

Examination of the Active Open Green Areas of Rize at the City Scale

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Abstract

In this study, the distribution and quantities of existing green areas in the city of Rize were examined, and the distribution of active open green areas in the city and neighborhood scale, their size, adequacy, and functional qualities, and the active green area rates per capita were determined. Squares, parks, children's playgrounds, sports areas, school gardens, official institutions, cemeteries, pedestrian paths, and medians from the open-green areas of the city of Rize were examined. It has been determined that the open-green area per capita in the city of Rize constitutes 7,8 m², and this rate is below the urban standards and thus insufficient. In addition, it has been observed that the open-green areas in the city do not exist in some of the areas reserved for planting, some are extremely limited, and the plant species used are not qualified to meet the needs of the urban people in terms of aesthetic and functional features in increasing the quality of the area, and the plant design is insufficient. As a result, it is suggested that the active green areas on the coastline and the active green areas in the city should be planned and designed by experts with a holistic approach, improving quality and quantity, and increasing the size and number of active open-green areas throughout the city.

Keywords: Urban open green areas, Rize city, active green areas, urbanization

Rize Kenti Aktif Açık Yeşil Alanlarının Kent Ölçeğinde İrdelenmesi

Öz

Bu çalışmada, Rize kenti mevcut yeşil alanlarının dağılımı ve miktarları incelenerek, aktif açık yeşil alanların kentteki büyüklükleri ve işlevsel nitelikleri ve kişi başına düşen aktif yeşil alan oranları tespit edilmiştir. Rize kenti açık-yeşil alanlarından meydanlar, parklar, çocuk oyun alanları, spor alanları, okul bahçeleri, resmi kuruluşlar, mezarlıklar, yaya yolları ve refüjler incelenmiştir. Rize kentinde kişi başına 7,8 m² açık-yeşil alan düştüğü ve bu oranın kentsel standartların altında ve yetersiz olduğu belirlenmiştir. Ayrıca, kentte yer alan açık-yeşil alanların bitkilendirmeye ayrılan alanların hiç olmadığı, ya da sınırlı olduğu ve kullanılan bitki türlerinin mekanın kalitesini artırmada kent insanının ihtiyaçlarını karşılayacak nitelikte olmadığı, bitkisel tasarımın yetersiz olduğu gözlenmiştir. Sonuç olarak mevcut yeşil alanların bütünsel bir yaklaşımla konunun uzmanları tarafından planlanıp, tasarlanarak nitelik ve nicelik olarak iyileştirilmesi ayrıca aktif açık-yeşil alan büyüklük ve sayısının kent genelinde artırılması önerilmektedir.

Anahtar kelimeler: Kentsel açık yeşil alanlar, Rize kenti, aktif yeşil alanlar, kentleşme

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1. Introduction

Since the industrial revolution, the rate of urbanization has increased gradually due to migration. Irregular applications due to rapid and unplanned urbanization have led to the reduction of existing urban open-green areas and the restriction of their usage purposes. With the studies carried out in developed countries, cities have been re-planned and rearranged by taking into account the social, psychological, and recreational demands of individuals (Bekiryazici, 2015). In developing countries, on the other hand, open and green areas have remained in the background, primarily considering the need for housing and development. This situation has negative consequences on human health and quality of life.

Unhealthy and unplanned urban growth causes people to face global-scale problems such as environmental pollution, noise pollution, visual pollution, climate change, habitat loss, decrease in biodiversity (Vural, 2020). For these reasons, the necessity of green areas in urban life is an indispensable reality. Green areas offer more comfortable environmental conditions to people with the contribution and opportunities they provide to the urban ecosystem, physical development of cities, and daily urban activities (Burgess et al., 1988; Cetin, 2015; Eminağaoğlu & Yavuz, 2010).

The concepts of open and green areas have similarly been defined by various authors. According to Öztan (1968) and Özbilen (1991), the concept of an open area is one of the important basic elements of the urban fabric and describe as the openings or empty areas outside the architectural structure and transportation areas. According to Gold (1980) "open areas" are defined as lands that are not covered by vehicles or structures in an urban area, and undeveloped lands that are important in various aspects such as water surfaces, natural resources, history and landscape features, parks and recreation (Oğuz, 1998). Yıldızci (1982) on the other hand, defines urban open areas as constructions within the city or outside the city, either of which has a land use feature (agriculture, forest, heath, lake, etc.) or as an answer to certain functions (park, garden, square, promenade, etc.). They are also defined as unoccupied areas (Önder & Polat, 2012).

The concept of the green area is defined as the surface areas of existing open areas covered by or combined with vegetative elements (woody and herbaceous plants). According to this definition, every green area is an open area. However, not every open area is a green area (Akdoğan, 1987; Saatçioğlu, 1978). Again, according to Öztan (1968) and Özbilen (1991), while the empty areas left after the necessary buildings are placed in the city plans are expressed as urban open areas, urban green areas are formed by planting these open areas. These areas, which positively affect the image of the city, play an important role in the fulfillment of recreation functions (Aydemir, 2004). In the work of Gül & Küçük (2001), it is possible to use these two concepts as separate concepts. However, in practice, it may not be possible to separate these two concepts from each other with certain lines. For this reason, we think that it would be more appropriate to use these two concepts together as open-green areas/areas instead of using them separately.

According to Rostami et al., (2013) the quality of green areas contributes positively to defining the urban identity, which can increase the attractiveness of cities in the areas of living, working, investment and tourism. Open and green areas, which are an important planning tool for the success of planning studies in cities, are one of the basic uses of the area that provide the balance of occupancy and area in the organization of urban area, reveal and shape the physical structure of the city, and are a balance element integrating other uses of area in urban planning and design (Manavoğlu & Ortaçşme, 2014).

It is possible to summarize the contributions of urban open-green areas to the city and the people of the city and the functions they fulfill in four groups ecological, economic, sociological, and technical functions (Önder & Polat, 2012). As an ecological function of urban open-green areas, open and green areas have multifaceted effects on the urban climate and they are biological environments, providing clean air by producing oxygen and carbon dioxide, regulating air circulation, daily seasonal temperature changes, and relative humidity of the city air, reducing negative environmental factors such as noise and dust, providing clean air to the city. They provide groundwater storage and erosion control, as well as providing light, and sunbathing opportunities and directing the development of

the city, especially in places close to the city periphery (Berker, 2021). As an economic function of green areas, it helps energy saving by heating-cooling of green areas, forests, or trees (Yılmaz et al., 2006), increasing tourism potential and job opportunities by improving urban infrastructure (Öztürk, 2013), creating a hedonic effect of green areas (Morancho, 2003; Saphores & Li, 2012) and because it is a raw material for many products, it offers production opportunities. As a social function, it has been determined that it provides opportunities for the realization of educational and cultural activities, especially meeting the recreation needs of the people, as well as positive contribution to the health of the public and reducing crime rates (Grahm & Stigsdotter, 2003; Bilgili et al., 2011; Laforteza et al., 2013; Öztürk, 2013; Doygun et al., 2015; Yılmaz et al., 2017; Ögçe et al., 2022). The main technical functions of green areas are their harmony with architectural structures and their potential to reflect the character of the city (Gül & Küçük, 2001). It also has many technical functions such as improvement of adverse environmental conditions, architectural effect, screening, regulation of the direction of urban development, etc. (Vural, 2020).

The open-green area norm is generally expressed as the amount of m^2 of open-green areas per capita, that is, the division of all green areas in the city by the general population of the city. However, this statement is only a quantitative approximation. Open-green areas, their equipment, functionality, and aesthetics are as important as the area they cover (Gül & Küçük, 2001). According to Art.25 of the Zoning Law No. 6785, which was enacted in 1956, as amended by Law No. 1605 and dated 20.7.1972, the amount of green area per population taken as the basis for planning was at least $7 m^2$, with a regulation enacted on September 2, 1999, the amount of green area has been increased to $10 m^2$. In addition, according to the criteria of the Ministry of Public Works and Settlement, the distribution of $10 m^2$ green areas per capita in urban areas according to their functions; $1.5 m^2$ / person as a children's playground at the neighborhood unit level, $2 m^2$ / person as a sports field at the neighborhood and district level, $3 m^2$ / person as a neighborhood park, and $3.5 m^2$ / person city park at the city level (Önder & Polat, 2012).

Today, according to the MPY Regulation (2014) in the legislation, the amount of active green area is foreseen in the Urban, Social and Technical Infrastructure Annex1 in terms of quantity of $10m^2$ per person in the borders of the Municipality and adjacent areas, and $14m^2$ per person outside the borders of the Municipality and adjacent areas. In this context, it is very difficult to say that the green area standards of $10m^2$ per person in cities have been reached in our country. For example, as of 2018, there is a decrease of $5.98m^2$ in Istanbul and $4.4m^2$ in Antalya (Gül et al., 2020).

To date, various studies have been conducted on the current status of urban open-green areas in many provinces in our country, and no comprehensive research has been conducted in which the quantity and quality of open-green areas in the city of Rize are taken holistically. This study aims to examine the current situation of open-green areas in the city of Rize and to determine their competencies and functional qualities.

2. Material and Method

The study area is located in the east of the central district of Rize, Artvin in the east, Trabzon in the west, Erzurum in the south and the Black Sea in the north, in the east of the Eastern Black Sea coastline, between $40^{\circ}-22'$ and $41^{\circ}-28'$ east meridians and $40^{\circ}-20'$ and $41^{\circ}-20'$ North Parallels. It is one of Turkey's most rainy and smallest provinces (Rize Belediyesi, 2021). There are 42 neighborhoods in the central district of Rize (Figure 1). The area of the central district is approximately $245 km^2$ (Korgavuş, 2015). The population of the central district for 2020 is 148,735 (TÜİK, 2021).

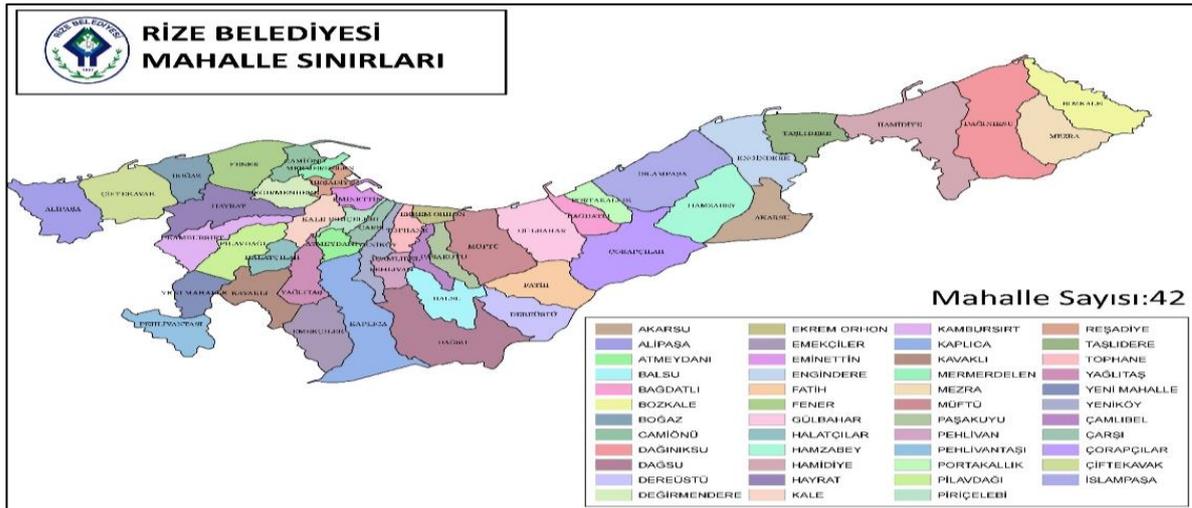


Figure 1: Location of neighborhoods in the study area

In the study, on-site observation, examination, analysis, and evaluation methods were used as a method, and reports, projects, and activity reports prepared by various institutions and researchers related to the study area were used. Quantity and functionality of the open-green areas of the study area were investigated under 7 different headings; squares, parks and children's playgrounds, sports fields, school gardens, official institutions, cemeteries, pedestrian ways, and median areas. First of all, the current status of the open-green areas of the city was revealed. Then, based on on-site observations and the 1/5.000, 1/1.000 scale Master Development Plan of Rize Municipality Directorate of Reconstruction and Urbanization, Explanatory Reports, and the information obtained from the Park and Garden Directorate, the current amounts of open-green areas in the city center were calculated and their adequacy was examined. Finally, the data obtained in the research were evaluated by considering the standards specified in the Ministry of Public Works and Settlement and Zoning Law No. 3194, and suggestions were made regarding the open-green areas of the city of Rize.

3. Research Findings

3.1. Squares

In the city of Rize, there is only one square named 'July 15 Democracy and Republic Square'. This square, which is used very actively by the citizens, can be used as a festival- area, a walking, and waiting area, a speaking area, a meeting area, an exhibition area, etc. It is located between Cumhuriyet Street and Atatürk Street. This square, which has a total area of 702 m², is 0.004 m² per person (m²/person). This rate is insufficient in terms of green areas and is below the standards. The area is completely composed of hard ground and there is just an ornamental pool, democracy monument, and seating units on it. The lower part is reserved for the car park and the planting is done in pots. The existing square cannot meet the growing and developing city's needs in terms of quality and quantity in terms of size and planning (Figure 2).

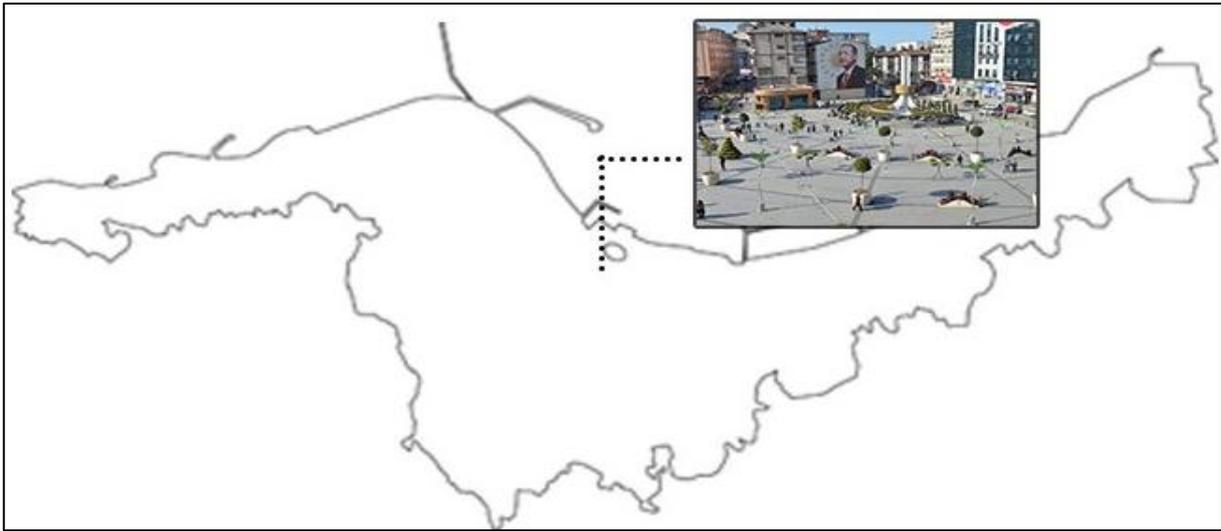


Figure 2. July 15 Democracy and Republic Park

3.2. Parks and Playgrounds

Individuals' recreation, socialization, rest, etc. is mostly composed of green tissue, It can also be grouped differently as parks, neighborhood parks, district parks, city parks, national parks, regional parks, forests, groves, and nurseries (Uluakşit et al., 2020). There are 71 park areas connected to the central district of Rize province. Children's playgrounds constitute 42 of these parks. While the total area formed by the parks in the central district of Rize is 203371,958 m², the amount of parks per person is 1.36 m². The majority of the parks are located in the coastal filling area. The most important park in the interior is the Ziraat Botanik park and the Rize Castle, which is used for recreation. In addition, 28 August Fetih Park and Tuzcuoğlu Memişağa Park, which are also located in the interior, are among the parks that are heavily used due to the ease of transportation. Although Isırlık Nature Park, which is used as a recreation area, is preferred, it has less use compared to the others because it requires vehicles (Figure 3). Existing Park areas and children's playgrounds are below the standards in terms of quality and quantity, and partially meet the needs of the people. When evaluated based on the neighborhood, parks and children's playgrounds are quite inadequate.

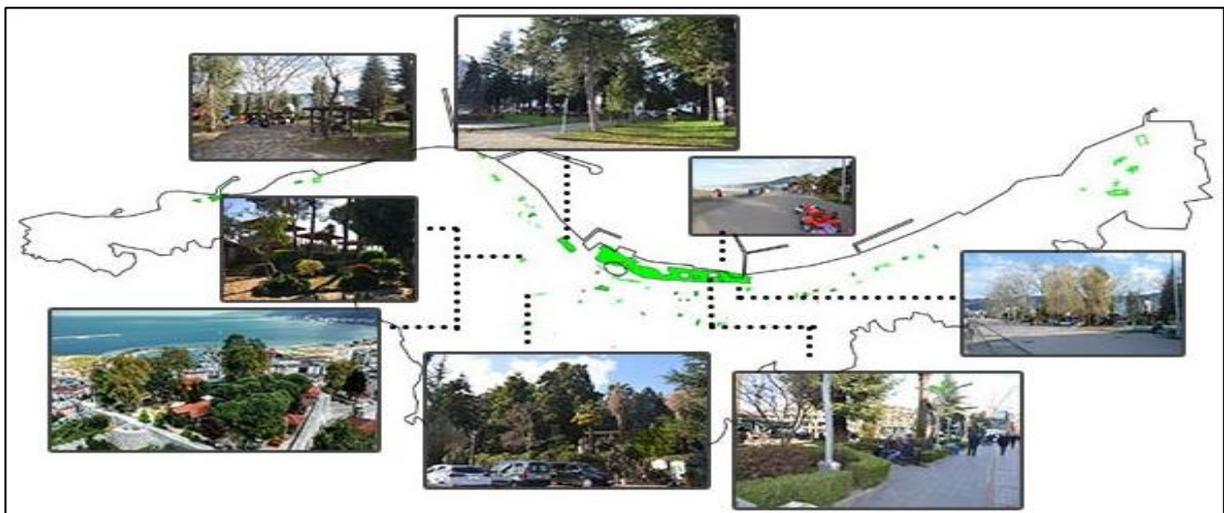


Figure 3. Rize city parks and recreation areas

3.3. Sports Areas

Rize city sports areas are not included in mini football, basketball, tennis, cycling and walking paths, and fitness areas, but also in complex areas owned by the University, National Education and Youth and Sports Provincial Directorate. The total area of the city sports areas is 126.183,417 m² and the sports area per capita is 0.84 m², which is below the standards. Similarly, sports facility areas, which

are among the green area used at the neighborhood level, show an uneven distribution in the city of Rize in terms of spatial adequacy and accessibility (Figure 4).

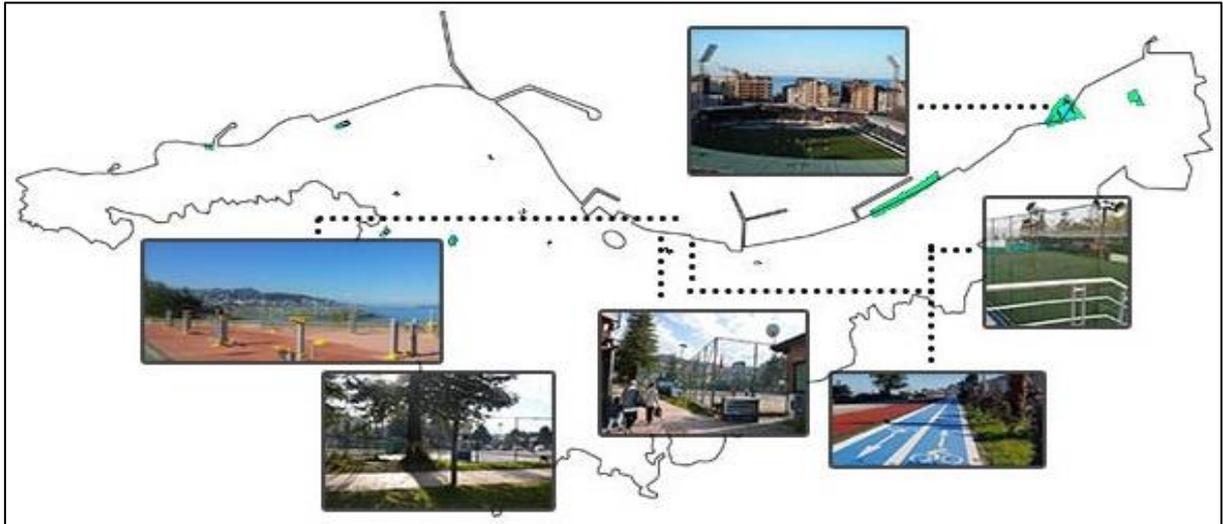


Figure 4. Distribution of sports fields In Rize City

3.4. School Gardens

They consist of the fields of institutions such as pre-school, primary, secondary, high school, and university education and educational guidance research centers. As a solution to the reduction of open-green areas that occur as a result of the increase in population, urban areas need to be used in a multi-faceted manner, and for this purpose, school gardens are also loaded with additional functions (Tepe, 2018). While the total area of the training facility areas is 249.414,279 m², the area per person is 2.18 m². When we look at the school gardens throughout the city of Rize, it is seen that there is very little or no part of green areas.



Figure 5. Examples from primary school gardens in Rize City

3.5. Official Organizations

In Rize city, while the total area of official institutions is 204.411,918 m² and the per capita area is 1.37 m², the green areas are passive (Figure 6).

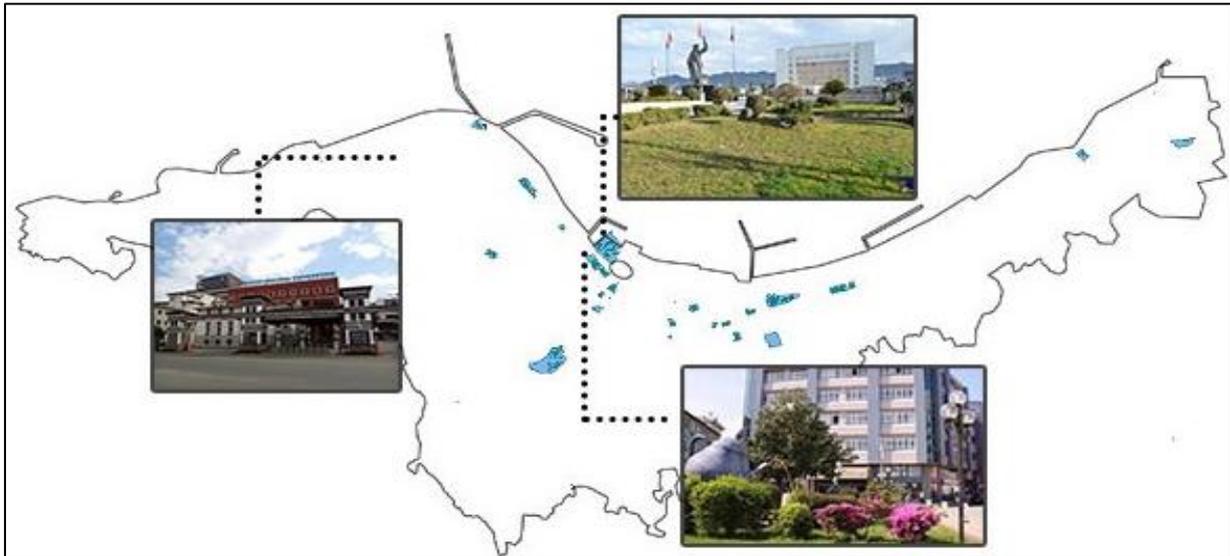


Figure 6. Distribution of official institutions in The City Of Rize

3.6. Medians and Pedestrian

In addition to their circulation function, the roads not only provide transportation by connecting green areas but also provide light and air to the buildings by creating an open area in the city. The medians contribute to the urban traffic and provide the citizens with a short-time recreation opportunity. The total area of pedestrian paths and median in Rize city is 315.201,367 m² and the amount per person is 2.11 m² (Figure 7).

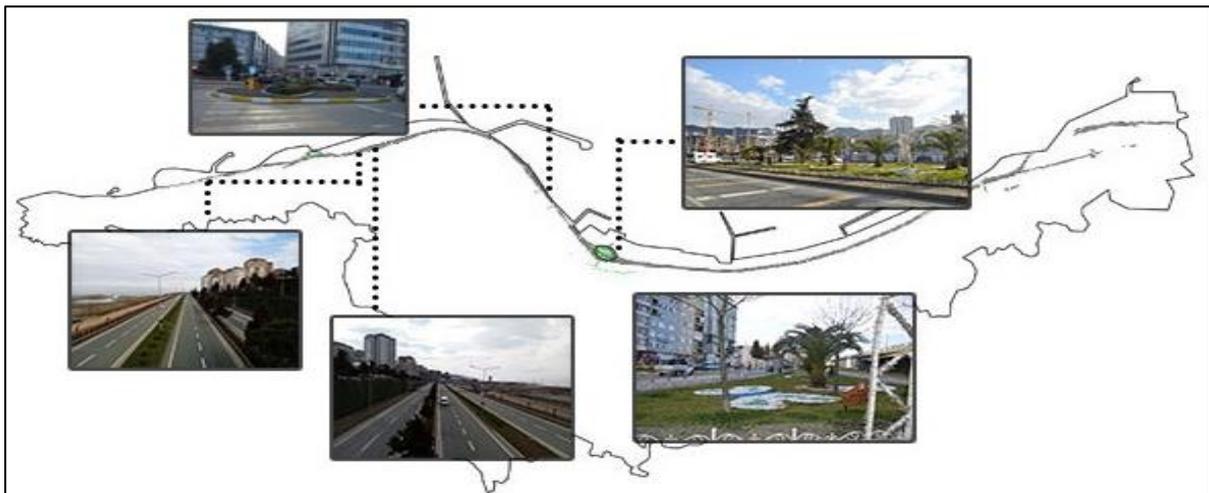


Figure 7. Rize city median and pedestrian roads

3.7. Cemeteries

In the city of Rize, as the topographic structure does not allow mass settlements as you go from the coast to the inner parts, the cemeteries are located within the family lands. There are only 3 mass cemeteries in the city of Rize. Including family cemeteries, it has a total area of 71.430,425 m², and the area per capita is 0.48 m² (Figure 8).

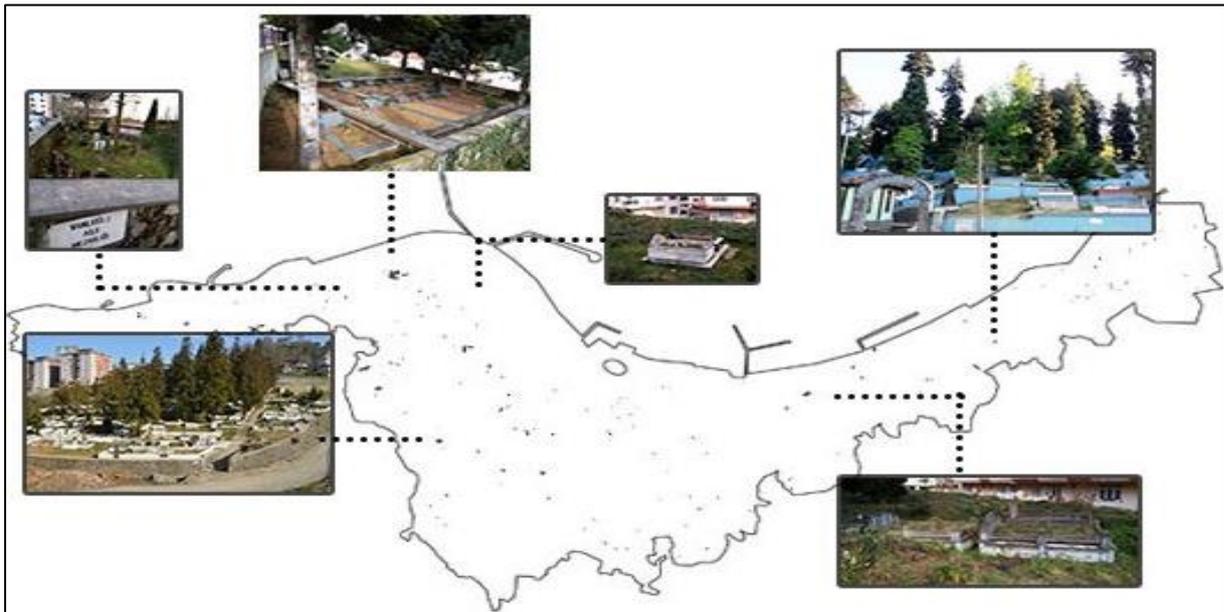


Figure 8. Distribution of Rize City cemeteries

The data obtained in this study and the amount of open green area aimed to reach until 2035 in the 2016 revision zoning plan of the Rize municipality are shown in Table 1.

Table 1. The total amount of urban open green area available in 2022 and urban open area aimed in 2035.

	Target Open-Green Area Amounts Included in 2021 Revision Zoning Plan Explanation Report Data *		Data Measured from 2022 Rize Municipality GIS Map	
	Area (ha)	m ² per person	Area (ha)	m ² per person
Education Facility Area	63,75	4,5	2,49	1,67
Parks and Playgrounds	128,4	9,14	2,03	1,36
Cemeteries	4,70	0,33	7,14	0,48
Squares	0,92	0,065	0,07	0,004
Sports Areas	6,65	0,47	1,2	0,84
Official Organizations	24,59	1,75	2,04	1,37
Medians and Pedestrian	-	-	3,15	2,11

*Rize Municipality 2016 Revision Zoning Plan Explanation Report data

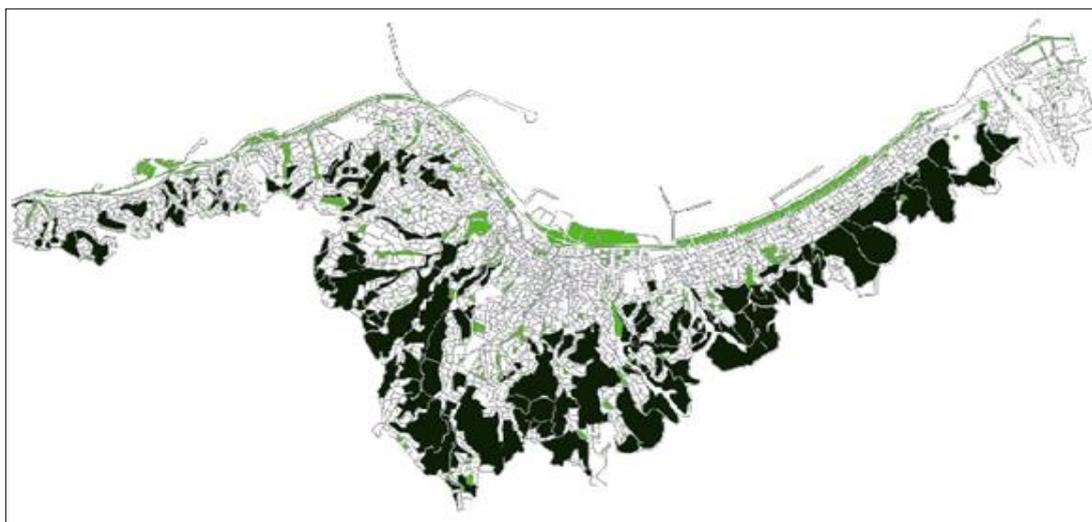


Figure 9. Distribution of urban open green areas available in the city of Rize in 2022

In the 2016 revision zoning plan of the Rize municipality, it is stated that the open green areas that are aimed to be reached by 2035 can be possible with both new fill areas and ecological urban planning and design that will be considered holistically. 2035 aimed open green area distribution is shown in Figure 10.



Figure 10. Distribution of urban open green areas aimed for 2035 In The City of Rize.

4. Conclusions and Recommendations

Considering the findings obtained in the study, the total amount of active green areas in Rize city, including parks (excluding urban forests), playgrounds, medians, pedestrian paths, sports areas, cemeteries, and squares, is 716.889,167 m², and it is 6.28 m² per capita. According to this result, it is seen that the city of Rize is insufficient in terms of active green areas. With the addition of passive green areas to this result, the total amount of green area is 7.699.506,528 m², and the amount of open-green area per capita is 67.24m². It is seen that this rate is above the standard (10m²) specified in Zoning Law No. 3194. This situation remains in theory and does not reflect the real situation. It is because, due to the topography, the density of dense and multi-story apartment-type buildings without gardens in the central area turns into sparse and low-rise buildings as they move away from the center, and the fact that the gardens of these buildings are integrated with agricultural areas is a factor in the increase in the green area per capita. In addition, it is seen that many areas, which are considered active green areas, have almost no vegetation and green area (for example, school gardens, July 15 Democracy and Republic Park, children's playgrounds, etc.). However, a quality living environment and urban texture; are the result of a balanced spatial relationship between buildings, transportation facilities, and open and green areas. The types, sizes, equipment, functions, and service areas of open and green areas uses according to their characteristics and quality reveal the impact on the quality of urban life (Emür & Onsekiz 2007).

Adequacy analysis of urban green areas at certain time intervals is important for green area management and future design. Considering their social, environmental, and economic functions, these areas need to be protected and improved (Gozalo et al., 2018). In this context, the only square in the city of Rize is small and unplanned for collective activities and actions, and it is extremely insufficient in terms of the recreational diversity of the people. New square areas should be proposed by the relevant persons or institutions, the recreational diversity of the people should be increased in these areas, and plant arrangements that will reflect the urban identity of Rize should be included.

There are limited park and playground areas arranged by the Rize Municipality throughout the city. In addition to the parks located on the coastline, the effect of other parks, especially the castle, on the city life in the interior is of great importance not only in terms of the use of the open-green area

but also in terms of urban identity. The parks, the majority of which are located in the seashore filling area, which constitutes an important threshold in the development of the city, also affect the quality of life with their decisiveness in the urban landscape. While the recreational use of the long coastline meets the open-green area needs of the city, it cannot meet the city fully. In addition, it falls short of meeting the need of the increasing population. Although studies continue to meet this need with new filling areas, it would be more appropriate to make these plans with ecological urban planning and design that will be considered holistically. It is of great importance for a quality, modern and healthy city to be planned and implemented rapidly in open-green areas in parallel with the population increase in the city (Erođlu et al. 2016; Ardalı, 2018). On the other hand, existing parks in the city, are not qualified to meet the expectations of people's needs due to the combination of activities such as recreation, sports, and games, and they need to be renewed in terms of sustainability. Urban open-green areas have been an important element in sustainable urban planning models that have been accepted in recent years (Rakhshandehroo et al. 2015).

Existing parks with low landscaping standards should also be renewed and gain aesthetic and functional values. Children's playgrounds in the city are mostly located on one side of the parks, they are small and insufficient in terms of quantity and quality. In addition, it is seen that children's playgrounds generally lack green texture and contain playgroups that repeat each other. However, children's playgrounds should be areas that will develop their imaginations and develop their skills, as well as spend their physical activities and energies (Ulu Akşit et al., 2020). The amount of green area per capita is well below the urban standards and is 1.36m² in total for parks and children's playgrounds. In the city of Rize, a balanced distribution of children's playgrounds in the neighborhood and other areas should be ensured, their number, size, and diversity of playgroups should be increased, and they should be established by standards.

When evaluated in general, it is seen that the open-green areas of the city of Rize have uneven distribution and do not contain integrity. In addition, it has been observed that the aesthetic and functional properties of the plant materials of the open-green areas in the city are insufficient in terms of plant design, they are not sufficient to meet the needs of the urban people and the plant species used are not sufficient to increase the quality of the area. However, the adequacy of open-green areas in terms of size, location, accessibility, quality, and presentation diversity is extremely important for society to benefit from these areas easily and effortlessly (Önder & Polat, 2012; Kömür Ardalı, 2018). A balanced distribution within the city should be ensured by increasing the adequacy of accessibility, location, size, etc. in a way that will create suitable usage areas for the people. If the open green area planning, which is aimed to be reached by 2035 in the 2016 revision zoning plan of the Rize municipality, is realized, the amount of green area per person may be above the standards.

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The article complies with national and international research and publication ethics. Ethics committee approval was not required for the study.

Author Contribution and Conflict of Interest Declaration Information

All authors contributed equally to the article. There is no conflict of interest.

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