

# DETERMINATION OF OUTDOOR RECREATION POTENTIAL: CASE OF THE CITY OF BARTIN AND ITS ENVIRONS, TURKEY

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## ABSTRACT

This study has been prepared to determine the importance of existing historical, cultural and natural resource values and outdoor recreation areas in the City of Bartın and its environs. Besides, it has been prepared to expose the ecologic and economic potential values of existing recreation resources. Also computer software, which determines the potential of outdoor recreation areas, has been developed to assist the healthy improvement of the city from the recreational point of view. The study takes place within the jurisdiction border of the Bartın Municipality.

The study provides information about the definition, classification, etc of the recreation. After natural and cultural characteristics of recreation areas in the city limits have been inspected, existing and potential recreation resources have been determined. Depending on the results of survey, in the frame of protection and usage principles, the recreation resources have been evaluated in order to maintain their best usage, and usage values of these resources have been determined by using the method of Kiemstedt (1967) [27] that has been developed by Altan (1976) [28] and Gülez (1980) [8] for Turkish conditions. Furthermore, computer software has been created in this study, and this developed software puts into practice the method and determines the significance of outdoor recreation potential values quickly and accurately.

**KEYWORDS:** Outdoor recreation potential, leisure time, computer software, City of Bartın.

## INTRODUCTION

Since the incidents in industrial and technologic fields, unplanned and unhealthy urbanization revealed the physical, psychological and socio-cultural diversities and problems of people. With the existence of unplanned urbanization, rapid and intense changes are experienced in natural structure and landscape, some environmental problems, such as partially or thoroughly devastation of fauna and flora,

come into happening. Nowadays, as an assist to these types of danger, the protection of nature and its sources and having the necessary precautions against physical and psychological welfare of people, supplying the necessity of movement and recreation of individuals have become essential. This urbanization in recent years has also revealed the importance of forming new lands in order to answer the recreation necessity in the frame of a planning theme.

## Recreation

Leisure time and the theme “recreation” do not correspond in the same meaning though they show similarities each other. Leisure time is the span of time that people have the opportunity of living the time so as to reach an acceptable life standard beside their own activities [1, 2]. However, Balcı [3] advocated that recreation is evaluating the leisure time with various trenchancies.

The phrasal meaning of recreation utilizing the word by applying an affix “re” to itself enables obtaining a new correspondence as having the opportunity of re-evaluating the word “create,” “coming into existence again” [4-6]. Several researchers (e.g. [4, 7-11]) put forth various definitions on recreation up to their fields of studies.

According to Corbin [7], recreation is refreshing and regeneration by affording energy and power with an output of mental and psychological renewal. This utterance by Köseoğlu [4] was progressed as an activity with which everyone who has all classification of ages, gets pleasure in his leisure time about resting, having joy and self-progression, in addition to affording the spare energy or being refreshed from the daily life’s toughness to renew himself psychologically and physically, and to find an alternative way for refreshing his energy and being wedded to life.

Recreation is the total of activities that aims the physical and mental renewal of the individual with his own will in leisure time with a frame which consists of the social, economical, cultural opportunities of the individual by having a connection with the structure of society [5, 10].

In recent years, recreation experienced a phase of transition from being a demand into requirement. According to Karaküçük [12], after realizing the necessity of recreation, the studies on appraising of the decreasing green-lands in

urban area and the ones round the city have begun. Primarily, the protection and progression of the inner urban greenlands are obligatory.

Beside physical landscape features, some outdoor recreation activities require for resources, such as historical values, location, attainability, progression opportunities and transportation capacity. For this reason, an area that is in frame of its natural and cultural features gains value by being used for various recreational activities.

Recreation is accepted both as an individual and social need. Therefore, recreation resources are an important subject. This importance shows itself with the carriage capacity of resources, its evaluation and progression through protection and usage principles [6, 9, 13]. With the industrialization after the Industrial Revolution, the occurring damages to natural resources by means of the rapid urbanization theme became the major reason of the devastation of ecological balance. Therefore, the recreation needs of society will be able to be accomplished and progressed in accordance with the protection and usage principles of resources.

Especially, these observed negative outputs round the large accommodation areas, increased the importance of outdoor green-land necessity and recreation planning that help having a steady balance on human and environment relations [14].

Generally, it is a known fact that there is discordance with the life conditions of urban areas and the environment which the people look for natural beauty, fresh air, fresh water, comfort, tranquility, freedom etc. In order to protect this balance, the individuals need recreational activities related with nature. At this point, it should be stated that the recreation activities are to be fulfilled by the leisure time but every leisure time cannot be used for recreation activities. The aim of recreation is having rest and gaining energy [5].

#### Outdoor Recreation

Since the unavailable conditions in urban areas and inadequacy of resources, the urban people direct themselves to recreational areas that exist in interior and exterior lands of cities. According to Bell [13], the outdoor recreation generally refers to all recreational usages which can be fulfilled outdoor. The key elements of this are forests, mountains and wetlands. These types of lands enable people to get rid of mental tension in modern urban life and, additionally, to provide psychological and mental needs in terms of relaxation and experience the freedom [12, 15-16].

According to Akten [17], the forest lands that have natural, cultural and visual values are the primary outdoor recreational resources which are mostly preferred. Moreover, they can serve the crucial percent of natural sources for various recreational usages and make physical and mental contributions.

Güleç [5] stated samples about outdoor recreation activities, such as camping (e.g. outdoor, with tent or station-

ary camping complexes), accommodation facilities, having picnic, excursions (e.g. pedestrian, by bicycle, motorcycle and vehicle), hunting on land (e.g. bird hunting, wild animal hunting), sportive fishing, shooting, horseback riding, mountaineering, winter sports (e.g. sledge, skiing), swimming, having rest in sea coasts, excursion and resting opportunities in parks and greenlands that exist in exterior or interior sides of cities.

#### Classification of Outdoor Recreation Resources

The recreational resources that have natural and cultural features are classified according to attainability, development, resource features, resource demand of recreation activities, density of users, state of ownership, etc.

One of the classification systems about recreation resources was fulfilled by United States Outdoor Recreation Resources Review Commission (ORRRC). According to ORRRC [18], the commission divided the outdoor recreation resources with emphasize on the physical resource character and need of public recreation, with the aim of declaring general principles and ministries as an effective device. In this classification system, the usage of resources for a particular recreation activity or relation with the other applications is aimed. Since lots of lands give way to various recreational activities, each classification is determined so as to maintain the opportunities. These classifications from densely used recreation lands to rarely used primitive ones were stated in a detailed and broader perspective [18, 19]:

- *High-density Recreation Areas:* These areas include lots of various recreation usage types that require crucial progressions (e.g. beaches).
- *Outdoor Recreation Areas:* These areas are progressed for various recreation usages and the selection of resources should be done carefully (e.g. hillside parachute)
- *Areas having Consistent Natural Features:* These areas are convenient for recreational activities that have particular environmental will and related with other usages (e.g. picnic areas)
- *Unique Natural Areas:* They are lands that have scientific importance, unique landscape features, natural resources or scientifically important areas. At this point, observing and perceiving the environment is a recreational activity having priority (e.g. national parks).
- *Primitive Areas:* They are lands that are not distorted, untouched, pathless, natural and savage characterized.
- *Historical and Cultural Protected Areas:* Areas that have historical and cultural values (historical urban texture: mosques, Moslem seminary, etc.).

However, obtaining the natural features by the user and physical characteristic of recreation resource in terms of this macro-scale classification is not determined as adequate for some researches' recreation resources. Because, some essential points as unvalued settlement and accessibility will

affect the interest towards the recreation resource by contributing the feature of resource [20]. This condition has given way to a new classification system that unifies some features based on resource and user, such as distance to residential units and recreational necessity. By the assist of this classification system, not only the physical character and potential of resource is classified but also its types of usage. In the USA, by given attention to these points, so as to classify and use the resources effectively social factors, such as **Time, Income and Mobility (TIM)** zones have been determined with natural resource factors [19-22].

These zones are given as mentioned [19, 21]:

- Zone 1: Recreation areas with a distance away from 3-3.5 km to the residential units
- Zone 2: Areas with a daily distance of 60-65 km to the residential units
- Zone 3: 1 to 3 nights long tourism accommodation areas till the distance of 200 km away from the residential units
- Zone 4: 4 to 9 nights long tourism accommodation areas
- Zone 5: Areas that are out of third zone border or with the aim of more night accommodation

As stated by Clawson [21], the recreation resources have been classified into three divisions as given in Table 1.

TABLE 1- Recreation resources [21].

	Areas based on users	Areas based on resources	Subdivisions
Location	Each resource that existed nearby the user	Areas that have the crucial resources	The best areas that have a constant distance to the user
Primary Activity Type	Golf, tennis, horse back riding, outdoor games	Seeing essential landscape and historical features, trekking, mountaineering, camping, fishing, wild animal hunting	Camping, having picnic, long trekking, hunting,
Densest usage time	Leisure time during the day, off time after work	Long holiday	Off time during day or weekend

A. Areas based on users: Areas both nearby the city center and affected by dense developments.

B. Areas based on resource: Areas where the resource characteristic maintains the usage style and having a low development density.

C. Subdivisions

According to Sözen [23] and Pigram and Jenkins [20], some recreation resources which take part in this classification system are as follows:

- *Recreation Areas and Facilities Based on Users:* Playgrounds, neighborhood parks, quarter parks, trekking areas, café-houses, outdoor sport complexes, zoos, arboretums, amusement parks, fairs, outdoor museums, amphitheatres, exhibition areas etc.
- *Recreation Areas and Facilities Based on Resources:* Resting areas nearby highways, dam lake and park recreation complexes, beaches, picnic areas, camping areas, winter sports areas, thermal areas and facilities, national parks, archaeological areas, historical monuments and areas, natural and cultural valued areas etc.

According to Bromley [16] and Pigram and Jenkins [20], in the frame of definitions about recreation resource, though the areas that have natural and cultural features in terms of recreation take the first place, it is important to supply the will of users' for the value gaining of an area as a recreation resource. Since, thanks to recreational usage of an area, it gains value by the contribution of user. According to Sertkaya [11] and Karadağ [19], Table 2 indicates the factors that affect the recreational value of an area. While the natural features maintain the value of recreation resource, socio-cultural factors and usage of environmental quality resource and demand take an important part in development.

In the study, recreational behavior types of Bartın urban residents, determined existing recreation potential of some recreation areas belonging to the City of Bartın with its environs, and whether the expected functions are fulfilled have been set. Furthermore, the developed software has been introduced by screen captures. The software has been created in Delphi® 2006 programming language. The minimum requirements for the software are Pentium (or above) processor, 512 MB of memory and Windows XP (or higher) operating system. The software is Windows Vista-compatible and the data to be used can be transformed into various formats.

TABLE 2- The factors affecting recreation resource value [11].

Natural Features	Socio-cultural Factors	Environmental Quality
Topography	Historical and Archeological Values	Air Pollution
Geological Structures	Population	Water Pollution
Water sources	Economy	Soil Pollution
Soil Structures	Existing Land Use	Visual Pollution
Climate Condition	Access	Noise
Flora		
Fauna		

## MATERIALS AND METHODS

### Materials

The study takes place within jurisdiction border of the Bartın Municipality which is located in the Western Black Sea Region.

The City of Bartın, located in the Black Sea Region of Turkey, and the center of Bartın Province, is on 41°53' north latitude, 32°22' east longitude, whereas the city center is 12 km away from the coast. Bartın Province is surrounded by Zonguldak on the West, Kastamonu on the East, Karabük on the East and South and its 59 km coast line (Fig. 1). The altitude of the city is 25 m with 2143 sq m covering 0.3% of total state lands. The district of Bartın is totally 1151 sq m with its towns, Art and Kozcağız [24].

Bartın is one of the Turkish provinces having tendency to be newly urbanized, and total population within jurisdiction border of the Bartın Municipality is 42,932 [26]. Especially, since the establishment of Bartın Faculty of Forestry in 1993 and Bartın Vocational School in 1994, the social, economical and cultural structures of the city have changed thoroughly. Collaterally, the needs for the urban recreational areas have been attracting an immense demand.

The City of Bartın, generally, has existing outdoor rec-

reation areas (e.g. picnic areas, neighborhood parks, playgrounds, sport fields) that are scattered and not having integrity. In these areas, existing vegetation and structural equipments are in adequate to maintain the necessities of residents and visitors in terms of aesthetic and functional features.

Bartın Province has enriched natural and cultural values, such as Kastamonu-Bartın Küre Mountains National Park, Bartın River, plateaus, waterfalls, beaches and archeological structures.

In the study of determining recreational potential of the city and its environs, the recreation areas greater than 0.5 ha of jurisdiction border of the Bartın Municipality form the essential materials (Table 3, Fig. 2).

Natural and cultural values affecting the existence and development of outdoor recreation areas are other research materials. Literature about recreation issue, values depending on it and revealing the relationships about various recreation areas, the studies on the city and its environs, information about the city, visual and statistical databases, the survey results among the Bartın residents and the taken photographs as an output of case area observation have been used as assisting materials. In the light of these data, determinations and evaluations among the case areas and recommendations have been put forth.



FIGURE 1- Location of Bartın Province [25].

TABLE 3- Areas included in the study.

	Outdoor Recreation Areas	Location	Type
1	İnkümu Coastal Area	13 km away from north of city center	B-C
2	Balamba Recreation Area	3 km away from northeast of city center	C
3	Çağlayan Picnic Area	3 km away from east of city	C
4	Karaçay Picnic Area	5 km away from northeast of city center	C
5	Halatçıyaması Picnic Area	City center	A-C
6	Gazhane Park	City center	A
7	Municipal Park	City center	A

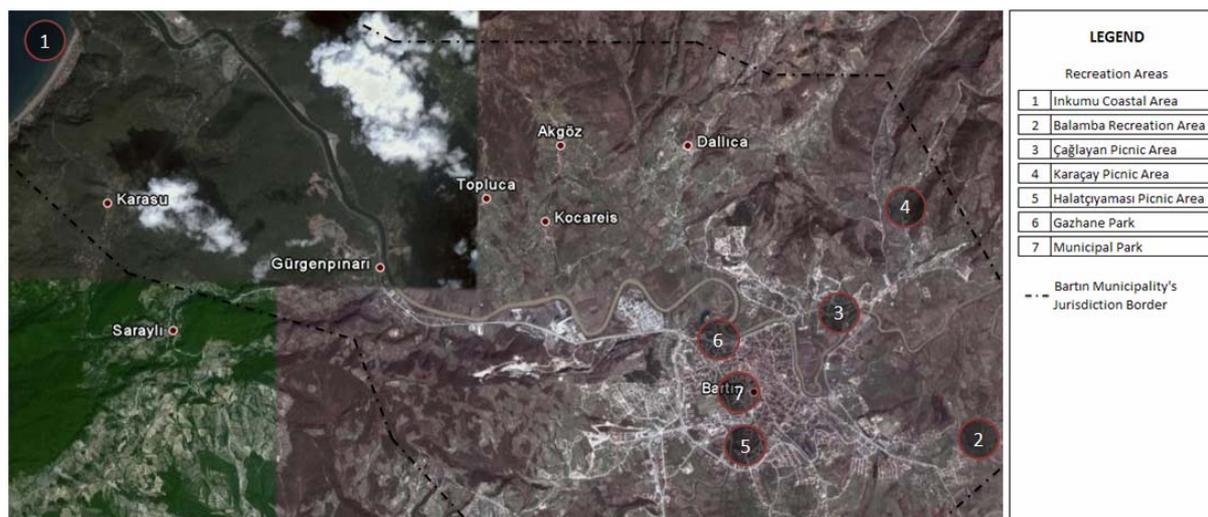


FIGURE 2- Location of outdoor recreation areas greater than 0.5 ha of jurisdiction border of the Bartın Municipality.

## Methods

The study has been accomplished by four stages. At the first stage, by the determination of natural and cultural features of recreation areas in jurisdiction border of the Bartın Municipality, the existing recreation resources have been determined. At the second stage, depending on the surveys' results, in the frame of protection and usage principles, user's will, consideration and recommendations have been inspected. At the third stage, the recreation resources have been evaluated in order to maintain the best usage of the recreation resources, and usage values of these resources have been determined by using the method of Kiemstedt [27] that has been developed by Altan [28] and Gülez [8] for Turkish conditions. At the final stage, computer software controlling the confidence has been created in this study. This developed software puts into practice the method and determines the significance of outdoor recreation potential values that have been calculated and presented.

## Local Survey

In the study, a local survey about recreation areas of the City of Bartın and its environs has been put into practice. The findings and the results of the survey have been further guided from Babbie [29]. Participants have been selected according to "Simple Random Sampling." The number of participants has been determined with an average of 140 that means greater than 0.3% of total population of case area. In this study, the possible existence of the wanted specialty in mass has been accepted as 95%. The results have been evaluated by SPSS 11 computer software.

The survey questionnaires have been prescribed as four parts in a limited manner. In the first part, preferences of user, in the second part, usages, inadequacy and potential of areas, in the third part, the protection, development and expansion of areas have been emphasized and in the fourth part, the demographic study has been given.

## The Determination of Potential of Outdoor Recreation Areas

In order to determine the outdoor recreation potential of a region, the method of Kiemstedt [27] developed by Altan [28] and Gülez [8] for Turkish condition has been used. This method, which brings out a practical calculation and a simple mathematical formula as mentioned below, has been determined with five choices and a system formed with thirty-five criterion and prescribed with formula (1) below.

$$L+C+A+R+N= RP (\%) \quad (1)$$

The meanings of symbols in this formula with a constant rate and maximum rate distribution are explained in Table 4 [8].

TABLE 4 - Meaning of symbols and maximum rate distribution.

Abbreviation	Meaning	Max. Point (%)
L	Landscape Value	35
C	Climate Condition	25
A	Accessibility	20
R	Recreative Possibilities	20
N	Negative Factors	0 (Minimum -10)
RP	Recreation Potential	100

The total points that components can get, reveal the outdoor recreation area potential in terms of percentage rate. According to the results obtained from the method, the evaluation is recommended as following:

**"L" Landscape Value:** The important feature while the evaluation of recreation area is the landscape potential. Therefore, landscape value gets the priority in evaluation with 35% rate.

**"C" Climate Conditions:** By considering the climate having immense effects on recreation activities, climate effect has been seen as convenient to be evaluated with 25%. The particular climate components, such as temperature, precipitation, sunniness, windiness have taken their own



places in climate value with particular rates. At this point, climate condition is calculated as following (2):

$$\begin{aligned} \text{Climate Condition} &= \text{Temperature} + \text{Precipitation} + \text{Sunniness} + \text{Windiness} \\ 25 &= 10 + 8 + 5 + 2 \end{aligned} \quad (2)$$

The average temperature of summer months (June, July and August) has been determined according to recreation activities mostly taking part. For example, the average temperature in June is 21 C°, July 26 C° and August 28 C°, and average temperature of summer months is 25 C°. The distribution of 10 points for temperature is given in Table 4. According to Table 4, since 25 C° is the most suitable temperature for recreational activities gets the grade 10. However, 16 and 34 C° get the grade 1.

Precipitation being the second important component of recreation activities on climate has been evaluated conveniently by getting the grade 8. Considering the negative effect of precipitation on recreation, the grade 8 is given for the regions which rain amount is lower in terms of summer rainfall being 50 mm and lower. Then, the grades are being decreased in accordance with the increase of rainfall (Table 4).

The effect of sunniness component on recreation has been evaluated with the grade 5. As known, the sky being clear or cloudy, in other words cloudiness is determined with the grades 0 - 10. At this point, 0 corresponds with clear sky, 10 with cloudy sky, and sub-components symbolize the cloudy sky in various grades.

The state of whether being windy as another component of climate condition can be an effect on recreation activities. Therefore, grade 1 for the regions that have the average wind speed 2-3 m/sec, grade 2 for the ones that have the average wind speed below 1 m/sec.

**“A” Accessibility:** The recreation potential of a region gains value when the accessibility exists. In other words, how many individuals get profit from that region and do

not confront with an important accessibility problem, the recreational availability of there increases thoroughly. For this reason, accessibility component adds 20% rate to evaluation method. This addition is given in Table 4.

TABLE 5 - Classification of recreation potential.

Classification	Percentage
1. Very Low Recreation Potential	(lower than 30%)
2. Low Recreation Potential	(30-45%)
3. Medium Recreation Potential	(46-60%)
4. High Recreation Potential	(61-75%)
5. Very High Recreation Potential	(higher than 75%)

**“R” Recreative Possibilities:** In determining recreation potential, the existing recreative possibilities have a positive impact on increasing the potential. Additionally, wood lands and a place that has well quality vista, picnic tables, fountains, restrooms, and other facilities will enable attraction of more constant visitors; therefore, the increasing potential of recreation. Under these conditions, it is widely accepted that the recreative possibilities have been evaluated with a rate of 20%.

**“N” Negative Factors:** In accordance with calculating the recreation potential of a region, concentrating on the negative factors is obligatory. The best case without any suspect is that negative factors or negative grades of a recreation area do not exist. Moreover, the existing factors that will lead getting maximum grade -10. The grades of negative factors are accepted as minus (-) and omitted from the total evaluation.

According to the outputs of this method, the following evaluation has been stated (Table 5).

As stated in the study of Gülez [30], since the evaluations have been fulfilled by specialists, the differences between the found results are on a normal level. In Table 6, the prepared form exists so as to evaluate the recreational potential of an area according to Gülez studies [8, 30].

TABLE 6- Recreation potential evaluation form (from the studies of Gülez [8, 30]).

Components in Formula	Features of Components	Maximal Points	Explanations	
Landscape Value (L)	Area	4	Greater than 10 ha	4
			5-10 ha	3
			1-5 ha	2
			0.5-1 ha	1
	Vegetation	8	Woods, bushes, meadows	7-8
			Woods and meadows	6-7
			Bushes, meadows and few trees	5-6
			Meadows and few trees	4-5
			Bushes and meadows	3-4
			Bushes and few trees	3-4
			Meadows and few bushes	2-3
	Meadows only	1-2		
Vista Point (water)	8	Sea coast	7-8	
		Lake coast	6-7	
		River coast	4-5	
		Stream line	1-4	
Slope	5	1-2%	5	
		2-5%	4	
		5-10%	3	
		10-20%	2	
		>20%	1	

TABLE 6- continued

	Scenic Quality	4	Panoramic view Well quality vistas Aesthetic quality (general) Aesthetic quality (local)	4 3 2 1
	Other Features	6	Nature monuments, waterfalls, caves, historical and cultural features, wild life, birds etc.	1-6
Climate Condition (C)	Temperature	10	Summer months (June, July, Aug) average 16-17-18-19-20-21-22-23-24-25 34-33-32-31-30-29-28-27-26-25 Points: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	
	Precipitation	8	Summer months totals (mm) -50-100-10-200-250-300-350-400 Points: 8, 7, 6, 5, 4, 3, 2, 1	
	Sunniness	5	Summer months cloudiness average Cloudiness: 0-2, 2-4, 4-6, 6-8, 8-9 Points: 5, 4, 3, 2, 1	
	Windiness	2	Summer months average wind speed lower than 1 m/sec 1-3 m/sec	2 1
Accessibility (A)	Touristic importance of region	4	Mediterranean, Aegean, Marmara Coastal Region Black Sea Coastal Region Important Road Directions Primary Tourism Region	4 3 2 1
	Population of the city at least 100,000	5	Far away 20 km Far away 50 km Far away 100 km Far away 200 km and more	4-5 3-4 2-3 1-2
	Accessed time period (Population of city nearby, at least 5000)	4	1 hr walking distance or 0- ½ hr by vehicle ½-1 hr by vehicle 1-2 hr by vehicle 2-3 hr by vehicle	4 3 2 1
	Access (except taxi or private vehicle)	4	Access on foot or supplying instant vehicle Supplying vehicle in particular time	3-4 1-3
	Other possibilities on accessibility	3	e.g. cable car existence, access by water based vehicle	1-3
Recreative Possibilities (R)	Picnic facilities	4	Picnic tables, grills and the like, (acc. to properties)	1-4
	Supply of water	3	Possibility of drinks and water consume (acc. to properties)	1-3
	Accommodation facilities	2	Permanent accommodation facilities Opportunities of camping with or without tent	2 1
	Restrooms	2	According to properties	1-2
	Parking lots	2	According to properties	1-2
	Cafeteria, Kiosk	2	According to properties	1-2
	Watchman and Staff	2	Permanent Watchman / Staff Watchman for weekend	2 -1
Other Possibilities	3	e.g. beach, cabinet and shower facilities, renting boats, sport fields (acc. to properties)	1-3	
Negative Factors (N)	Air Pollution	-3	According to pollution rate	-1 -3
	Unsafe	-2	According to safe conditions	-1 -2
	Water Pollution	-1	For sea, lake and river	-1
	Lack of Care	-1	Lack of care in the area	-1
	Noise	-1	Traffic, crowd and similar noises	-1
	Other Negative Factors	-2	Mining fields, construction etc.	-1 -2
General Total Point or Outdoor Recreation Potential (%):				

## RESULTS AND DISCUSSION

### Findings of Survey Results

#### Demographic Features of Participant

There are 140 returned surveys that were from 65% male and 35% female. The mean age of the respondents was 36.3 years. 37% of all respondents were between 18-25 years

old, 45% between 26-45 years old, and 18% of them  $\geq 46$  years old. 51% of all respondents have high school degree, 36% of them at least, a bachelor degree, and 13% have primary school degree.

#### Tendency of Participants on Recreation Activities

While having picnic with a rate of 51%, it took the first

place in types of recreational activities, whereas swimming (32%), trekking (17%), sport training (6%), reading a book, riding a bicycle, etc. (5%), and scientific-purposed researches and observations (3%) had the following consequences.

#### Time Distribution of Participants' Recreation Activities

While primarily preferred months are summer months (June, July and August) with 67%, spring ones (March, April and May) with 25%, autumn ones (September, October and November) with 6% and, finally, winter ones (December, January and February) with 2% took the following consequences. 40% of total respondents prefer recreation activities mostly on Sundays, 23% of them on Saturdays, consequently, 16% on Fridays, 6% on Tuesdays, 4% on Mondays and Wednesdays, but only 1% on Thursdays. The frequency participation percentage of recreation is determined as once a month with 38%, once per six months 25%, once a week 20%, once per three months 12%, and several times a week with 5%.

#### Consideration of Participants about Bartın Recreation Areas

85% of all respondents state that they participate in recreation activities, and 11% rarely take part; on the other hand, 4% are able to be involved sparsely. The areas that the respondents prefer to participate in recreation activities are with 62% on the sea coasts, 28% in forest lands, 8% in parks and 2% at river banks. The primarily examined feature of recreation activity areas is landscape design (66%). Consequently, the possession of historical areas with 12%, the existence of social activity areas with 10%, being nearby the city 8%, as well as other features (e.g. having traditional architecture) 4% are following each other in the above order. Respondents prefer the recreation areas for the reason of: 38% well vista, 27% easy access, 16% facility and area adequacy, and 4% being clean. The negative factors seen by respondents are: 38% over usage, 18% noise, 12% water pollution, 10% air pollution, 9% traffic, 7% environmental pollution and 6% other reasons. The respondents widely prefer (34%) İnkümu Coastal Area, (30%) Gazhane Park, (12%) Balamba Recreation Area, (9%) Yalıboyu and Boğaz areas, (8%) Çağlayan Picnic Area, (4%) Karaçay Picnic Area and (3%) Halatçıyaması Picnic Area in the jurisdiction border of Bartın Municipality's recreation areas.

Briefly the accessed information by the survey can be summarized as follows:

- The most usual recreational behavior type of Bartın residents in their leisure time is having a picnic. Though, the recreational behavior type illustrates differences in terms of socio-cultural structure of the city, and it indicates as the past similar studies (e.g. [8, 17, 30-31]) that this type of recreational behavior reflects the common value of residents.
- Residents widely fulfill recreation activities in order to have rest.
- The most commonly preferred months are June, July and August and the days are Saturday and Sunday.

These results are the same as in previous studies (e.g. [17, 32-33]).

- As the users come up with the usage of recreation areas in summer and at weekends, a higher user density than carrying capacity occurs. Therefore, critical distortions take place in the environmental balance of recreation areas. By this way, in the frame of planning and management studies, the recreational demand on area, the availability of suitable recreation activities, the exact time and area planning about recreation activities, the possible impacts on natural environment and the methods and frameworks related with potential negative factors should be known.
- One of the most common complaints of users is the over-usage density owing to the lack of recreation areas. The air and water pollution are considered as being the most negative components. The study of Gülez [30] indicates that recreative possibilities increase the potential of those areas.
- The majority of survey participants consider recreation areas as insufficient, and development as well as renewal studies inadequate.
- Another complaint of participants is about some deficiencies and negatives in the recreation areas. The inadequacy and lack of care of recreation areas, such as playgrounds, parking lots, sport fields, cafeterias, etc. decreases the preference ratio of users. Therefore, each facility should be in harmony with natural features and aesthetics of recreation areas. Especially, construction techniques, external appearance, etc. of accommodation units are to be utterly correlated with the characteristic architectural feature of the region.
- The survey participants generally have stated the inadequacy of urban recreation areas. Especially, it is widely accepted that inadequacies exist in indoor areas (shopping centers, folkloric houses, tourism facilities, museums, etc.). Moreover, the absence of recreation areas, such as a city park, exhibition, fair ground, etc. is generally a subject of users' complaints.

#### Determining the Recreation Potential of Case Areas and Application of Computer Software

In the study, computer software has been created in order to determine recreation potential. The software has been written in Delphi® 2006 programming language. The software has maintained user-friendly application with its modular structure and interfaces (Fig. 3); therefore, it is so easy-to-use.

After running the programme by clicking on "Add New" button, a new user space can be possessed. Clicking on "Delete" button, the user can omit the selected area in the table. "See Details" button enables the user to see a window related with recreation activities in the selected area. "Calculate" button reflects the averagely calculated recreation potential of all areas on the screen. "Print" button sends the calculated recreation potential and details as

an output. “Exit” button makes the program finished and directs the user to Windows operating system.

When the user clicks on “See Detail” button, the window in Fig. 4 comes up. This window includes 5 tab segments. These segments are “Landscape Value,” “Climate Condition,” “Accessibility,” “Recreative Possibilities” and “Negative Factors.” In order to reach these segments by clicking the mouse or pressing the capital letter of components using “Alt” will be adequate. In the segments, sub-selections belonging to elements will be determined by users’ mouse guiding to the recreation potential marking up. After completing the selections in all segments by clicking on “Save” button, the inserted selections will be saved. The saved data can be accessible anytime. Besides, both the change and re-evaluation of data are so easy. The saved data can be directed to calculate recreation potential by clicking on “Calculate” button. By converting the inserted alpha-numeric values into numeric values, the outdoor recreation potential is calculated. It reflects the final value that comes up by calculating according to Fig. 5. As seen in Fig. 5, the outdoor recreation potential of Inkumu Coastal Area is calculated to be 78%.



FIGURE 3- Print screen of computer software for obtaining calculation of outdoor recreation potential value.

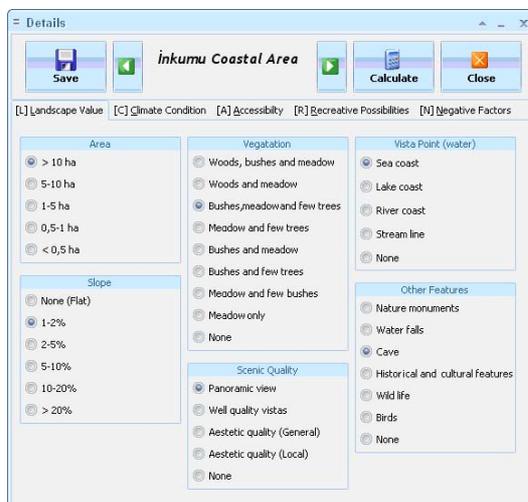


FIGURE 4- Data entrance section of the software used.

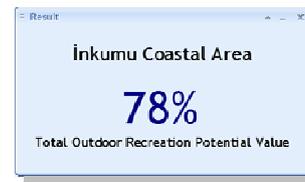


FIGURE 5- Visualization of the result table by the software.

## CONCLUSIONS

It is observed that the City of Bartın’s quantity and property of outdoor recreation resources are not adequate, and cannot supply the recreational needs of urban residents. Nowadays, in order to maintain a modern and healthy city, primarily, it is obligatory that with a rational, sustainable, user-acceptable and permanent conception, the trinity of planning, application and monitoring processes can be fulfilled integrally.

Though the City of Bartın and its environs have an important recreation potential, it is not thoroughly got efficiency among these recreation areas. In order to maintain the permanent efficiency of resources, it is vital to make the supply and demand relation set on a balance. Determining the recreational tendencies and needs of the City of Bartın’s residents in a detailed manner will play an important role in maintaining existing recreation areas or potential ones.

In terms of rational usage of natural resources, it should be aimed that existing recreation areas included in urban area and its environs are to be developed in the frame of infrastructure and facilities; additionally, diversification and increasing of recreation activities. By this way, the existing potential of recreation areas will be increased and supply the service that it should bring out.

According to findings of survey’s results, the majority of residents around the City of Bartın and its environs are not aware of alternative recreation areas. In this context, the collaborative studies, such as publishing brochures and booklets, organizing promotion campaign on local TV, etc. will promote essential profit with the management and coordination of Bartın Governorship, Bartın Municipality, Bartın Directorate of Culture and Tourism, Bartın Directorate of Environment and Forestry, University of Bartın, and non-government organizations. Therefore, public awareness of recreation areas coming by local promotion campaign on TV and newspapers will bring out a great contribution on realizing the rational usage of resources and public psychology. Moreover, supplying guiding and directing signboards on roadways will provide great profit.

Having the natural and visual values of recreation resources is the prime concern of being preferred. Therefore, the existence of not distorting and badly affecting features of infrastructure and facilities are so essential for the purpose of fulfilling the upcoming recreation activities. Additionally, with a detailed oral and verbal warning, sign stud-

ies in recreation areas, all types of pollution (e.g. water, air, noise) during the users' usage of area should be prevented.

In order to determine subjectively the outdoor recreation potential value in the jurisdiction border of Bartın Municipality, the method of Kiemstedt [27] developed by Altan [28] and Gülez [8] has been used according to 5 choices and 35 components with a result of obtaining an average of 62%. In Table 7, according to the method of Gülez [8; 30], outdoor recreation potential has been determined.

The application of this method to the İnkümu Coastal Area results in the outdoor recreation potential value of 78% which is classified as "very high." This result is in accordance with the previous study [31]. It can be stated that İnkümu Coastal Area's landscape value is recreative and suitable with various recreative activities (e.g. swimming, fishing, camping, picnicking, trekking); additionally, hot and sunny in summer months (especially July and August) with its climate conditions. Considering accessibility, recreative possibilities and negative factors, the year-long working users having their 2-months summer holidays, however, for the rest want to put forth the reality that rec-

reation potential is very high.

The outdoor recreation potential value of Gazhane Park with the applied method was determined as 69%. Since the location of the park exists in the city center surrounded by natural beauties (e.g. connection point of Kocanaz and Kocaçay streams), it can be said that it has "high" recreation potential and recreative possibilities, though dominated by negative factors.

Outdoor recreation potential of Çağlayan Picnic Area with a ratio of 67% has also been determined to be "high." The area is preferred due to the distance from city center and compatibility with water-based recreation activities (i.e. fishing). The landscape value is very high with the existing historical water mill and waterfall. The area also serves activities such as wrestling feasts per year, trekking, observing nature, having picnic, taking photographs besides natural features. The high recreation potential of the area comes up when determining the common point between positive values, such as accessibility, landscape value, recreative possibilities, etc. with the negative ones.

TABLE 7- Recreation potential evaluation form.

Components in Formula	Max. Points	Features of Components	İnkümu	Balamba	Çağlayan	Karaçay	Halatçya...	Gazhane	Municipal	Bartın
Landscape Value	4	Area	4	3	2	2	1	1	1	2,0
	8	Vegetation	6	7	6	6	6	6	4	5,9
	8	Vista point (water)	8	4	4	4	0	5	0	3,6
	4	Scenic quality	4	3	3	1	4	4	0	2,7
	5	Slope	4	2	4	4	4	5	1	3,4
	6	Other features	4	3	5	2	0	4	0	2,6
Climate Condition	10	Temperature	6	6	6	6	6	6	6	6,0
	8	Precipitation	7	7	7	7	7	7	7	7,0
	5	Sunniness	3	3	3	3	3	3	3	3,0
	2	Windiness	1	2	2	2	1	2	2	1,7
Accessibility	5	Population of city nearby, at least 5,000	5	5	5	5	5	5	5	5,0
	4	Permanent access opportunity	3	2	3	3	3	4	4	3,1
	3	Accessed time period	3	3	3	3	3	3	3	3,0
	3	Distance to main road	1	2	2	3	3	3	1	2,1
	2	Property of the road	1	2	2	2	2	2	2	1,9
	3	Other possibilities on accessibility	2	1	2	1	1	2	1	1,4
Possibilities	4	Picnic facilities	4	4	4	4	4	0	0	2,9
	3	Supply of water	3	3	3	0	3	3	3	2,6
	2	Accommodation facilities	2	0	0	0	0	0	0	0,3
	2	Restrooms	2	2	2	0	1	2	2	1,6
	2	Watchman and Staff	2	1	0	0	1	2	2	1,1
	2	Parking lots	2	2	2	1	1	1	0	1,3
	2	Cafeteria, Kiosk	2	0	0	0	1	2	2	1,0
	3	Other possibilities	3	1	1	1	0	1	0	1,0
Negative Factors	-3	Air pollution	0	0	-1	-1	-2	-2	-3	-1,3
	-1	Lack of care	-1	-1	-1	-1	-1	0	0	-0,7
	-2	Unsafe	0	0	-1	-1	-1	0	0	-0,4
	-1	Water Pollution	0	-1	-1	-1	0	-1	0	-0,6
	-1	Noise	-1	0	0	0	-1	-1	-1	-0,6
	-2	Other negative factors	-2	0	0	0	0	0	0	-0,3
Total point			78	66	67	56	55	69	45	62

Outdoor recreation potential value (66%) of Balamba Recreation Area is being in a “high” manner. The area is the unique one used as forest land in the study. For natural features of the area, the following recreation activity opportunities are possible in this area possible (trekking, observing nature, having picnics, taking photographs, etc). When considering the positive components (landscape value, recreative possibilities, existing security and monitoring, having private company service, etc.) and negative components, the high recreation potential of this area comes up.

Both the outdoor recreation potential of Karaçay Picnic Area (56%) and Halatçıyaması Picnic Area (55%) are determined as having the common medium potential value. Karaçay Picnic Area with its natural beauties has recreational opportunities, such as having picnics, trekking, fishing, etc. On the other hand, Halatçıyaması Picnic Area has features such as accessibility to the city center and having vista points to the city. However, in both areas, scarcity of recreative possibilities and negative factors with “medium” recreation potential are mentioned.

Applying this method to the Municipal Park with the outdoor recreation potential 45% shows that the ratio is in a “low” manner. The park is an area not offering natural features, but the daily resting opportunity of users and taking care of municipality. The recreational activity possibilities are really restricted.

As a result, in determining the existing recreation areas in jurisdiction border of Bartın Municipality, the insufficient evaluation of resources and inadequate recreation areas for users have come up. Moreover, other than that mentioned scarcity of recreational areas in the city and its environs, the over-usage of existing areas, the insufficient serving of opportunities and existence of problems due to recreational usage or problems depending on management have come up. In this context, in the planning and management applications of existing and potential recreational resources and areas, the development and application of functional, aesthetic and management features of new evaluations that will take place in a short span of time, in terms of the public participation serve a great importance for the City of Bartın and, particularly, for Turkey.

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