahui potensi rekreasi pada aset Hutan Kota Kibitay termasuk pada kategori potensi rekreasi tinggi yakni sebesar 64%, karena memiliki nilai fitur lansekap yang cukup dan nilai iklim serta aksesibilitasnya tinggi. Hal tersebut menunjukan bahwa Hutan Kota Kibitay berpotensi dijadikan sebagai kawasan rekreasi publik, meskipun fasilitas rekreasi belum sepenuhnya memadai. Rekomendasi bagi penelitian selanjutnya yaitu melakukan perencanaan aset fasilitas Hutan Kota Kibitay Kota Sukabumi sebagai kawasan rekreasi publik.
***Kata Kunc :** Penilaian Potensi, Hutan Kota, Rekreasi Publik, Determination of Outdoor Recreation Potential*

1. INTRODUCTION

A city should ideally be able to facilitate the needs of every citizen by providing a safe, comfortable, productive, and sustainable urban space. A city is ideal if it can maintain a balance between built-up and open spaces so that environmental sustainability is well maintained. Imansari & Khadiyanta (2015) stated that urban open space is divided into two categories; green and non-green open spaces. As part of the spatial plan, the existence of green space will be a determinant of the balance of the environment and the built environment (Undang-Undang No. 26 Tahun 2007).

Green open space is currently an important thing in maintaining the balance of environmental quality, especially in urban areas that have problems with space utilization (Samsudi, 2010). In line with Thompson (2002), green open space is one of the most important elements of urban texture that becomes a point of social interaction, a place for people with different socioeconomic characteristics. Braquinho et al. (2017) stated that green open space not only functions as a vegetation area but also as an open space for the community. One of the areas that can support the growth of green plants as urban green space is urban forests (Hakim & Utomo, 2008).

Urban forests play an important role in responding to the ecological problems of cities and improving the quality of urban life (Samsoedin & Waryono, 2010). Kusyanto (2012) mentioned that urban forests can provide ecological, social, cultural, and architectural benefits, compared to other forms of green space. However, urban forests are often considered to be of low economic value so their management tends to be ignored and this condition has led to urban forests not developing as expected (Kurniastuti, 2013). One of the causes is less optimal utilization of urban forests as a social function, i.e. the provision of places to interact and recreation for the public (Kusyanto, 2012). This condition occurs in Kibitay Urban Forest which is located in Sukabumi City, West Java.

Kibitay is an urban forest asset owned by the Sukabumi Municipality Government and managed by the Environment Agency of the Municipality Government. It is located in Kampung Kibitay, Lembursitu Subdistrict, with an area of 4.2 ha. Based on the observations and preliminary interviews with the manager, Kibitay is no longer used as a public recreation area. However, as a public green open space, urban forest can be used to support social functions. A particular problem that causes Kibitay not to function for social purposes is the inadequate supporting facilities. A study by Imansari & Khadiyanta (2015) revealed that adequate facility provision in urban forests as public recreation areas can provide comfort and increase the area's vitality so that it can attract people to visit. Currently, the condition of the facilities in Kibitay is poorly maintained and some of them are damaged such as in certain parts of the footpath area, where the paving blocks are bumpy and shifting. In addition, some facilities are not used to their function (idle) and are abandoned such as greenhouse building. Another problem was the lack of security, especially at night, due to the limited availability of public street lighting around the forest. Recently, the municipality government plans to re-utilize the social function of Kibitay as a public recreational area.

This study is in line with the municipality government's plan to optimize the utilization of urban forests as a public recreational area. However, based on the existing problems in urban forests, it is necessary to assess further utilization potential of the social function of Kibitay as a public recreational area so that it cannot only function from an ecological perspective but also from a social perspective for residents. The purpose of the study is to reveal in-depth the potential utilization of urban forest assets as a place of public recreation. The outdoor recreation potential dimension (Çetin & Sevik, 2015) was employed to identify the value and potential utilization of urban forests as recreational areas since it can provide an in-depth approach as a basis for planned utilization of urban recreational areas and provide recommendations to address current and potential problems.

2. DATA AND METHODS

2.1 Study Location

Kibitay urban forest is located on the municipality government's land, which has an area of about 4.2 ha. The site is located on Jalan Kibitay, Situmekar Village, Sukabumi Municipality, bordering Sukabumi City in the north, south, and west, and bordering Cipanengah Village, Sukabumi City in the east. Based on its location, Kibitay is included in the type of settlement because it is located in a residential area.

Source: Google Earth, 2022

Figure 1. Map of Kibitay Urban Forest Area

2.2 Data and Sampling Technique

This study used primary and secondary data as the type and source of data required. Primary data was obtained from observations and interviews. Observations were conducted directly in the field using open observation, where researchers directly observed the condition of the landscape, facilities, accessibility, and negative factors found in the urban forest. Meanwhile, interviews were conducted to find out problems related to the social function of urban forest assets as a recreational area by asking questions based on the dimensions of measuring recreational potential to the managers and guards of the forest. Meanwhile, secondary data was obtained from the results of documentation studies. The documents collected and analyzed were from books, articles, legal documents, ministerial regulations, climate data from the Meteorology, Climatology and Geophysics Agency, and legal data on urban forest aspects from the Regional Financial and Asset Management Agency of Sukabumi.

The analysis method used in this study is a descriptive analysis method with quantitative and qualitative approaches. A limitation of the data collection in this study was that it did not involve a structured questionnaire as Kibitay Urban Forest has not been opened to the public and therefore the number of respondents was limited. This may imply that there are aspects that may not be documented thoroughly or on a broader scale, limiting the ability to get a picture of the recreational potential under study.

2.3 Methods and Analysis

The descriptive analysis method is used to describe the facts and indications of problems systematically and accurately on Kibitay as the urban forest assets based on the outdoor *recreation potential* dimension by Çetin & Sevik (2015). Quantitative data was in the form of the recreational potential value of each indicator obtained subjectively. Meanwhile, qualitative data was obtained by interpreting the data and recreational potential values of each indicator to provide a detailed explanation of the assessment given. Referring to the research of Çetin & Sevik (2015), the data analysis technique was carried out based on practical calculations with a predetermined simple mathematical formula with five dimensions formed with thirty-five indicators and determined by the following formula:

$$L+C+A+R+N= RP (\%)$$

The symbols in this formula with constant values and maximum values are explained in Table 1.

Table 1. Symbols and Dimensions of Maximum Potential

Abbreviations	Meaning	Max Value. (%)
L	*Landscape Value*	35
C	*Climate value*	25
A	*Accessibility*	20
R	*Recreative Facility*	20
N	*Negative Factors*	0 (Minimum -10)
RP	*Recreation Potential*	100

Source: Çetin & Sevik, 2015

Measurement of potential urban forest assets as a public recreation area according to Çetin & Sevik (2015) each dimension uses *the rating scale* as presented in Table 2. Furthermore, the total value of each dimension obtained is classified into 5 classes of recreational potential; very low, low, sufficient, high, and very high based on the long division of classes (Sudjana, 2002) by dividing the maximum potential value by many classes as described in the following parts.

2.4 *Landscape* Value (L)

The most important characteristic feature in the assessment of an area for recreational potential is the landscape potential (Çetin & Sevik, 2015). A landscape is a meta-structure of relationships between different systems i.e. geomorphology, ecology, environment, history-culture, aesthetic, socio-economy, and territory that includes all genetic, biological, and functional relationships among the components of every part of the Earth's surface (Brunetta & Voghera, 2008). According to Çetin & Sevi (2015), recreational potential based on *the* landscape value can be measured through 6 indicators; *the size of the area,* surface condition, flora, seas/lakes/streams, visual quality, and other properties. The value of the landscape received priority in the assessment of potential as a public recreational area with a total level of recreational potential of 35%. The explanation of each indicator value on the dimensions of Landscape Value (L) is presented in Table 2.

2.5 Climate Value (C)

Climate has a huge impact on the recreational activities of the potential of a region (Çetin & Sevik, 2015). The utilization of open space conditions as a recreational potential is strongly influenced by weather and climate conditions, which becomes the standard of visitor comfort (Mahabella et al., 2020). According to Ouf & Makram (2018), the recreational area should have a comfortable warm temperature and humidity and low rainfall. According to (Çetin & Sevik, 2015), recreational potential based on the climate of an area can be measured through 4 indicators; temperature, precipitation, sunshine, and windiness. Considering the

climate that has a great influence on recreational activities, climatic conditions are considered comfortable with a total level of recreational potential of 25%. Recreational potential based on climatic conditions is calculated by the following formula:

Climate Value = Temperature + Precipitation + Sunshine + Wind

The explanation of each indicator value on the dimension of Climate value (C) based on the order of importance of climate to recreational activities is presented in Table 2.

2.6 Accessibility (A)

According to Kaya & Aytekin (2009), the recreational potential of an area acquires value when accessibility is available. Permata (2019) argued that people in urban areas prefer urban forests that are close to them because they are easy to access and do not require a long time to get to the forest (Van Herzele & Wiedemann, 2003). According to Çetin & Sevik (2015), recreational potential based on the accessibility of an area can be measured through 5 (five) indicators; Population of the city at least 100,000 accessed time period, Access to transportation, and Convenience of transportation. The accessibility dimension adds a level of recreational potential of 20%. The Explanation of each indicator value on the dimensions Climate Value (C) based on the order of importance of climate to recreational activities is presented in Table 2.

2.7 Recreational Facility (RF)

A Recreational Facility is the amount of equipment or facilities for various activities (Gidlow et al., 2012). Attractions and facilities are the two things that make people visit the urban forest (Bachtiar & Kusuma, 2019). With its attractions, the atmosphere of the urban forest becomes more attractive and interesting. In determining the recreational potential, the recreational possibilities that exist contribute a positive impact on increasing the potential (Çetin & Sevik, 2015). According to Çetin & Sevik (2015), recreational potential based on the recreational facilities of an area can be measured through 8 indicators including picnic facilities, water condition, overnight facilities, cafeteria, kiosks, toilets, parking areas, guards, workers, and other facilities. The dimensions of recreational facilities add a level of recreational potential by 20%. The explanation of each indicator value on the dimensions of *Recreational Facility* (RF) is presented in Table 2.

2.8 Negative Factors (NF)

Based on the calculation of the recreational potential of an area, concentration on negative factors is mandatory. The best case without suspicion is the absence of negative factors or negative values of the recreation area. According to Çetin & Sevik (2015), recreational potential based on the negative factors of an area can be measured through 6 indicators; air pollution, insecurity, water pollution, neglect, noise, and other adverse factors. The best assessment of recreational potential is the absence of negative factors or negative values in the recreation area. The value of the negative factor is accepted as minus (-) with the maximum value of the negative factor (-10) and is eliminated from the calculation of the total recreational potential. The explanation of each indicator value on the dimensions of Negative Factors (NF) is presented in Table 2.

Table 2. Determination of Outdoor Recreation Potential

Dimensions	Indicators	Explanation	Value	Maximum Value
Landscape Value	Size of Area	> 10 ha	4	4
		5-10 ha	3	
		1-5 ha	2	
		0.5-1 ha	1	
	Surface Condition	Flat (slope 0-8%)	5	5
		Ramps (slope 8-15%)	4	
		Slightly steep (slope 15-25%)	3	
		Steep (slope 25-40%)	2	
		Extremely steep (slope > 40%)	1	
	Flora	Greenwood, brushwood, meadowland	7-8	8
		Lonely greenwood, meadowland	6-7	
		Brushwood, meadowland	5-6	
		Meadowland, sparsely greenwood	4-5	
		Only brushwood, meadowland	3-4	
		Brushwood, sparsely woodland	3-4	
		Meadowland, sparsely brushwood	2-3	
		Only meadowland	1-3	
	Seas, lakes, and rivers	Marine Objects	7-8	8
		Lake objects	6-7	
		River objects	4-5	
		Small River Objects	1-4	
	Visual Quality	Panoramic Views	3-4	4
		Beautiful Views	2-3	
		Visual and Aesthetic Value	1-4	
	Other Properties	Other natural reserves, such as caves, waterfalls, historical buildings, and cultural textures	1-6	6
	Total Recreational Potential by the Dimension of Landscape Value			*35*
Climate Value	Temperature	Summer months average (°C)		10
		16-17-18-19-20-21-22-23-24-25 34-33-32-31-30-29-28-27-26-25	1-10	
	Precipitation	Total summer precipitation (mm)		8
		400-350-300-250-200-150-100-50	1-8	
	Sunniness	Summer months average cloudiness		5
		0-2, 2-4, 4-6, 6-8, 8-9	1-5	
	Windiness	Summer months average wind speed		2
		< 1 m / SEC	2	
		1-3M/SEC	1	
	Total Recreational Potential by the Dimension of Climate Value			*25*
Accessibility	Touristic importance of the region	Marine/coastal areas	3-4	4
		The research object is located on the main road	2-3	
		Prior regions in tourism (located in the tourist area)	1-3	
	Having a city with min. 100,000 of the population in the area	Distance up to 20 km	4-5	5
		Distance up to 50 km	3-4	
		Distance up to 100 km	2-3	
		Distance up to 200 km	1-2	

Dimensions	Indicators	Explanation	Value	Maximum Value
	Reaching time from the least 5000 populated area	Travel time up to 1 hour on foot	4	4
		Travel time 0-0. 5 hours by vehicle	3	
		Travel time 0.5-1 hour by vehicle	2	
		Travel time 1-2 hours by vehicle	1	
	Transportation except for taxi and private car	Availability of access for pedestrians and walking- distance to the object of study	3-4	4
		Availability of public transport modes to the object	2-3	
		Availability of public transport during limited hours	1-3	
	Convenience of transportation	Availability of other modes of transport such as cableways, railways, ferryboats, balloons, airplanes, parachutes, and others.	1-3	3
	Total Recreational Potential Based on Accessibility			*20*
Recreation Facilities	Picnic facilities	Availability of benches and picnic tables, grills, trash cans, water supply facilities, gazebos, etc.	1-4	4
	Water condition	Availability of drinking water and clean water	1-3	3
	Overnight facilities	Availability of lodging facilities	2	2
		Availability of camping facilities with or without the tent	1-2	
	Toilets	Based on the technical standards of toilets	1–2	2
	Parking areas	Based on the technical standards of the parking area	1–2	2
	Food court, kiosk, etc.	Based on the availability of the food court	1–2	2
	Guard and workers	Permanent workers	2	2
		Weekly workers (on holidays)	1	
	Other facilities	Beaches, sports facilities, playgrounds, relaxation facilities, etc.	1–3	3
	Total Recreational Potential by the Dimension of Recreational Facility			*20*
Negative Factors	Air pollution	The level of air quality in the object of the study	–1 - (–3)	
	Insecurity	According to the security degree	–1 - (–2)	
	Water pollution	Pollution from sea, lake, or river	–1	
	Neglect	Lack of maintenance in the research area	–1	
	Noise	Congestion and crowds in the area of the object of the study	–1	
	Other adverse factors	The existence of rock mining activities and the remnant construction activities in the area of the object of the study	–1 - (–2)	
	Total Recreational Potential by the Dimension of Negative Factors		*0 (maximum -10)*	

Source: Çetin & Sevik, 2015

The results of the assessment of each dimension are then summed to determine the classification of the recreational potential of the object of the study. The classification of recreational potential refers to Çetin & Sevik (2015), includes very low recreational potential (less than 30%), low (30-45%), sufficient (46-60%), high (61-75), and very high (more than 75%).

3. RESULT AND DISCUSSION

3.1 Landscape Value (L)

The results of the assessment of the recreational potential in Kibitay indicate that the potential value of all *landscape value* indicators has not been fulfilled. This is because there are no natural reserves or other objects in Kibitay. Thus, the total value of recreational potential in Kibitay based on the dimensions of *landscape value is 21 which is included* in the category of sufficient recreational potential. The measurement of landscape value potential in Kibitay is closely related to the condition of the existing natural resources. Warpani (2007) stated that the use of landscapes to develop eco-tourism needs to be conducted carefully so that it does not conflict with economic interests. It is intended that the integrity of the potential of existing natural resources is maintained and protected (Beljai, 2014). Therefore, to make the potential of natural resources in Kibitay be maintained and protected, good planning is required for the landscape through an appropriate arrangement and preparation of development programs for recreation.

Table 3. Re-Reaction Potential Assessment Results Based on Dimension of the Landscape Value

Indicators	Explanation	Value Potential
Size of Area	Kibitay covers an area of 4.2 Ha, including the range of land area of 1-5 Ha.	2
Surface Condition	Kibitay is on land with a flat slope (0-8%) that mostly dominates the urban forest and sloping (8-15%) in the southern part of the forest.	5
Flora	Flora conditions in Kibitay are diverse, fertile, and dense. There are also shrubs and meadows. Included in the availability assessment of greenwood, brushwood, and meadowland.	8
Seas, Lakes, Streams	There is the Cimandiri River with an area of 201,431 Ha in the southern part of Kibitay. Potential as an object of water recreation.	4
Visual Quality	The visual quality of Kibitay can reveal the beauty value of the variety of tree and plant species including the assessment category of beautiful views.	2
Other Properties	There are no other natural reserves, such as caves, waterfalls, historical buildings, and cultural textures	0
Total Recreational Potential by the Dimension of Landscape Value		21

3.2 Climate Value (C)

The total value of the recreational potential of Kibitay based on the dimensions of climate value scored 22 which included in the category of very high recreational potential. Weather or climate conditions are conditions beyond human capabilities, so the Kibitay managers need to prepare facilities and infrastructure that support the open space recreation adapted to the climatic conditions so that visitors feel more comfortable.

Table 4. Recreation Potential Assessment Results Based on the Dimension of Climate Value

Indicators	Explanation	Potential Value
Temperature	The climate condition of Kibitay shows the average air temperature in the dry season of 26.39°C. Including in the category of effective temperature for the people of Indonesia.	9
Precipitation	The climate condition of Kibitay shows the average precipitation in the dry season is 18.05 mm/month.	8
Sunniness	The climate condition of Kibitay shows that the average length of solar irradiation in the dry season is 6.83 hours.	4
Windiness	The climate condition of Kibitay shows that the average wind speed in the dry season is 1.26 m / sec. Including the light air and the light winds.	1
Total Recreational Potential by the Dimension of Climate Value		22

3.3 Accessibility (A)

Kibitay has not fulfilled all the indicators on the assessment of recreational potential based on accessibility. There is still incomplete accessibility to Kibitay such as the availability of public transportation modes, pedestrian access, and traffic signs. The total value of the recreational potential of Kibitay by the dimension of *accessibility* is 15 which includes the category of high recreational potential. In this case, to get a very high recreational value, the availability of easy and comfortable accessibility to Kibitay needs to be considered especially the availability of public transportation modes that can pass directly through Kibitay and the availability of pedestrian access. This availability will affect people visiting Kibitay.

Table 5. Recreation Potential Assessment Results Based on the Dimension of *Accessible*

Indicators	Explanation	Potential Value
Touristic importance of the region	Kibitay is on a secondary local road with good conditions of asphalt road. The location is close to five other recreation areas, the nearest distance is 2.6 km and the farthest distance is 9.5 km.	2
Having a city with min. 100,000 of the population in the area	The distance from Kibitay to the city center such as the city square, city hall, and Sukabumi City Shopping Center is 8-9 km.	5
Reaching time from the least 5000 populated area	The travel time to reach the Kibitay from the residential area is only 1-10 minutes on foot and 1-5 minutes by vehicle.	4
Transportation except for taxi and private car	Kibitay is only 3 meters on foot from the nearest settlement and 450 meters to 1.4 km from the nearest transportation stop. However, sidewalks are not available to facilitate pedestrians. Public transportation also does not direct to Kibitay.	3
Convenience of transportation	Another mode of transportation to get to Kibitay is a train with a travel distance of 9.1 km.	1
Total Recreational Potential Based on the Accessibility		15

3.4 Recreational Facility *(RF)*

Kibitay does not fulfill all the indicators on the dimensions *of recreational facilities* because lodging facilities and food courts are unavailable. Thus, the total value of recreational potential in Kibitay based on the dimension of *the recreational facility* is 8 which includes the category of low recreational potential. Today, Kibitay functions as a conservation area. This is what underlies Kibitay is still minimal for recreational facilities and infrastructure. Although functioning as a conservation area, Kibitay has the potential to be used as a community recreational area. So, the improvement of recreational facilities and infrastructure in Kibitay is essential. The more unique objects in an urban forest, the more people will visit the urban forest. Objects in the urban forest need to be added and managed properly to improve the quality of the objects and to increase visitor interest, activity, and comfort.

Table 6. Results of the Assessment of Recreational Potential by the Dimensions of *Recreational Facility*

Indicators	Explanation	Potential Value
Picnic facilities	Picnic facilities available in Kibitay are gazebos, clean water, and trash cans. There are no picnic tables, benches, and grills. Grilling activities within the urban forest vegetation area are not allowed.	1
Water condition	Clean water facilities are available with clear and odorless water conditions. There is a water tank to store clean water used for watering plants. Drinking water for visitors is not available.	2
Overnight facilities	Lodging facilities in and around Kibitay are not available.	0

Indicators	Explanation	Potential Value
Toilets	Based on the technical principle of the toilet on the Minister of Tourism and Creative Economy Regulation No. 2 of the Year 2022, the toilet facilities provided in Kibitay do not meet the criteria of the technical principle of toilets.	1
Parking areas	Based on the type of parking area according to the Minister of Tourism and Creative Economy Regulation No.2 of the Year 2022, Kibitay is an off-road parking area as a supporting facility in the urban forest area. However, there are still many parking area infrastructures that are not available such as the parking signs and security facilities such as security officers, CCTV, and lighting in the parking area.	1
Casino, buffet, etc.	Food courts/kiosks/stalls in the Kibitay are not available.	0
Guard and workers	Some permanent workers work every day in Kibitay, starting from 8 a.m. until 5 p.m.	2
Other facilities	Sports and socializing facilities such as jogging tracks/trails for sports and a greenhouse for plant cultivation and educational recreation facilities are available. The conditions of the jogging tracks /trails for sports are quite good. However, mossy and damaged paving blocks are only found in certain parts. Meanwhile, the stairs and pathways are strewn with dry leaves that are not friendly to people with disabilities. Condition of greenhouse that is currently abandoned.	1
Total Recreational Potential by the Dimension of Recreational Facility		8

3.5 Negative Factors (NF)

Kibitay urban forest still has negative factors on indicators of insecurity and neglect. Thus, the value of the recreational potential of Kibitay based on the negative factors dimension is -2 which includes the category of very high recreational potential. The value of negative factors in Kibitay will later reduce the total value of the recreational potential of the four previous dimensions, including landscape value, climate value, accessibility, and recreational facility.

Table 7. Results of the Assessment of Recreational Potential by the Dimension of *Negative Factors*

Indicators	Explanation	Value
Air pollution	The level of air quality is very good (85.3625%) so there is no air pollution there. This is because the level of motor vehicle traffic is low and the types of vegetation are varied.	0
Insecurity	Kibitay is a fairly safe area because there has never been a crime. Security facilities available are guard posts, guardrails surrounding the forest area, and lighting. However, facilities to improve security are not yet available such as CCTV, visitor rules, disaster preparedness-fire extinguishers, First Aid Kits, and evacuation routes.	-1
Water pollution	There is also a river that potentially becomes the source of water pollution, but fortunately, the river has good water quality which indicates that there is no water pollution.	0
Neglected	The maintenance is not still properly done. This can be seen from the piles of dry leaves, branches, twigs, and the abandoned greenhouse. There are only two rubbish bins and their conditions are not appropriate.	–1
Noise	The streets around Kibitay are not crowded and the traffic is not congested so there is no deafening noise that disturbs the forest.	0
Other adverse factors	In the area of Kibitay, there are no rock mining and construction activities.	0
Total Recreational Potential by the Dimension of Negative Factors		-2

3.6 Level Potential of Urban Forest Assets as Public Recreation

The results of the assessment of the potential of Kibitay as a public recreational of each dimension-dimensions landscape value, climate value, accessibility, recreational facility, and negative factors based on the results of the assessment of the recreational potential that has been described, will then be summed up to obtain the overall value of the potential assets of Kibitay as public recreation and determine the level of recreational potential. The calculation of the recreational potential value of Kibitay from each dimension is presented in Table 8.

Table 8. Total Recreational Potential Value of Kibitay Urban Forest Assets

Dimensions	Maximum Value	Recreational Potential Value of Kibitay Urban Forest
	(%)	(%)
Landscape Value	35	21
Climate Value	25	22
Accessibility	20	15
Recreative Facility	20	8
Negative Factors	0 (Minimum -10)	-2
Recreation Potential	100	64

Based on Table 8, the recreational potential value of Kibitay based on the Dimension of landscape value is 21% which includes the category of sufficient recreational potential. The dimension of climate value is 22% which includes the category of very high recreational potential. The dimension value of accessibility *is* 15% which belongs to the category of high recreational potential. The dimension of recreational facility value is 8% which includes the category of low recreational potential. Furthermore, the sum of the potential values of the four dimensions-landscape value, climate value, accessibility, and recreational facility reduced by the value of dimensions of negative factors is -2%. So, the total value of recreational potential in Kibitay assets equals 64%. Based on the classification of recreational potential according to Cetin & Sevik (2015), the level of recreational potential of forest assets of Kibitay is categorized as high recreational potential.

The level of recreational potential in Kibitay is categorized as high recreational potential because it has diverse trees and plants, good climatic conditions for recreation, fairly easy accessibilities, and potential for recreational activities that can be done in the area. This indicates that Kibitay has the potential to be utilized as a public recreation area. However, in its utilization, it is necessary to take into account the recreational potential problems found, which are related to recreational facilities and negative factors. Recreational facilities in Kibitay have a low recreational potential value because the facilities are not diverse and inadequate to support recreational activities. Permata et al. (2019) mentioned that as one of the public recreation areas, the urban forest will be considered attractive if there are various recreational objects or attractions. Thus, the availability of various recreational facilities is required to increase the value of recreation in the urban forest.

Negative factors were also found to be a potential recreational problem in Kibitay, such as the lack of facilities to improve security. Although Kibitay is currently crime-free, it is necessary to provide an adequate and complete security system to reduce the possibility of negative factors. This is in line with the results of research by Koara et al. (2023), that the security system is an important factor for recreational areas which is also related to the safety and comfort of visitors. In addition, maintenance activities in the urban forest are still carried out modestly.

Utilizing the urban forest as a recreational area to support social activities, including doing sports, picnicking, doing environmental education, and relaxing, requires a holistic understanding of the recreational potential and recreational potential issues found in Kibitay. Heer et al. (2003) suggested that one of the main challenges in recreational urban forest utilization is dealing with the negative impacts of visitors' experience on the urban forest environment. In general, forest management techniques for

recreation consist of providing recreational facilities that ensure visitor comfort and minimize problems caused by recreation in the natural environment (Switalska et al., 2021). Therefore, the provision of adequate recreational facilities while maintaining environmental integrity is the main focus in optimizing its benefits as a recreational area.

According to Köse (2020), urban forest management plans need to consider the balance of current and future land protection and utilization based on sustainable resource management, which enables maximum utilization of the urban forest. Therefore, it is important to maintain the potential of the existing urban forest landscape and establish a sustainability-oriented recreation and management model, ensuring that the benefits of utilizing the urban forest as a recreational area can be enjoyed by future generations.

4. CONCLUSION

The utilization of Kibitay as a green open space that can provide a recreational area for the public has not been implemented. The Sukabumi Municipality government plans to optimize the utilization of Kibitay as a public recreation area. This study shows that Kibitay is an area with high recreational potential because it has a scenic attraction in the form of diverse tree and plant species, good climatic conditions, and easy accessibility. It indicates that Kibitay is possible to be utilized as a public recreation area.

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