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CONTRIBUTION OF DAM LAKES TO RECREATION; PALANDÖKEN CAT DAM

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Abstract

As it is generally accepted, recreation is one of the most important needs of people today. Especially, people living in big cities feel this requirement much more. Dams built around urban area for the purpose of providing drinking water, irrigation and flood control become prominent in this process as the source of recreation and for the satisfaction of this requirements with their natural and cultural properties.

In this study, it is aimed to determine the potential of recreation for PalandökenÇat dam and its environment which are planned to meet drinking water need of the city of Erzurum. In the process of the determination of recreational areas fitting the aim of this study, natural dates and cultural land uses were analyzed through the inventory studies and observation made in the field. Evaluated data are interpreted in GIS (geographic information systems) environment and recreational suitability maps were produced. In the light of produced land use suitability maps, recreational land use recommendations were presented.

Keywords: Geographic Information System (GIS);Palandoken Cat Dam; Recreation; Erzurum/Turkey.

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1. Introduction

Dams have played a key role in development for years since, the first great civilization evolved on the major rivers. Initially, only small dams were built for water supply and for irrigation. Growing population and rising levels of economic activities increase human demand for water and related services. In the past large dams were often seen as an effective way of meeting water and energy needs [1].

Due to recreational features, forest areas and water sides, have many important potentials to relax, have fun and refresh the mind of people. Artificial or natural stagnant water surfaces and rivers in both urban and rural areas are widely used for active and passive recreational activities in developed countries such as USA, Canada, England and France.

It is seen that being away from daily routine is very important function to refresh mentally and physically when recreational behaviour of the community is considered. However cities can not perform such fuctions. Therefore people prefer to go away from cities they live. This demand emerges especially in the region where urbanization and industrialization are at higher levels and increases the popularity of rural recreation areas around cities.

Dam lakes and rivers began to be used as recreational areas in 1945 in the USA and multi purpose dam projects including recreationas well as irrigation and energy were implemented by Tennesse Valley Authority e.g. Mississipi River and 131 dams [2]. Dams are one of the most important infrastructure investments in Turkey, providing essential services: drinking water, irrigation water, flood and torrent control, hydroelectric power, fisheries, wildlife, recreation, and other environmental benefits [3].

Dams have many features such as power generation, flood control and irrigation as well as being shelter for a variety of bird species and also provides the opportunity of freshwater fishing economically. Even their lakes are artificial they can be natural places for birds and new bird species are beginning to be seen in the region. Also dam environment provides recreation possibility in the winter and summer for the people and Dam Lake creates ideal atmosphere for a variety of water sports [4]. Dam lakes offers socialization and quality of life increase by their

green area potential for citizens besides ecological contribution inside semi-terrestrial ecosystem consist of lake and river shorelines, wetlands, and beaches [5].

In today's world where environmental and economic effects of dam construction and lakes are debated, it's not a rational approach to benefit from dams for only electricity production. In this context, it will be convenient to plan various alternative economical activities in dam lakes such as fishing and touristic activities [6]. It can be expressed that almost of the outdoor activities offered below can be achievedas the result of the preliminary studies, synthesis and researches made around the dam [7]. These can be listed as camping, picnicking, hiking (spring, bicycles, motorcycles, cars), land hunting, sport fishing, shooting, horse riding, climbing, winter sports, water sports, to cure (sand, mud, spa etc.) to nature exploration, visit the nature center, amateur volatility, gliding, parachuting, scouting, watching the scenery, play in the playground, nature walks.

This study puts forward of the importance of Erzurum Palandöken Dam Lake and its environment for the people living in Erzurum city to meet their recreational needs. Furthermore, it was implemented in order to determine the recreational potential of Palandöken Dam Lake and its environment in this sense.

Control of the expected development to be in the future in Erzurum Palandöken Dam Lake and its environment is very important for determining strategies and ensuring balanced and regular development, preperation of sub-regional development plan and sustainability of the resource.

2. Materials and Methods

2.1. Research Area

Construction of Palandöken Dam was completed in 2005. 46 km from Erzurum-Bingöl highway and it has been operated to meet drinking water since 1th November 2008. Dam's body is filled with soil, body volume is 500.000 m3, height of river bed is 49,00 m. lake volume is 220,44 hm3 in the water level, lake area is 50,50 km2 in the water level. Dam provides annual 34 hm3 drinking water while giving irrigation service for an area of 11.678 ha. [8].

Study area is 31.693 ha and it is an intersection point between Erzurum-Bingöl (D-950) highway in the South-West of PalandökenÇat dam and Çat town boundary in the North-East and Beyçimen hill in the South (Figure 1).

In the study it was aimed to determine area use proposals for optimal utilization from the area as process and structure putting out the recreational potential of the ÇatPalandöken dam located in an area close to Erzurum. For this purpose, it was used from the works previously done on the subject to identity the most appropriate potential recreation areas (e.g.[4], [5], [6], [9], [10]).

In the first phase of the study literature review is performed for the research. In this context, the study has a quantitative composition with regard to use of data as statistics, reports and so on obtained from various institutions and organizations and also it has qualitative features with regard to use data obtained by interview, observation.

In the second stage, digitizing of maps with differenft scales are made by inventory works in the field of research and it has been transferred geographic information system (GIS) collecting in databases. ArcGIS 10.1 software and extension of operation Company benefiting from GIS techniques were used in the study. In the third stage, there are some suggestions about appropriate activities and areas for recreation by maps.

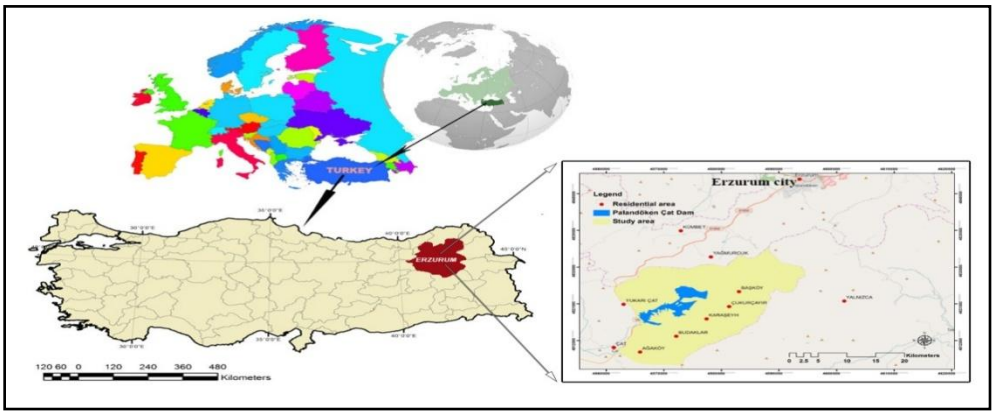

Figure 1. Location map of the research area

3. RESULTS AND DISCUSSION

3.1. Topography

The study area and environment consist of Oligo-Miosen elderly land and are located on the southwest extension of the Palandöken Mountains. Topography is quite hilly in the area andesit and bazalt rocks spread widely (Figure 2).

The study area and its environment are surrounded by high hills (Figure 3). The longest river poured into the Palandöken Dam is Long Stream. The source of this stream is the hill with 3100 m. located in the south of Ejder Peak (3176 m.), the highest place of Palandöken, in the near of Karakaya Peak (3167 m.) [11].

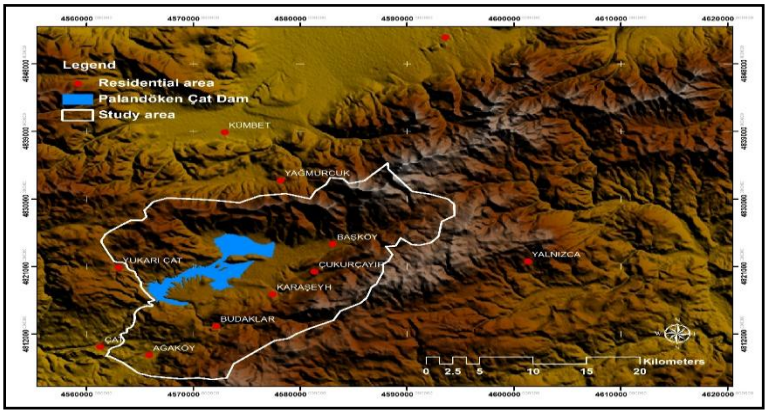

Figure 2. Topographic map of Palandöken Dam and its environment

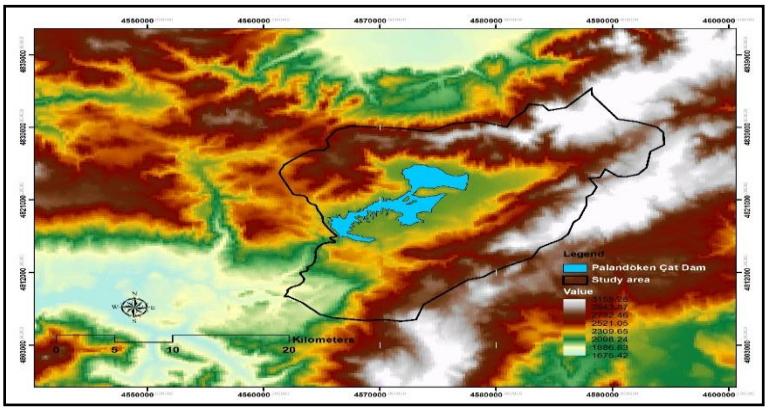

Figure 3. Height map of Palandöken Dam and its environment

3.2. Slope

Defining of the slope, one of the topographic elements, is utmost importance in recreational planning. Slope groups have been identified as %0-2, %2-6, %6-12, %12-20, %20-30, %30 benefiting from the topographic maps of slope. The slope of the land seems over 20-50 % in the study area. More appropriate areas with 12-20 %, 20-30 % slope for building are concentrated in the east of the area (Figure 4).

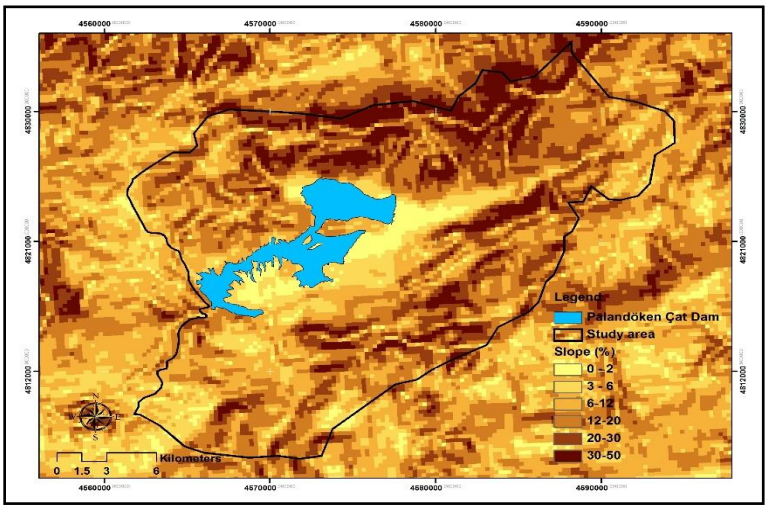

Figure 4. Slope map of Palandöken Dam and its environment

3.3. Climate

The research area is similar to Erzurum in terms of climate. The study area is under influence of severe continental climate due to topographic structure and geographical location and summer is short and warm, winter is long and snowy. The research area has the lowest average temperature in Turkey.

Warm is starting to fall in September, to rise in April in the area. The highest average temperature recorded during the 13 years of observation period in the city is 19.1ºC the lowest average temperature is -9.9ºc. The average temperature of four months of the year (December-January-February-March) is less than 0ºC. The lowest temperature is -36ºC measured on January 23, 1995, the highest temperature is 35.6 0C on July 31, 2000. The night temperature is less 0 0C than in all months except July and August.

The dominant wind direction of the environment of the research area is southwest. The fastest winds with average of 28.1 m / sec speed in the west in April, the slowest winds with average of 19.5 m / sec speed from the southwest in september [12].

3.4. Vegetation

Vegetation was lost because of very severe and excessive grazing in the watreshed in the resarch area. This will make more severe surface erosion in the future. There are usually annual and perennial herbaceaus plants in these fields. Photographs taken from the research area are given in (Figure 5.) in terms of the vegetation, steppe and alpine meadows are dominant.

Step formation is flourishing with the melting of snow but are suddenly dry when the summer drought starts. The alpine meadows in the mountain areas can stay almost green throughout the summer unlike steppe (Figure 6). Research field is represented by nicknames as flat land, steppe, grasslands and stony fields "OT-Z in" Erzurum Regional Directorate of Forestry, Forest Management Plans [13].

Figure 5. Vegatation of Palandöken Dam and its environment

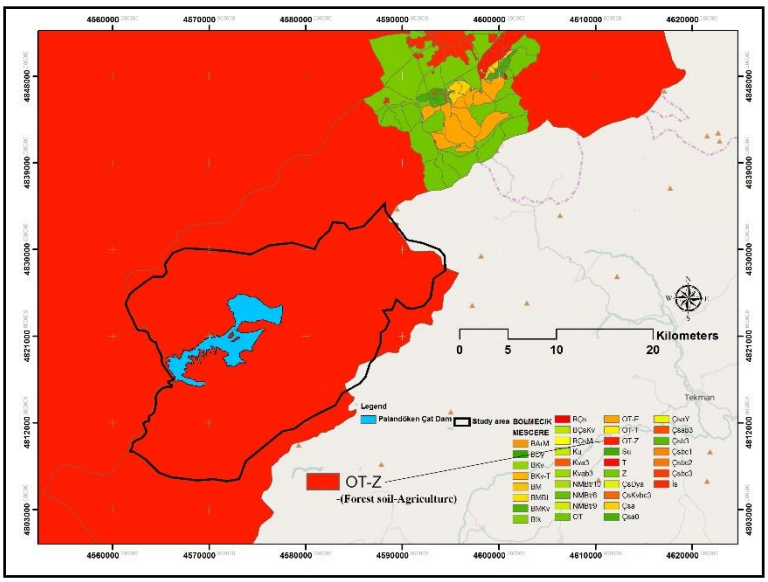

Figure 6. Stand map of Palandöken Dam and its environment

3.5. Existing Land Use

PalandökenÇat Dam and its environment are one of the most important recreational areas located close to Erzurum. Due to Dam started to fill with water, Down Çat, Top Çat and Taşağıl villages remained under the water, urban, who were collecting mushrooms at first, discovered the area newly and now they make picnic, sport fishing, nature walks and view course. There are not any social and recreational facilities available in the research area. The use of the available space of the research area are given in Figure 7. Pasture, irrigated and dry farming, grasslands constitute the rural pattern in the research area. Başköy, Çukurçayır, Karaşeyh, Budaklar, Ağaköy are in the research area as residential places Figure 8.

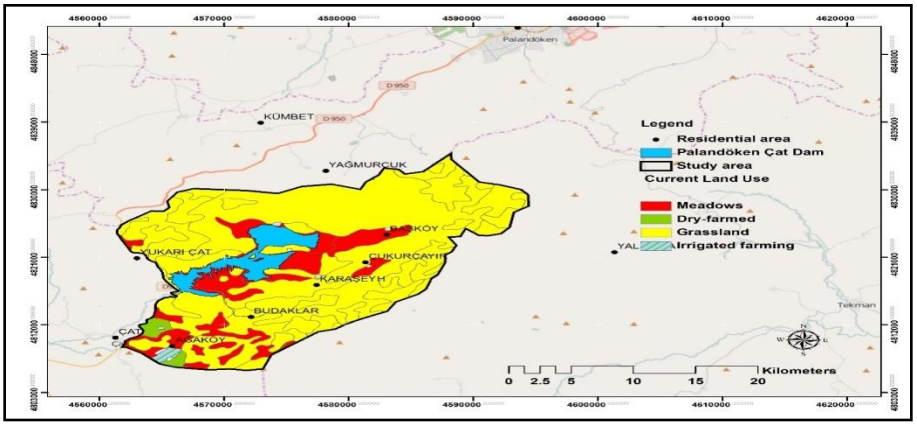

Figure 7. Existing Land Use Palandöken Dam and its environment

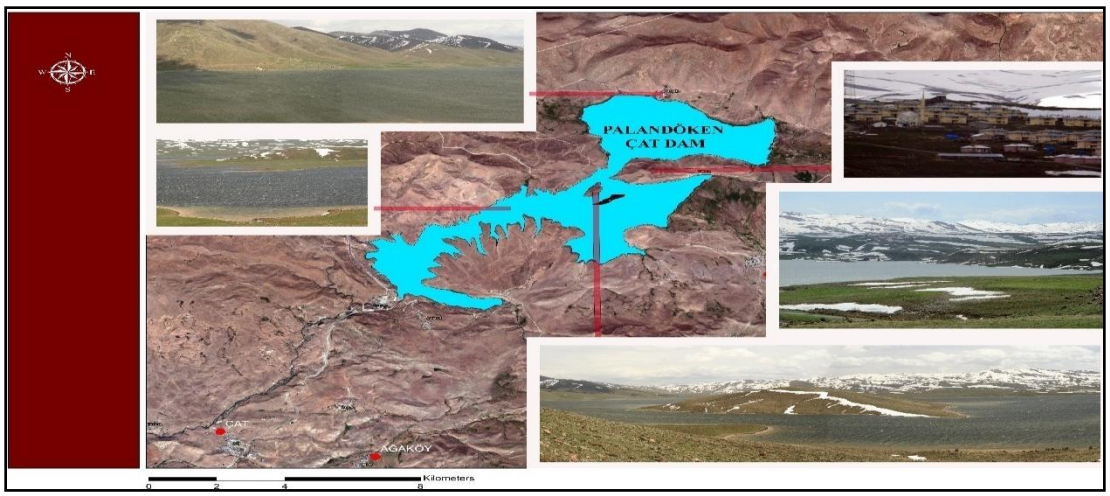

Figure 8. Views Palandöken Dam and its environment

4. CONCLUSION

Today cityes offer positive conributions to people, however they cause people to face serious problems. Unplanned construction, negativite effects of excessive population growth and hard work bring adverse physical and psychological spiritual effects on individuals. People need relax, have fun, assess their free time like work. For this purpose, the planning of recreational activities for the meeting of recreation needs of people consistently and regularly is very important. In recent years dam lakes, natural lakes, sea and river shores located in the research area are used extensively for the purpose of tourism and recreation in certain periods.

Erzurum is one of the cities located at the highest altitude in our country (1850 m). In the region continental climate prevails, winter is very long and approximately covers a period of 5 to 7 months. Remaining of snow for a long time in the winter period and being cold are forced the local people to stay indoors. After the long winter period opening of the public to the environment and especially rural areas are emerging as an important need in the spring (May-June). Water coasts (recreational areas, bellows, river, reservoir and pond) near and far from the city are also in great demand for recreational purposes [9].

Most appropriate recreational areas in terms of recreational activities that can be done in the potential recreation areas are concentrated in areas close to settlements, close to dam, less inclined, having ease of transportation in the research area. Lake shore in the research area is an

important potential for the use of recreation. Research findings in the field show that it is appropriate in terms of qualities as topography, vegetation, transportation, landscape view and relations with the use of available space. In the study of [14], planning and design work is proposed for the research area.

1. Water quality in the research area, water source of Erzurum, should be improved landfill should be cleaned and standards should be protected.
2. Preserve the existing landscape character of the dam lake environment should be based on the purpose of recreation.
3. Use of the area should be planned in order to ensure the protection and use of balance and control in the study area. Thus, digressing of the visitors from the designated use and routes can be monitored.
4. In the research planning some water sports impacting the water quality should be restricted.
5. Limited number of eating-drinking places, recreation facilities should be established in the locations restricted buildings.
6. Horseback riding, hiking and cycling paths that cover the dam coast will form the basis of quality recreation areas.

Plan and design for the use of recreational areas in the research area of Erzurum should be made available to meet a variety of recreational needs of the population that will increase in the future. Here the overall presentation of the area made in this study, Erzurum from recreational importance for Erzurum has tried to be highlighted in terms of recreation.

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