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Functional Use Change in Green Spaces: A Case Study of Kırklareli Province

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Abstract. Green spaces which are one of the most important public spaces in urban design have an important role on qualified daily urban life. People escape from intense work pressure and traffic jam of metropolises to those urban green areas to take a breath even they cover a small size. In time, people's expectations from green spaces as functional and quantitative needs are changing. This change occurs due to increasing population and as the character of the urban life. This study examines the functional use and quantitative change of urban green spaces of Kırklareli Province from past to present. Kırklareli is a border city to Bulgaria which is located in north-west part of Turkey and this gives a transitional and a multicultural character to the city. The population is about 67360. In the course of time; green space needs have increased by the increasing population. In addition to this, green spaces' functional use change has been identified. According to the results of the study; from the aspect of the green space standards, Kırklareli found above standards with 17.5 m² per capita, but on the other hand, sport and playground areas found insufficient. The Oldest and the newest city plans of Kırklareli (1940s and 2012s cadastral plans) have been compared and site surveys implemented as the methodology. In site survey, current green spaces' functional uses as sport or playground are observed and determined and also current quantitative measure of the green spaces are verified. Urban green spaces in Kırklareli Province evaluated through considering world's most populated urban green space standards and Turkey's standards. This study utilizes to compose a substructure of the urban green space. Determined deficiencies and inadequacies of green spaces and functional needs in this study, can guide to further studies and implementations of Kırklareli Municipality.

1. Introduction

Nearly half of the global population lives in urban areas. Continuous growth in the population and size of urban areas, increasing human needs cause pressure on green spaces of city life. Urban green spaces have indisputably benefits both as ecological and social to the surrounded settlements. To set an example, purifying air, reducing air pollution, regulating climatic conditions, regulating urban temperature are some of them. Inner city green spaces have an important role on climatic balance. Larger green spaces in urban areas such as park or zoo can be 4°C cooler than the surrounding area. Also green spaces enable habitat for urban, and strongly influence urban bird communities, enable recreational activities for human health and have huge emphasis for human welfare especially from psychological aspect [1-3]. Besides, urban green spaces' positive relation with human health is revealed in the past



studies [4]. Urban green spaces are indispensable element for the sustainability of cities [5]. As a general knowledge, green spaces provide opportunities for outdoor physical activities, social contact and relaxation [4]. The research study of Hyunjung Lee et al. (2012) also supports this result with most people's preferences on urban green spaces that support outdoor activities [6].

Dr Well's research study revealed how environmental and urban green areas design promoted or hindered physical exercise, psychological well-being and cognitive functioning. Physical activities found much related with mix-used neighbourhoods' design as sidewalks or shared recreation spaces. On the other hand, safety concern or fear of crime deters walking. Research revealed also a grid street's design promotes walking too. In addition to those results, especially for children's well-being; having nature close to a home, protects the psychological well-being of children and having green space around the home boosts their cognitive functioning [7]. In another study of Wells and Evans (2003) which implemented in rural upstate of New York Communities with 337 children, the impact of life stress and adversity found lower among children who lived close to nature and vegetation than among those with little access to natural settings [8]. Once repeating the urban green spaces' impact on well-being in city life, functional service change of the green spaces is another case that should be drawn attention. Functional services can change in time according to the changing needs of the users. Since the area is very valuable especially for high populated cities, green spaces functional use can change too. Most of the urban green spaces in Kırklareli, service for visually or ecologically. This is not sufficient for outdoor activities. As a summary of the study, to the contrary of the sufficient green space per capita, there has been increasing needs for green spaces including outdoor activities determined.

Study examined the change of urban green spaces of Kırklareli City from the aspect of functional needs and quantity. Future changes will bring forth need of new urban green spaces but in which function? For further plan objectives, determination of the functional needs and the quantity of them, monitoring studies that consider the changes both as functional and quantity are prior.

2. Study Area and the Methodology

The study area is Kırklareli city which is located on the North West side of Turkey. The coordinates of the area are between 41° 14' and 42° 00' latitudes and 26° 53' and 28° 13' longitudes (Figure 1). Population has an international and multicultural character as well. It is a small-sized city with the population of about 67360 and covering an area of approximately 1700 km². Kırklareli is in a distance of 213 km to İstanbul and 67 km to Edirne (Figure 2). After the establishment of Kırklareli University in 2007, Population has been increased and diversified.

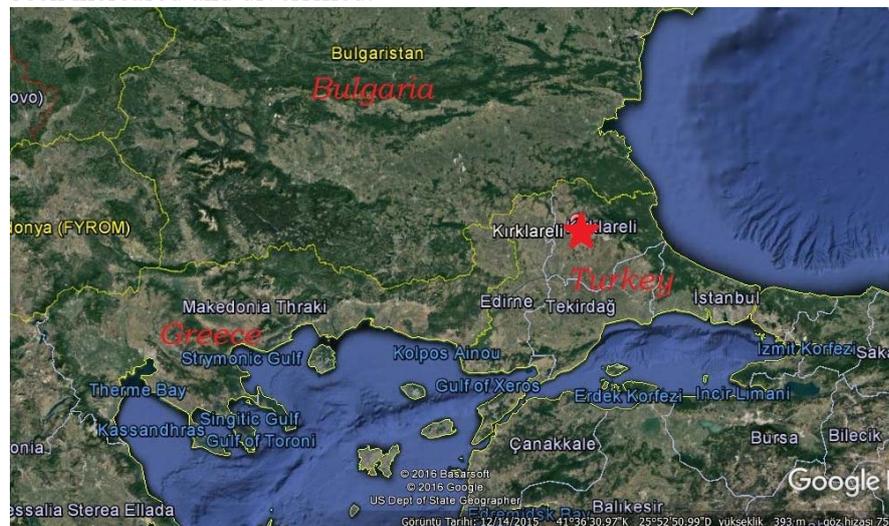


Figure 1. Kırklareli location in Turkey (Google Earth, 2015)



Figure 2. Kırklareli Center (Google Earth, 2015)

As methodology, we examined the green spaces of Kırklareli both for qualitatively as considering meet with the needed functions and quantitatively as areal size of green spaces per capita. We used the base map, development and master plans of Kırklareli both the oldest (1940) and the newest (2012) to compare. Besides, we implemented site survey in urban green spaces of Kırklareli city center to verify the current situation and the newest plan. We composed Kırklareli urban green spaces' map by combining the site survey and 2012's plan by using AutoCAD 2009 Program, version 17.2. There are green spaces but in which function? Do they serve for passive or active uses? What should be the quality of the green space and how it meets with the needed function? To determine the qualification of the green spaces, we classified them according to their functions.

Increasing the urban green space's square meters per capita of Kırklareli without considering the functions was the prior target of the Strategic Master Plan of 2010-2014 of Kırklareli Municipality. Especially playground and sport function areas are considered to increase as function of urban green spaces in the strategic master plan [9]. According to this strategic plan target, we considered both playgrounds and sport functions of green spaces and also green space square meters per capita. The first construction plan and base map formed in 1940 for Kırklareli. To make a comparison, to see the changes in green spaces we considered the first and the last green spaces' plans and also the data of site survey results. Urban green space plan was composed by using both the last city plan and the data of site survey

3. Green Spaces' Change from Past to Present in Kırklareli City Center

Quantitatively and qualitatively changes of green spaces of Kırklareli were examined as the concept of this study. As quantitatively, just size of the green spaces and the increasing size considered. As qualitatively first; two main functions as playgrounds and sport fields considered if they meet with the functional needs of population by considering Turkey's green space standards. Secondly, urban green space square meters per capita considered and evaluated from past to present in Kırklareli City Center. 1940's green space data and 2012's green space data were compared.

Green spaces' standard is identified as the square meter of active green spaces per capita. Active green spaces include playgrounds, sport areas and parks as neighbourhood, community or pocket parks, sitting and resting areas that allow outdoor activities [10]. Besides, there are passive green spaces as military green spaces, cemeteries and medians. But these are not considered to determine the green space standards. Green Space Standards of each country varies. These standards change according to the economic situation, population and cultural structure of the country (See below in figure 3). In addition to this, in the same country, for different cities, standards can vary according to their situation too [11]. In US 40 m² per capita; in Rome/Italy 11,9 m² per capita; in Berlin/Germany 27 m² per capita and in Paris/France 10,1 m² per capita [12]. In Turkey green spaces' standard is determined as 10 m² per capita [13]. The elaboration of this 10 m² per capita standard includes 1,5 m² playground area; 2 m² neighbourhood or community park area; 3,5 m² urban green park area and 3 m² sport area [14]. According to the World Health Organization, urban green spaces should be at least 9 m² per capita, but the optimum size determined as 10-15 m² per capita [15].

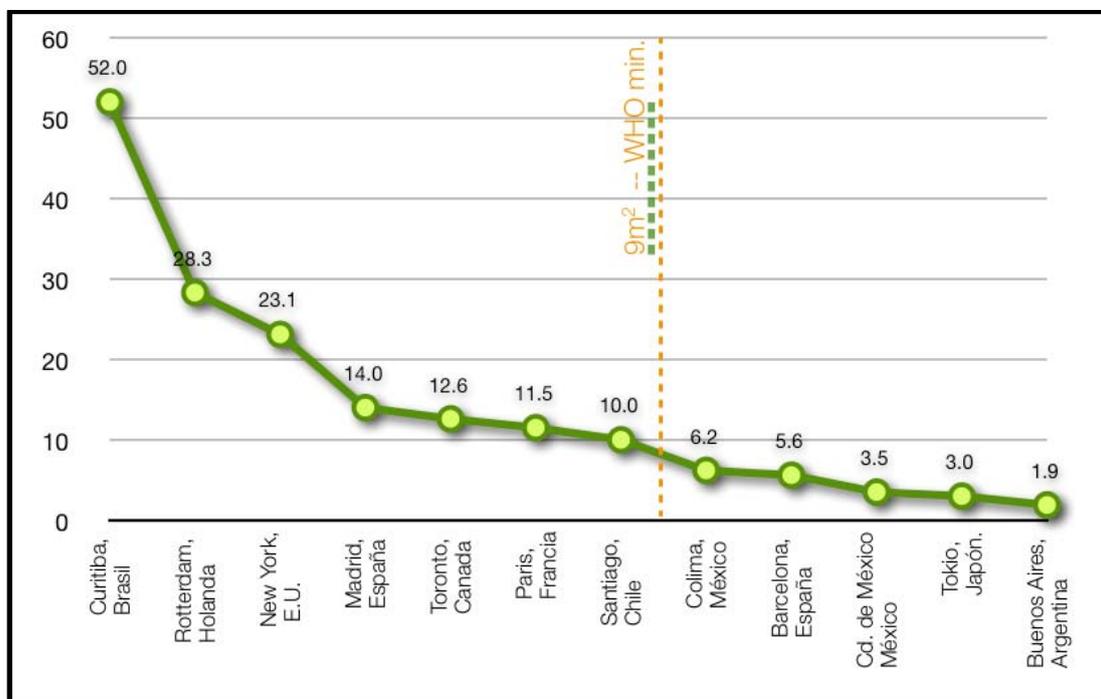


Figure 3. Metropolitan's green spaces square meters per capita [15]

According to 1940's data; the population of Kırklareli was 17.944 and the total green space was exactly 233.518 m². Sport fields covered an area of 55.067 m² of that total green space. There is no information found about playground areas according to the master plans of 1940's. There is a data efficiency to compare playground areas so we can only interpret the current situation for the playground areas of Kırklareli. Sport areas per capita in 1940; measured as 3.06 m² which meets today's sport area standard per capita. The green space per capita on that year calculated as 13.01 m². In the year of 2012, the population increased to 67.360 and the total green space measured as 1.181.968 m². According to the areal and population numeric data; the green space per capita calculated as 17,5 m². Total sport areas measured as 67.948 m² of those green spaces. Total playground areas measured as 7.971 m² [16].



Figure 4. An old view from Kırklareli (Kırklareli Municipality Archive)

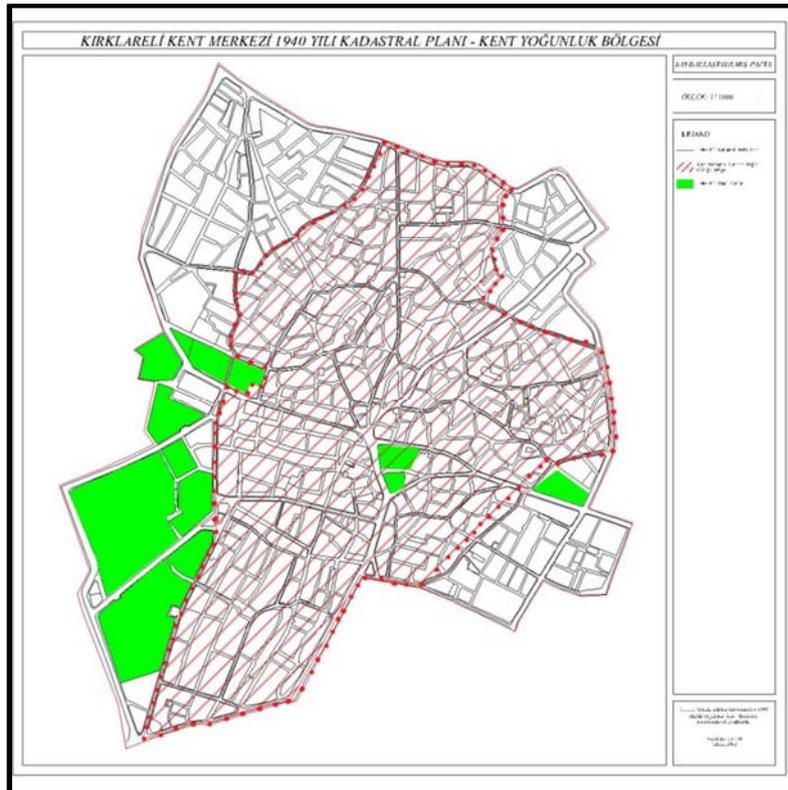


Figure 5. First cadastral plan of Kırklareli in 1940 (Kırklareli Municipality Archive)

Development plans and offerings considered in the concept of this study for interpret wise of the progress of the city. After first cadastral plan, city's physical development offered to the south of the city where the fertile agricultural soils found. Those fields found appropriate for city development but it built a contrast with the land use in a city which livelihood based on mostly agriculture. This development was offered due to raising population [17]. Story height offered in those plans low to be compatible with historical urban site since the city is being 4th degree seismic belt according to the earthquake map of Turkey [18].



Figure 6. A top view of Kırklareli in 2012 (Culha 2013)

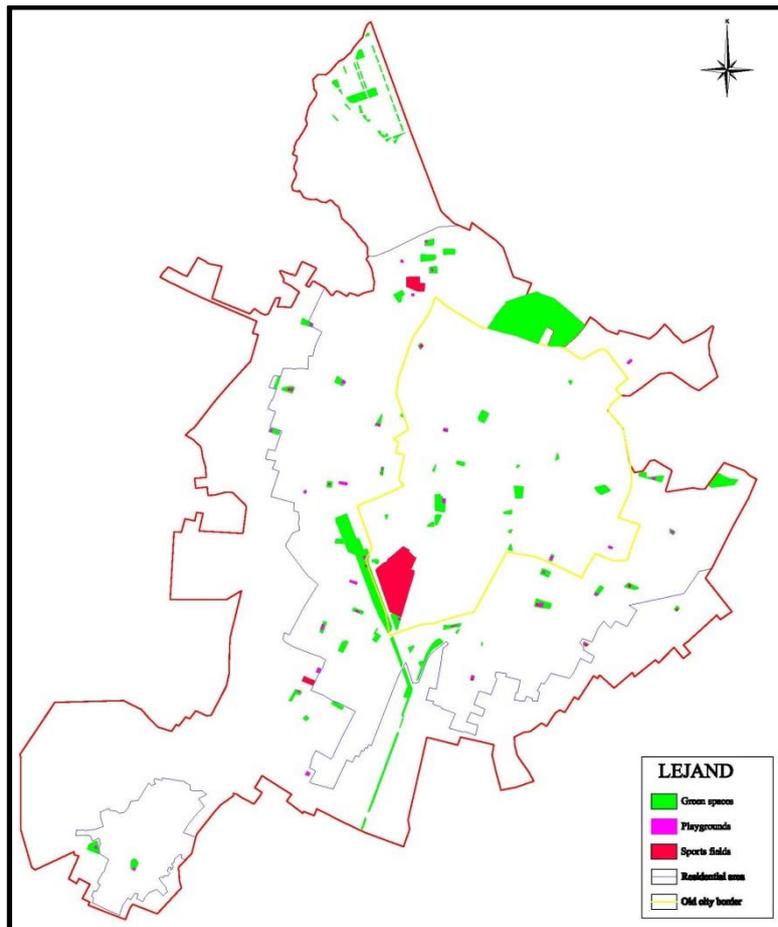


Figure 7. Current green spaces of Kırklareli (playground areas are pink and sport areas are red in colour)

4. Results and discussions

The quantitative increase in urban green spaces from past to present is obvious. Square meters of green spaces for Kırklareli have increased 406 %. This growth rate is also including the effect of city's physical growth. Comparing with 1940's green space; functions became varied according to the needs of growth population. Today Kırklareli City has 7.971 m² playground and 67.948 m² sport areas as function in the total urban green space. According to the Turkey's green space standards, we considered at least 1.5 m² playground per capita, and 3 m² sport area per capita. Sport fields have also positively changed 23.4 % from past to present but at the same time population has increased with the ratio of 275 %. This means the sport functional area standards per capita decreased according to the Turkey's green space standards. Remembering the 3 m² of 10 m² green space standard was sport area; current sport area per capita decreased to 0.991 m². In 1940 the sport area per capita was 3.06 m². Again remembering 1.5 m² of 10 m² green space standard was playground area; current playground area per capita measured as 0.118 m². Here we cannot compare the past and present situation of the playground area since there is no data for past uses. Urban green spaces per capita have also been positively changed with the ratio of 34, 5 %. Urban green space per capita measured as 17, 5 m² is adequate and this amount is over the city standards for Turkey (10 m² per capita). On the other hand, there is deficiency determined from the aspect of functional needs. Sport and playground functional needs don't meet with the current situation. As functional aspect additionally; 124.028 m² sport areas and 93.069 m² playground areas are needed in the urban green spaces to serve as outdoor activities.

5. Conclusions

Despite green spaces quantitative growth, functional needs of the population as sport or playground area don't meet with the standards. Urban green spaces should be evaluated with their qualities and their offered services and functions preferred. This can bring satisfaction for human welfare to offer a qualified city life. Quantitative growth certainly enables habitat areas for wild life in cities but not exclusively enough.

On the other hand, if we come to interpret development plans; master plan offers the city growth to the south direction but, the city had been grown both in south and west directions. Since Kırklareli is in the 4th seismic level, the story height is low and the city grows horizontally. Vertical city growth can be offered by using earthquake resistant construction technology for Kırklareli. Urban sprawl problem and shrinking the city can be achieved by this vertical construction layout. This can provide larger green spaces for city. Research results obviously reveal the deficiencies on playground and sport functional areas of urban green spaces. Considering population of the city, 124.028 m² sport area, and 93.069 m² playground areas should be added. The quantitative urban green areas of Kırklareli are adequate for per capita but found deficient for qualified standards or human welfare in urban life.

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