

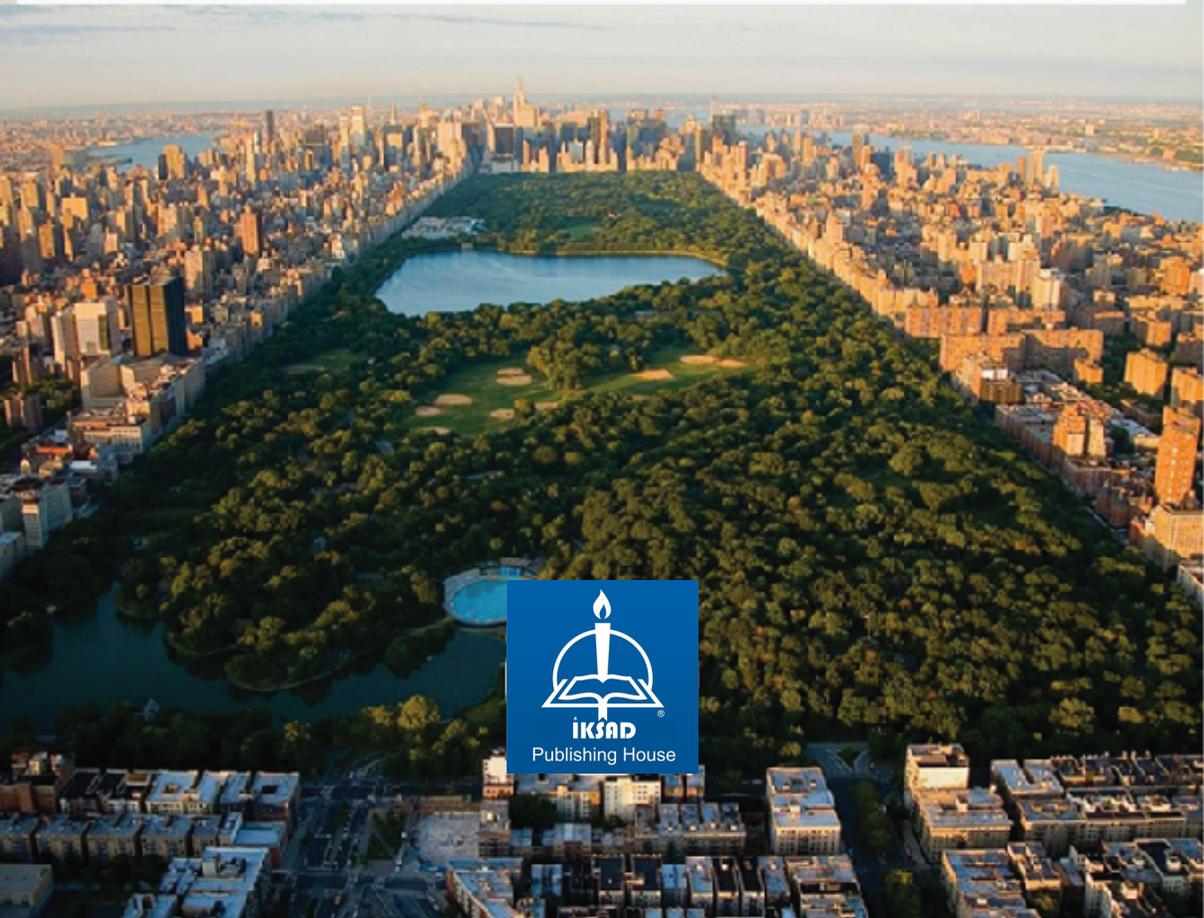
**THE**

**LANDSCAPE**

**AND THE CITY**

**EDITOR**

**Assoc. Prof. Dr. Kübra YAZICI**



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# THE LANDSCAPE AND THE CITY

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December/2022



## **PREFACE**

Dear readers,

The quality of society life changes along with the development of science, therefore; the studies that contribute to this development emerge with a combination of scientific thoughts and research methods. This may well explain why most of the studies are carried out in the field of landscape architecture. Landscape Architecture discipline, which plays an important role in studies such as nature conservation, biological restoration, urban and rural use planning, includes design and landscaping studies for the organization of spaces in the immediate environment of people.

Landscape architects introduce artistic and scientific principles as well as new insights into the planning, design, management, building conservation and restoration, and natural environments. As a consequence, Landscape architecture is in a strategic position among all scientific fields that work with a focus on sustainable environment with climate change. The direction of research has also altered with the changing environment. In the studies, the concept of sustainability has been discussed from different perspectives.

This book, published in December 2022, encompasses chapters on the relationship between the landscape and the city by Turkish researchers who are experts in the field of Landscape Architecture. The topics of the chapters are; Accessibility, Noise Pollution, Healing Gardens, Medical and Aromatic Plants, National Park, Climate Change in Cities, Therapeutic Recreation, Sustainable, Ecological Approaches in Cities, Ornamental Plants Sector Businesses, Concept of Temporary Space and Application Examples, Changing and Developing City Structure, and Recycling Park. All these issues are of theme importance for both landscapes and cities.

For this reason, I hope that the book we have prepared will be useful for users.

I would like to thank Turkish landscape architect academicians who contributed to the book. The Landscape and The City, to our valuable scientists who supported them with their professional experiences, and to İksad Publishing employees who contributed to the publication process.

**Editor**  
Assoc. Prof. Dr. Kübra YAZICI



# CHAPTER 1

## ACCESSIBILITY EVALUATION IN UNIVERSITY CAMPUSES: THE CASE OF ERZINCAN BINALI YILDIRIM UNIVERSITY YALNIZBAĞ CAMPUS

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## INTRODUCTION

For a space's universal design, it must be accessible and versatile. An education space should offer an equal opportunity for education and quality of life for all users. In addition, an education space at universal standards includes a space of understanding that will include everyone equally. So everyone can explore the area freely. People with disabilities must have access to social areas, participation in all areas, and independence. Accessibility is the ability for anyone to reach from one area to the one they want to go to without assistance. (Hilmioğlu et al.,2020). Design and planning principles for persons with disabilities should include equal use of space. Accessible spaces should be designed with minimum hazards, suitable for easy and comfortable use, and consider the abilities and desires of the disabled. Projects should be developed to enable access to all campus equipment elements, as well as to make designs that will appeal to users, to develop solutions to emerging problems, and to examine this situation specifically for disabled individuals. (Ökten, 2018).

According to Arendt (1970), despite the awareness that public spaces should be accessible to all users; It has become necessary to design them in a way that can easily solve all their needs, not in a way that will have problems in the areas where it is located. (Çelikyay and Karayılmazlar, 2016).

There are spatial barriers in cities for all people, not just for the disabled. Increasing the level of equipment that enables the disabled to move freely in public areas is directly related to the increase in the functionality of these areas. Therefore, the organization of the social and physical environment, starting from its planning and design, should be organized in such a way that it is beneficial to meet the needs of all users. For the disabled; An environment free of barriers will also positively affect the participation of these individuals in public life. (Kaplan, 2010).

The reasons limiting the disabled in educational institutions in our country; are pressure on the family and the individual, legislative deficiencies, and the deficiencies that designers and manufacturers have given on the field. For this reason, society should be aware of the disabled and solutions should be developed for the disabled to continue their normal lives so that the obstacles do not pose a problem in all areas, especially in the fields of education. (Çınar, 2010).

In addition to providing quality education and training, the physical equipment of the campuses has begun to be effective in the preference of universities with more than 200 numbers in our country. Universities that can be easily accessed by students, academics, and university staff, are safe, and comfortable, and have socio-cultural and recreational opportunities that provide opportunities for different activities are one step ahead in preference. (Yılmaz, 2019).

Campuses are places where multi-dimensional education is given. The planning of all usage areas in the university is important in every respect. (Çorbacı et al., 2018). One of the goals is to create a trouble-free environment in every field that will ease the education life of disabled students at universities and ensure the continuity of their education-teaching processes. Higher Education Institutions Disabled Persons with Disabilities Counseling and Coordination 8 Regulation (2010) was issued to take the necessary measures and develop the rules to achieve these goals.

With this regulation, disabled student units were established in the higher education council and universities. It has been seen as a goal to create barrier-free universities in every field. These units could not be concretely active between 2010-2017. To increase awareness as of 2016-2017, the year of 'Accessibility' was defined as 'Spatial Accessibility' in the same year, and the year of 'Accessible Education' in 2017-2018. As of 2018, the Higher Education Institution announced incentive projects. Barrier-Free University Flags; Different flag awards were announced in each area, access at the venue, access to education, and socio-cultural activities in 3 areas.

Flag awards (Table 1), which are given following TSE standards and other international standards, will contribute to promoting accessibility on campuses. (TUTAL, 2018).

**Table 1:** Barrier-free university flag awards

<b>Accessibility</b>	<b>Flag Type</b>
Accessibility in the venue	orange
Accessibility in education	green
Accessibility in sociocultural activities	blue

In this study; Within the framework of the above-mentioned information and national legal regulations, the accessibility of Erzincan Binali Yıldırım University Yanlızbağ Campus to individuals with disabilities was investigated. In this direction, the measurements, construction features, and suitability of the elements such as the works carried out on the campus, the structures, and the equipment of the intensive use areas on the campus were evaluated.

There are very few studies that holistically handle the route from the point where the student arrives on the campus to the classroom by vehicle, and generally, small-scale studies have been carried out. In this study, Erzincan Binali Yıldırım University, which has not been examined before within the scope of accessibility, has been tried to be discussed from a holistic perspective. Unlike the accessibility studies carried out in different universities before, accessibility in space, accessibility in education, and accessibility in socio-cultural activities were examined and all areas from the moment the disabled person stepped on the campus to the classroom were studied the current situation and what kind of improvements need to be made have been determined by preparing an 'Accessible campus access map' and this map will be a guiding resource for future campus users. Having the opportunity to examine the accessible map of students with disabilities beforehand in university preferences will increase the preferability of the university. It is aimed to develop applications and solution proposals to gain equal education rights, taking into account the usability of the campus environment, the ability to find directions, the orthopedically disabled, the visually impaired, the hearing and speech impaired, and the timely access of those who come to the campus for the first time.

## **1. MATERIALS AND METHOD**

### **1.1. Materials**

The study area is Erzincan Binali Yıldırım University Yanlızbağ Campus located within the borders of Erzincan. Erzincan Binali Yıldırım University; With 11 faculties, 4 institutes, 4 colleges, 12 vocational schools, 12 research centers, and 23,829 students, it is the shining science center of our country and especially our region. The total area of the Yanlızbağ Campus is 1,965,959,0 m<sup>2</sup>, and the landscape maintenance area, excluding the structural areas, is 198 thousand m<sup>2</sup>. The people who benefit from the campus are academicians,

students studying on the campus, administrative staff, guests, students who come to the open education exam and the exams made by OSYM. The structure distribution of Erzincan Binali Yıldırım University Yalnızbağ Campus is given in Figure 1.



**Figure 1:** Structure distribution of Erzincan Binali Yıldırım University Yalnızbağ Campus

According to the information obtained from the Erzincan Binali Yıldırım University Disabled Student Unit, the types and numbers of disabled people in the campus are shown in Table 1.

**Table 1:** Number of disabled students at Erzincan Binali Yıldırım University

TYPE OF OBSTACLE	Number
HEARING	4
MOTION/SIGHT	17
MENTAL	2
ORTHOPEDIC	2
OTHER	4
<b>TOTAL</b>	<b>29</b>

In the 2021-2022 academic years, the number of EBYU students with disabilities is 29 and the total number of students is 23578. In other words, it corresponds to 0.12% of the total number of students. The total number of students with disabilities in Turkey is 55667 ( URL 1).

## **1.2.Method**

In the research method, studies have been carried out to ensure that disabled users can be used as a barrier-free campus. The method of the study;

- Literature study on national and international disabled person regulations
- Determining the areas used by disabled people in the campus
- Revealing the physical condition of the interior and exterior equipment with visuals
- It consists of suggestions as a result of analysis and evaluation.

In this study, the educational texture, administrative texture, and outdoor open green space equipment were analyzed in Yalnızbağ Campus. In the scope of the research;

- Faculty of Education
- Faculty of Arts and Sciences
- Faculty of Engineering and Architecture
- Civil Aviation Vocational School
- Rectorate Building
- Congress Center
- Social Facility Building
- Indoor Sports Facility
- In Library Buildings
- Necessary measurements and visualizations have been made in the open-green areas of the Yalnızbağ campus.

The current accessibility conditions of the entrance doors, parking lots, ramps, elevators, WC, directional signs and warning signs, landscaping equipment, stairs, railings and handrails, transportation (pedestrian paths), stops, and tangible surfaces of the study areas have been revealed; A sensible surface map of the campus was created and some solution proposals for the deficiencies were emphasized.

In the evaluation of the studies carried out in the fields; Accessibility Monitoring and Inspection Regulation on accessibility structural design acceptances in the space, Accessibility Guide published by the General Directorate of Disabled and Elderly Services of the Ministry of Family, Labor and Social Services, Turkish Standards Institute TS9111 Requirements for Accessibility in Buildings for Disabled People and People with Restricted Mobility, TS 12576 City In-Roads-For Disabled and Elderly Structural Measures and Design Rules on Streets, Avenues, Squares and Roads, WDU (World Association of the Disabled) Universal Standards Guide for the Disabled Acceptances were examined and their compliance with the barrier-free campus standards was evaluated. According to this literature, the reinforcement elements used in buildings and open green areas have been evaluated in terms of the standards given below.

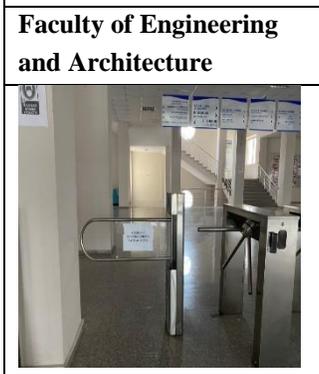
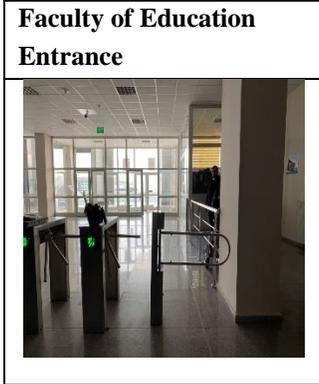
- The width of the building entrance door should be at least 150 cm. If there is a level difference at the building entrances, ramps, elevators, etc. analysis should be done. There should be no thresholds on the doors, they should be well-lit and guidelines should be applied.
- 40-50 mm non-slip tape should be applied on the steps.
- The step depth should be at least 27 cm and the step height should be at most 16 cm. If the width of the stairs is over 185 cm, a handrail should be placed in the middle for physical comfort.
- Slip-resistant materials should be used on walking surfaces.
- The width of the pedestrian path should be at least 150 cm. It should be 5m in areas with high traffic and usage density. The height of the equipment and trees on the road route must be at least 220 cm.
- Parking lots should be 30 m away from the nearest entrance and at least 400 cm should be reserved for each vehicle in the width of the car park. 5% of the total number of parking lots built in public areas should be reserved for disabled people.
- Ramps should have an 8% slope if the level difference is 15 cm or less, 7% if 1-50 cm, 6% if 51-100 cm, and a maximum of 6% if 101 cm and above. The ramp width should be at least 90 cm.
- The elevator entrance door must be at least 90 cm and the interior dimension of the cabin must be at least 120x150 cm.

- The height of the guiding plate and warning signs should be 210-250 cm.
- In order to use the 8% ramp of the bus stops located within the campus area, the step height should be 20 cm. There should be at least 90 cm of space next to the seating area for disabled people to use, there should be at least 100 cm of space in front of and behind the stop, the width of the sidewalk should be at least 300 cm in the area where the bus stop will be placed. There should be a 220 cm high board where the bus routes are written, and 110-130 cm Braille information boards for the visually impaired.
- The height of the garbage cans is 90-120 cm and should not be placed at a point that will prevent walking.
- The interior dimensions of disabled WCs should be 230x220 cm, they should have a movable grab bar, there should be a toilet and sink that disabled people can use, the door width should be at least 90 cm, and there should be an emergency call button for disabled people in case of emergency.
- The height of the railings and handrails should be between 70-90 cm. 60 cm wide, step-length stimulating surfaces should be used 30 cm before the steps.
- The height of the sitting bench from the ground is 45 cm, the height of the backrest is 70 cm, the height of the tables in the resting areas should be between 75-90 cm and the depth under the table should be at least 60 cm.
- The width of the guide tracks should be 30-60 cm. Degraded flooring, trees, signboards, garbage cans, benches, etc. It should be applied to areas free from reinforcement elements. Stimulating surfaces should be used in areas such as stairs, doors and elevators. On tactile surfaces, both the guiding surface and the stimulating surface can be used together. A palpable surface should be applied 30 cm before the ramps and 30 cm after the finish.
- Pergolas and camellias should be at least 250-300 cm high.

## **2. FINDINGS AND DISCUSSION**

As a result of the studies carried out, each physical texture or reinforcement was evaluated within itself and it was investigated whether it complies with the accessibility standards. Visuals of the physical texture or reinforcement detected in the study area are given in Figure 2-12.

***Building entrance doors;***



**Congress Center**



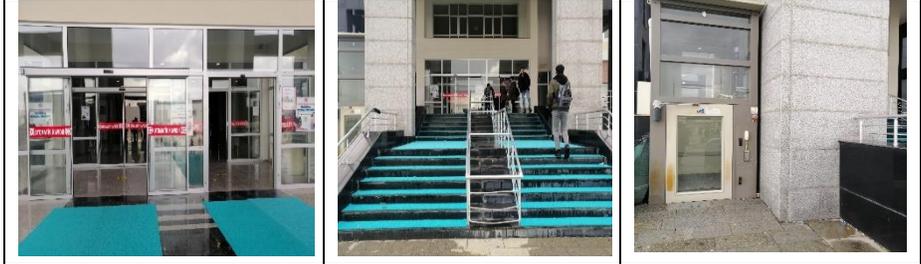
**Social Facility Building**



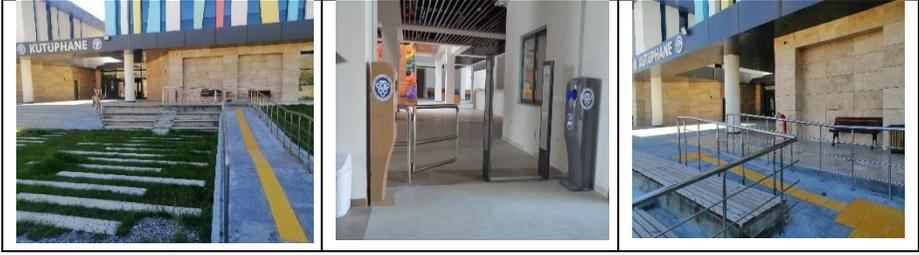
**Indoor Sports Facility**



**Civil Aviation Vocational School**



**Library Building**



**Figure 2:** Building entrance doors identified in the research area

Entrance door widths in 10 different areas of study are in accordance with the standards. Both ramp and floor elevator analysis were made in areas with level differences. The ramp widths are made in accordance with the standards and are at least 90 cm. Not all doors have thresholds. While the step width should be at least 27 cm and 16 cm according to the standards, the work areas are 30 cm and the pier heights are 16 cm, which is in accordance with the standards. There are no handrails in the rectorate building, library building, social facility building, congress center, which must have handrails in accordance with the standards in areas with a stair width of 185 cm.

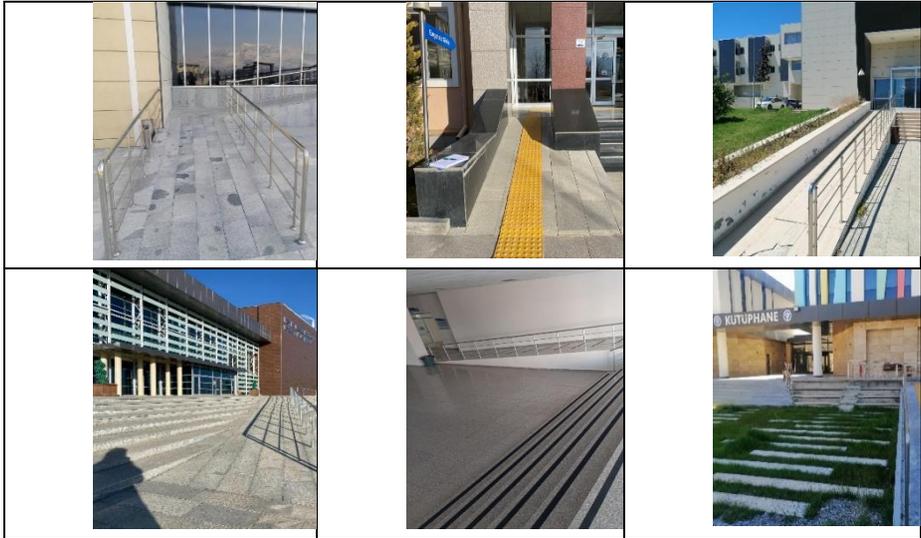
### *Parking lots;*



**Figure 3:** Car parks located in Yalnızbağ Campus

There are many parking lots in the study area, but 5% of the total number of parking lots built in public areas should be reserved for the disabled, while there is no parking area reserved for the disabled in any part of the campus.

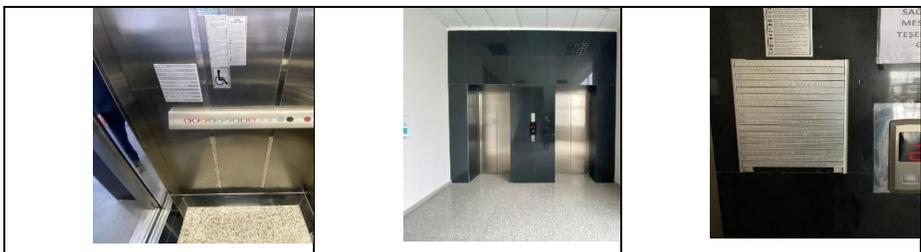
**Ramps;**



**Figure 4:** Ramps applied in different areas of the campus

According to the standards, at the entrances of the building, if the level difference is about 15 cm, it should be at most 8%, if it is 15-50 cm, 7%, if 50-100, 6% and if it is over 101 cm, it should be 5%. The ramps at the entrances of the Faculty of Education, Faculty of Arts and Sciences and Faculty of Engineering and Architecture have a height of 57 cm, a width of 1 m and a slope of 16%. The ramps in the campus promenade have a height of 16 cm, a width of 2.2 m and a slope of 7%. The height of the ramps built for the level difference inside the buildings is 97 cm, the width is 2.6 m and their slope is 9%. The width of the ramp at the entrance of the Rectorate building is 1.85 m and the ramp slope is 8%. The ramp at the entrance of the social facility building has a height of 1 m, a width of 1.2 m, a length of 12 m and a slope of 8%.

**Elevators;**

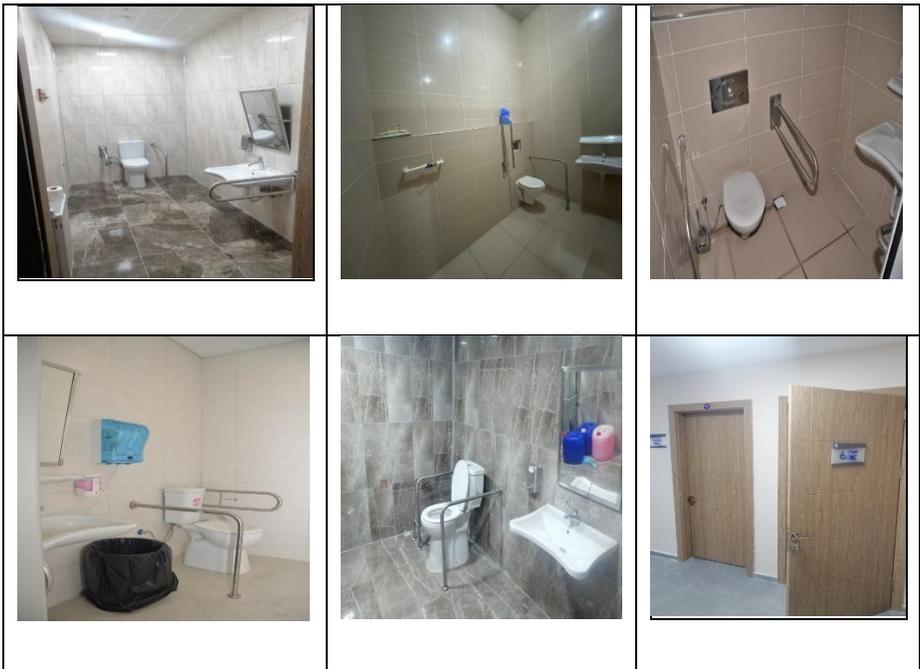




**Figure 5:** Elevators at building entrances and between floors

Due to the level difference at the building entrances in 10 working areas, the entrance floor disabled elevator, and accessibility between all floors is provided by elevators. Braille alphabet was used in the Faculty of Arts and Sciences and the Faculty of Education in the elevators. The elevator entrance door is 90 cm and the interior dimensions of the cabin are 130x150 cm.

**WC**



**Figure 6:** Toilets in buildings

There are movable grab bars and angled mirrors in all WCs. There is no emergency call apparatus for disabled individuals to use in emergencies. While the interior volume of the WCs should be 230x220 cm, the other 8 areas do not have this feature, except for the Faculty of Education and the Faculty of Arts and Sciences. Door widths are made at least 90 cm by the standards in all working areas. The doors in the working areas open outwards by the standards.

### Guiding sign and warning signs

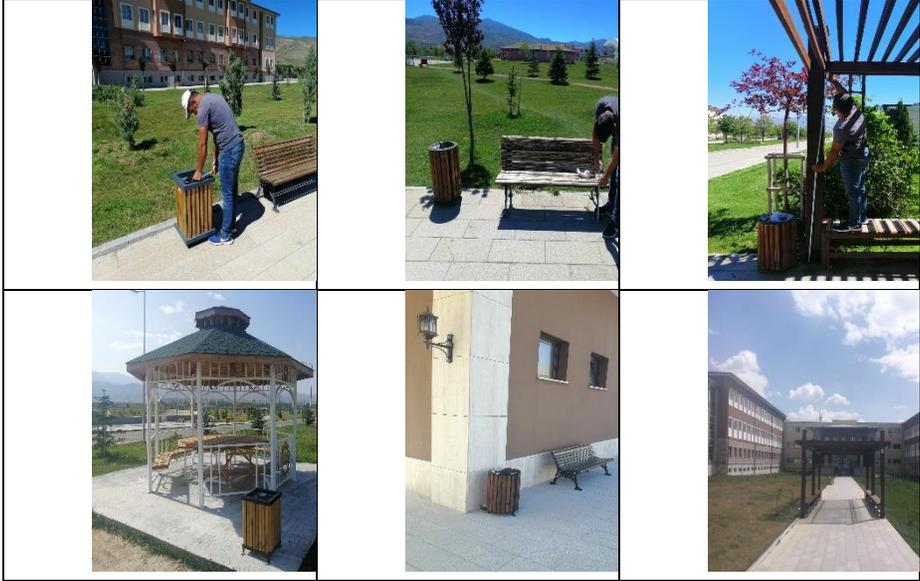


Figure 7. Guiding sign and warning signs

Guiding and warning signs are visible in the dark following standards. Router boards are hung at a minimum height of 210 cm from the ground. Perceptible and contrasting colors are used from other floors. In the Faculty of

Education, Faculty of Arts and Sciences, Faculty of Engineering and Architecture, guide boards with embossed faculty floor plans in braille alphabet complying with the standards were used.

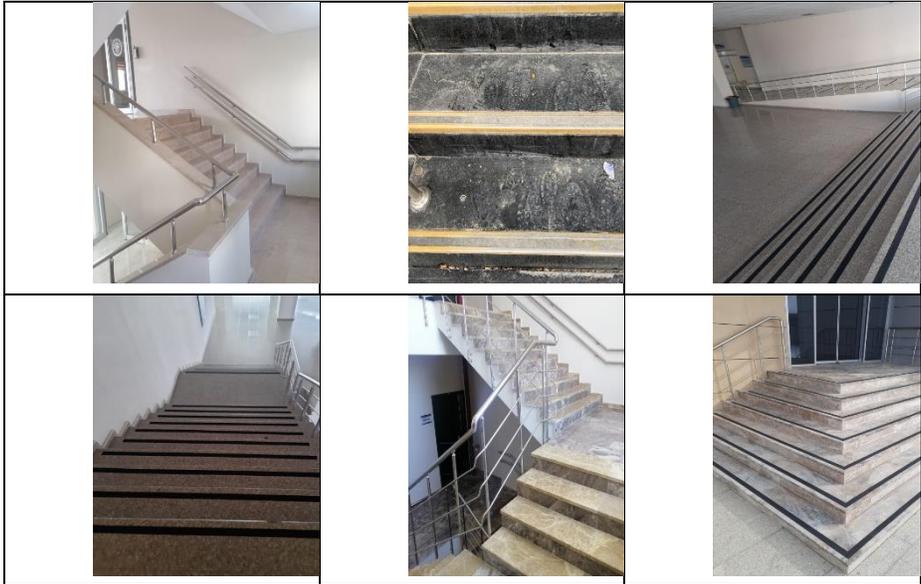
### *Landscape equipment*



**Figure 8:** Landscape equipment on campus

The height of the camellias in the campus area is 250 cm from the ground, and the height of the pergolas is 250 cm from the ground, and it complies with the standards. While the trash cans should be 90-120 cm according to the standards, the trash cans on the campus are 62 cm and do not comply with the standards. Seating benches should be 45 cm from the ground and 70 cm from the ground according to the standards, while the height of the benches on the campus is 38 cm from the ground and the leaning places are 70 cm, and they do not comply with the standards. All equipment are placed in such a way that they do not interfere with walking and comply with the standards.

***Stairs railing and handrail***



**Figure 9:** Stairs inside buildings and at building entrances

The non-slip tape event was used at the ends of all the entrance stairs in the study area, and it was determined that it was used in some areas inside the building and not used in some areas. Step widths and pier heights are made by standards. The height of the railings and handrails is between 70-90 cm and conforms to the standards. No tactile surfaces are used for disabled individuals on any of the stairs.

***Circulatory system (pedestrian roads etc.)***





**Figure 10:** Pedestrian roads in the campus

There are walking areas in the campus area and in the circulation areas within the building that can be used by disabled people. There is very little level difference throughout the campus, and these have been resolved with appropriate ramps. The width of the pedestrian paths on the campus is at least 150 cm and conforms to the standards.

***Stops***



**Figure 11:** Public transportation stops on campus

The number of private-public buses designed for the disabled providing transportation to the campus is 37 in total. While the required pavement height for the use of the bus ramp should be 20 cm, it is 12-16 cm high and does not comply with the standards. There are no informative boards in compliance with

the standards at bus stops. Some bus stops do not have a 100 cm space in front of them. There is a level difference between the bus stops and the pavement and there is no ramp solution.

### ***Tactile surfaces***



**Figure 12:** Areas where tactile surfaces are applied

Sensible surfaces should be applied to all points on campus from the point where the disabled individual gets off campus by public or private transportation in campus planning. The tactile surfaces are divided into two guiding and stimulating surfaces. The tactile surfaces on the campus were made only from the personnel entrance ramp to the security guards in the Faculty of Arts and Sciences, the Faculty of Education, and the Faculty of Architecture and Engineering, and were not made by the standards. In other study areas, no tactile surface was used.

10 different areas, building entrances, car parks, elevators, WC, directional signs and warning signs, landscaping equipment, stairs, railings and handrails, pedestrian paths, stops, and tangible surfaces were examined in Yalınızbağ campus + It met the standards, - did not meet the standards, x is not available in the area An accessibility study was conducted with the criteria of, / few in the area (Table 2, Table 3).

**Table 2.** Evaluation of educational buildings in terms of standards

Education buildings	Faculty of Education	Faculty of Arts and Sciences	Faculty of Engineering and Architecture	Civil Aviation Vocational School
Building entrances	+	+	+	+
Parking Lots	x	x	x	x
Ramps	/	/	/	/
Elevators	+	+	+	+
Wc	/	/	+	+
Directional Sign and warning Signs	+	+	+	+
Landscaping Equipment	+	+	+	+
Stairs	+	+	+	+
Balustrade And handrail	+	+	+	+
Pedestrian roads Etc.	+	+	+	+
Stops	-	-	-	-
Tactile surfaces	/	/	/	x

+ Provided the standards, - Did not meet the standards, x Not available in the area, / Few in the area

**Table 3:** Evaluation of administrative buildings and facilities used extensively by students in terms of standards

Administrative buildings and other facilities	Rectorate	Congress Center	Social Facility Building	Indoor Sports Facility	Library	Yanlızbağ Campus
Building entrances	+	/	+	+	/	+
Parking lots	-	-	-	-	-	-
Elevators	+	+	+	+	+	+
wc	+	+	+	+	+	+

Directional sign and warning signs	/	/	/	/	/	/
Landscaping equipment	+	/	/	/	+	/
Stairs	+	+	+	+	/	+
Balustrade and Handrail	+	+	+	+	+	+
Pedestrian roads etc.	+	+	+	+	+	+
Stops	-	-	-	-	-	-
Sensible Surface	x	x	x	x	x	x

+ Provided the standards, - Did not meet the standards, x Not available in the area, / Few in the area

### 3. CONCLUSION AND RECOMMENDATIONS

In universities, not only buildings, but also open green areas, social facility areas, sports facility areas are used intensively. Indeed, Hipp et al. according to (2016), the campuses where the green cover is dominant are important in terms of offering many activity opportunities to the students who use the space. A green university campus not only contributes to the socialization of students, but also relaxes them mentally (Hajrasouliha, 2017).

The accessibility of the campus and their implementation in educational buildings and what needs to be implemented are emphasized. Erzincan Binali Yıldırım University Yalnızbağ Campus was chosen as the location. As a result of the findings obtained in the study,

\*It has been determined that there is no disabled parking lot for disabled people in the study area. Accessible and convenient parking lots in all educational and residential areas should be reconsidered.

\*The tactile surfaces are only made at the entrance of the education buildings and are not used in other areas. Tactile surfaces should be used in open green areas of campus, at the entrances of buildings, and inside buildings.

\*It has been determined that benches with landscaping equipment and garbage cans are not made by the standards. Outdoor seating units on campuses are among the most preferred areas by users (Rumao, 2016). Considering that

there is a strong relationship between socialization and the cafeteria and sitting areas (Peschardt et al., 2016), the number of these spaces on the campus should be increased in a way to provide opportunities for all users.

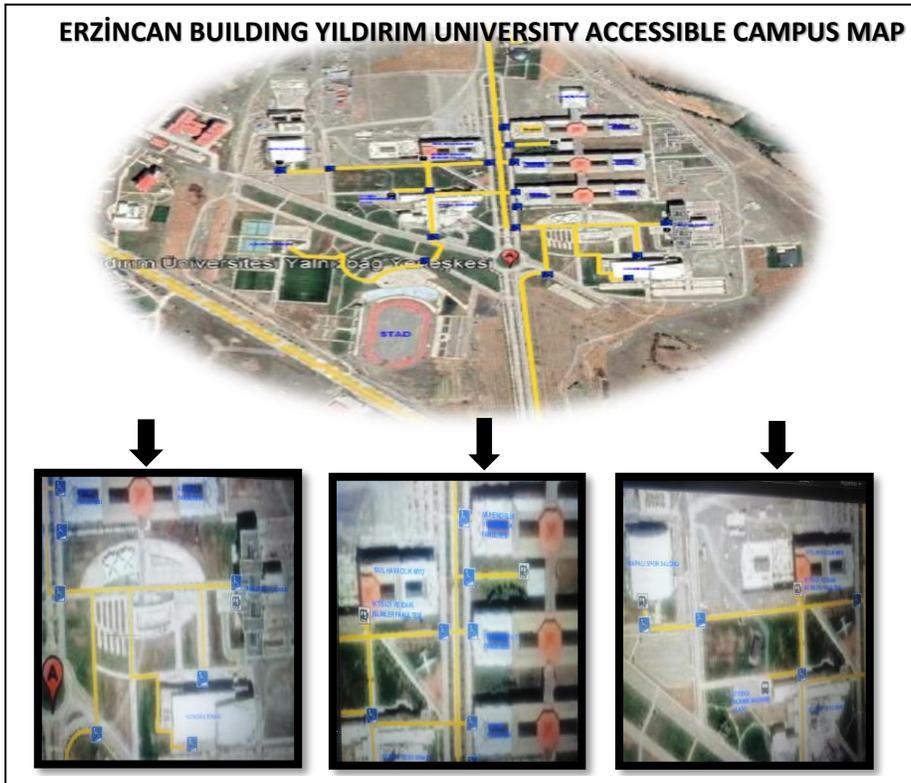
\*Since there are uneven surfaces at the entrance of the library building, which will pose a problem for users, it has been emphasized that smooth and slip-resistant coatings should be used in this area.

\*The room width of the WCs in the Faculties of Education and Science is shorter than the standards,

\*It has been determined that the braille alphabet is not used in the directional signs and warning signs in administrative buildings and other facilities and that there are not enough guiding signs and warning signs. The use of the Braille alphabet should be increased both in open areas and in buildings by the standards.

\*There is a level difference at the stops, there are no spaces for wheelchair users next to the seating area at the bus stop, and there are no informative signs about the buses. Information posters by the standards should be placed at the stops.

\*The number of public buses providing public transportation to the campus is 37 and it is sufficient. An unobstructed campus map has been prepared for academicians, students, administrative staff, guests, and students who come to the open education exam and exams held by ÖSYM (Figure 13).



**Figure 13:** Unobstructed campus map for accessibility

Thanks to the Barrier-Free Campus maps created, it is planned to ensure that all user groups can access the campus without any problems.

Accessibility maps are very few in universities in Turkey, and it will be an important criterion for disabled students to know the physical conditions of the university of their dreams, the suitability of vehicles, the accessibility of social areas, and determine their preferences accordingly in the university selection process.

All physical planning to be done on the campus should be done by subject experts, taking into account user requests. It has gained importance to carry out physical studies to obtain more useful/functional, aesthetic, ecological, economic, psychological, and recreational spaces that are at peace with the user, and suitable for the natural and socio-cultural structure of the

region. For a more livable and sustainable campus, there is a need for a committee that includes subject experts for all physical plan decisions from open-green space planning to transportation, building texture, and reinforcement elements.

It is expected that this study will help in the planning of other buildings to be built in the university by the specified standards and in awarding the campus with a flag by national evaluation institutions in terms of accessibility.

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## CHAPTER 2

### DEFINING SOUND LANDSCAPE AND DETERMINING USER REQUESTS IN TERMS OF NOISE POLLUTION: THE CASE OF URIMIYEH CITY PARK, IRAN

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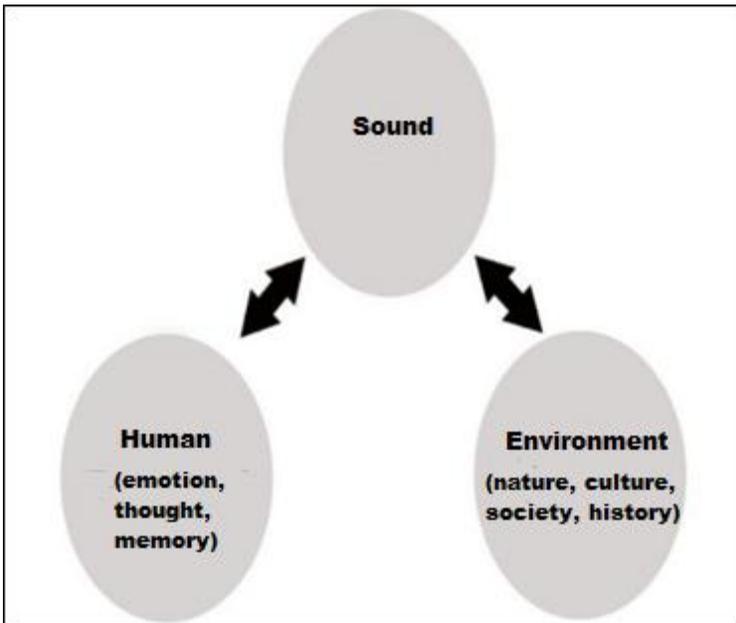
## INTORUCTION

Soundscape is known by architects and planners as all the sounds that exist in a particular space (Dixon, 2010). Soundscape refers to the perception of a residential area or a park as an acoustic environment by people (Axelsson, 2010). Soundscape is to bring the desired sounds to the fore, rather than the sounds that disturb people. Soundscape is an important factor in the perception of visual events. In addition, the soundscape is an important criterion in creating a sense of space (Leus, 2010). Each environment has a different soundscape. The soundscape is a result of the experiences of people from their cultural environment, and at the same time, the desired sounds show the quality of the environment (Botteldooren, 2011). Soundscape is one of the important factors in the formation of the image of the environment in which people are located. It covers all the positive or negative sounds heard in the environment.

According to Shahamian and Larimian (2016); Sound and soundscape is an important factor that affects emotions and determines the quality of urban areas. Sound, as an integral part of the urban landscape, is an important factor in the behavior of the users, in the choice of space and in the perceptions of the users of the urban environment, in general urban quality (Shahamian, 2016).

Sound: Mechanical vibrations that can be heard by the human ear, or "vibrational energy" that arises from the transmission of vibrations in a physical liquid, gas or solid medium into the air. Sound causes us to hear distant events (Blessner, 2009). Sound is a part of people's experiences from the environment (Botteldooren, 2009). Sound evokes a dynamic feeling, helps to perceive the size of the environment and creates a three-dimensional sense of environment (Leus, 2010).

The sound heard in the environment affects people psychologically, so it is reflected in people's senses, memories and thoughts (Shi, 2004). For this reason, the sounds in the environment affect the socio-cultural structure of a society (Figure 1).



**Figure 1:** Human-sound-environment relationship

**Perception of the soundscape:** Perception of the soundscape is defined by the listener's experience of the environment. However, the level and quantity of the sound are determined by the sound measuring device (Nilsson, 2007). The soundscape is perceived through hearing, but varies according to personal experience and demands.

**The image of the soundscape:** In the study conducted by Shahamian and Laramian (2016), three factors affect the image it creates on people (Shahamian, 2016). Information given by the sound wave source of sound The level of the sound.

Generally, people have the same pleasure in hearing natural and cultural sounds, but this cannot be said in artificial sounds. Traffic and construction noise are among the least desirable sounds. Natural sounds such as birds and water are known as the most desired sounds (Kang, 2002).

**Soundscape quality:** Soundscape is evaluated in terms of quality like other phenomena. In an area of high soundscape quality, sounds rarely overlap. Usually there is a long perspective of sound between foreground and background.

Generally, quiet sounds do not interfere with each other (they can overlap only when their frequencies are very close). All sounds separately without disturbing in an environment with a quality soundscape (Nasirpour, 2013).

According to Nasirpour (2013); In all studies on soundscape, three factors are examined in parallel:

1. Reducing or neutralizing very loud and unpleasant sounds,
2. Preservation and reproduction of pleasant sounds
3. Reproduction of required sounds by adding to sound elements that are not currently available:

a) Making the proposed design for soundscape in urban areas more effective,

b) To achieve the goal of improving the quality of the environment,

c) Soundscape design principles should be expressed in guide documents (Nasirpour, 2013).

The study area, Urimiyeh (Iran) City Park is located in an important and central part of the city. The park is a heavily used and preferred park by the people of the city. The study was carried out to determine the thoughts of the urban people about the soundscape in the park. As a result of this study, changes were made in the design of the park and recommendations were made to increase the desired sounds and to prevent unwanted sounds. is an important factor in the perception of visual events. In addition, the soundscape is an important criterion in creating a sense of space (Leus, 2010). Each environment has a different soundscape. The soundscape is the result of the experiences of people from their cultural environment, and at the same time, the desired sounds show the quality of the environment (Botteldooren, 2011). Soundscape is one of the important factors in the formation of the image of the environment in which people are located. It covers all the positive or negative sounds heard in the environment.

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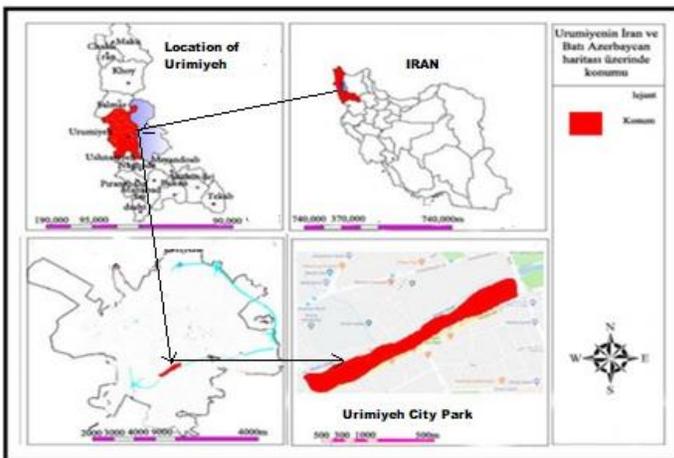
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## 1. MATERIAL AND METHOD

### 1.1. Material

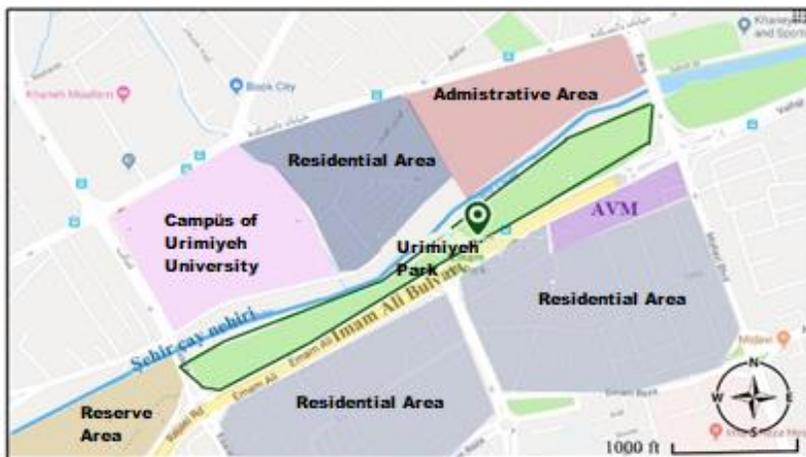
Urumiye is the largest populated city in the Western Azerbaijan Region. It is the 10th largest city in the country. According to the 2011 census, the population of Urumiye is 667,499 people. An estimated 90% of Urumiye's population is made up of Azeris, and the rest are Kurds, Assyrians, and Armenians. Urumiye is the second most populous city in western Iran after Tabriz (National Statistics Portal, 2011). Urumiye is the administrative and political center of West Azerbaijan (Figure 2). The majority of the population of West Azerbaijan is concentrated in 4 cities in its center. 34% of the population is located in Urumiye (Zali, 2011).



**Figure 2:** The city of Urumiye and the research area

Economically, the city has a commercial status. It is the main commercial center of the West Azerbaijan province. It is also a local area for the trading of agricultural products and nomadic people in the city of Urumiyeh. Urumiyeh City has an area of 18,552 km<sup>2</sup>. Its average slope is 9%. 57.5% of the provincial land is plateaus, 16.24% is hills, 28.34% is plains, 0.44% is urban land (Figure 2.5). The study area is at 37° 32' north latitude and 45° 4' east longitude (Taghilou, 2016). The city of Urumiyeh is one of the mountainous regions of the country and has a very active topography. Urumiyeh Lake, which is approximately 1267 meters above sea level, has an area of 130 km<sup>2</sup>. It attracts the water of the heights in the west (Mobaraki, 2017).

The material of the study consists of the Urumiyeh city park, which is located within the borders of the first district of Urumiyeh Metropolitan Municipality. Urumiyeh city park has an area of 60 decares. In the northern part of the research area, there is the Şehirçay river, which continues in parallel with the park. Across the river is the Urumiyeh University campus, residential area and administrative institution. There is Molavi Avenue in the east of the park, Edalet Avenue and the reserve area in the west, İmama Ali Boulevard in the south and a shopping center and residential area in the north (Figure 3).



**Figure 3:** Location of Study Area

Due to its importance in the city, activities are held at different times in the park. Every year, a flower festival is held in April and a grape festival is

held in September (Figure 4). In addition, the park is highly preferred for activities such as walking, exercise of athletes.



**Figure 4:** View from the flower festival of the city park of Urmimiyeh

## 1.2.Method

In determining the number of surveys, 385 surveys were conducted face-to-face using the formula below, which was used by Özdamar (2003) and the city population was taken as the sample size (Özdamar, 2003).

$$N = \frac{N t^2 \sigma}{d^2(N-1) + t^2 \sigma}$$

$N$  = Number of individuals.

$\sigma$  = Standard deviation. The standard deviation of the sample is used because it is mostly unknown.

$t$  = Theoretical value found in the  $t$  table at a certain degree of freedom and detected error level.

$d$  = It is symbolized as + deviation to be done according to the incidence of the event. ( $sd=n-1$ )

A total of 37 questions were asked in the survey. 6 of these questions describe people, 8 questions were asked to determine the general environmental problems of the city and noise. In addition, 9 questions were administered to determine the soundscape of the park. Again, 14 questions in 2 different question types were asked with the Likert method.

## 2. RESULTS

Since the park is in a very important location in the city, it is a park that is preferred by the public and is used extensively at different times of the day. There are 30 different tree species, 410 different shrubs and 100 different types of tulips in the park (Figure 5).



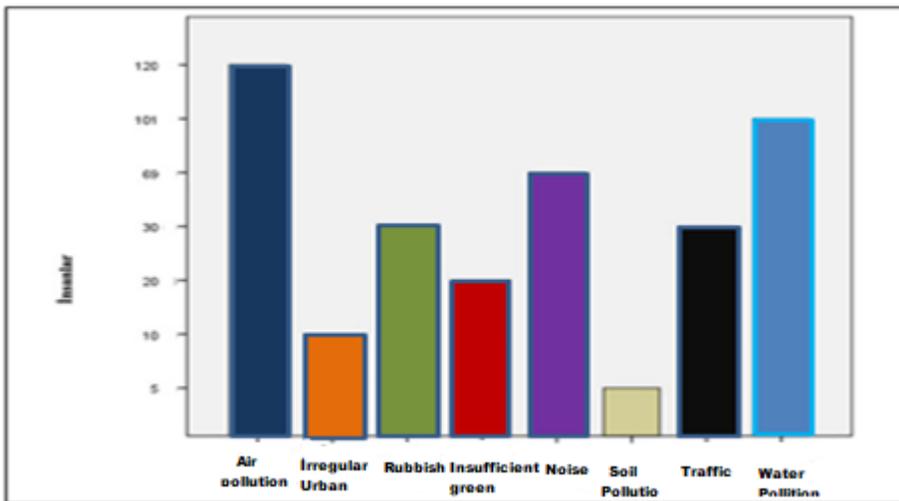
**Figure 5:** General View of Urimiyeh City Park

One of the most important reasons why people prefer parks is the silence of the park or hearing pleasant sounds. A closed questionnaire with personal information for research objectives, questions about the landscape aspect of the park area, as well as recreation, pedestrian, etc. In order to determine the opinions of park users, a survey consisting of 35 questions was

prepared. Questionnaires were filled in by face-to-face interviews with 385 people who came to the park.

46% of the respondents in the park are female and 54% are male. The majority of the participants (48.5%) are between the ages of 31-45. Most of them are married (57.6%); families generally have 3 children (25.7%); (25%) are students.

Asking 385 users, "What is the most important environmental problem in the city of Urumiyeh?" When asked, among the 8 environmental pollutions, 120 people consider air pollution as the most important environmental problem, 101 people water pollution, 69 people noise pollution, 30 people have traffic problems, 30 people have garbage problems, 20 people have lack of green space, 5 people have soil pollution. pollution and 10 of them stated unplanned urbanization. Considering the responses of the public, noise pollution ranked 3rd.

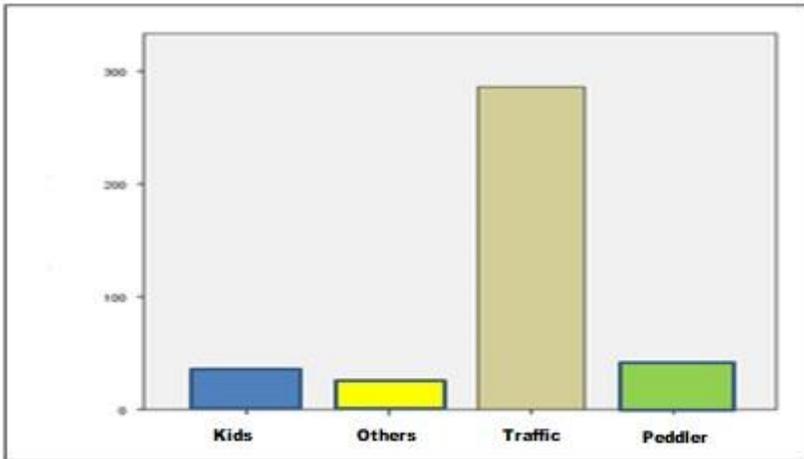


**Figure 6:** The most important environmental problem in the city of Urumiyeh

It is seen that 51% of the people of Urumiyeh are disturbed on the street, 25% at home and 22% at the workplace due to noise pollution.

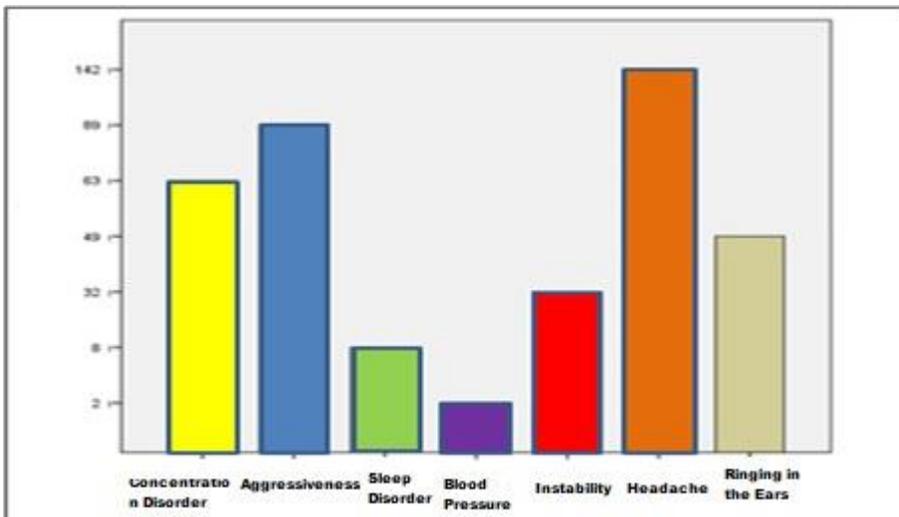
"What are the most important noise sources in the city?" When asked, 273 people stated traffic noise as the most important source of noise pollution. 21 people preferred the noise of children and 15 people preferred the other option. The noise caused by the traffic disturbs the public more than the other

sounds heard in the city. As for traffic noise (32 people), they stated that they were most disturbed by car horns (Figure 7).



**Figure 7:** The most important noise sources of the city.

In the question about the effects of loud noise on health, 142 people said headache. This can be caused by aggressiveness, concentration impairment and buzzing in the ear etc. followed (Figure 8).



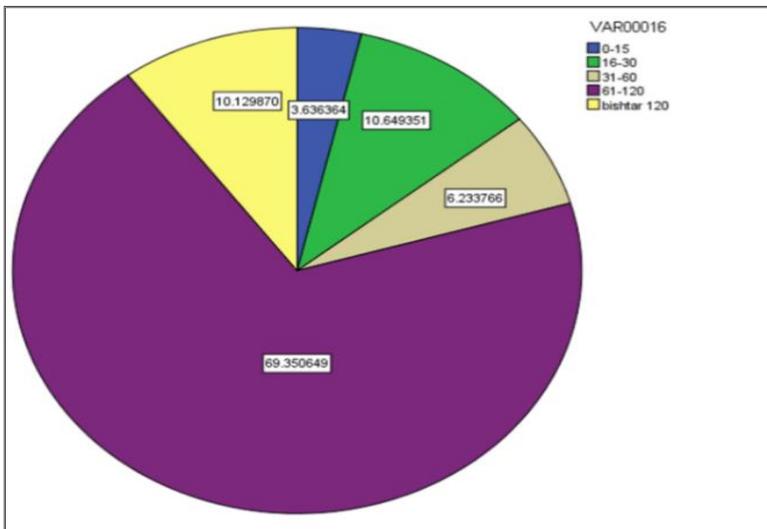
**Figure 8:** Health effects of noise

It was stated that 62% (240 people) of the people were disturbed by noise pollution on weekdays and 38% (140 people) on weekends.

Park users are more disturbed by noise pollution between noon and evening hours. The intensity of traffic in the afternoon break (12:00-14:00) and evening departure (17:00-19:00) from Imam Ali Boulevard, which passes near the park, causes an increase in noise. At the same time, afternoon and evening hours are the most crowded hours of the park.

Among the park users, about 200 people stated that they came to the park every week, around 100 people a few times a month, and 60 several times a week. When the answers given to the question were evaluated, most of the survey users preferred to come to the park every week. According to this result, most of the users are satisfied with spending time in the park. 43% (160 people) of the users said that they came to the park in summer, 30% (120 people) in spring, 24% (90 people) in autumn and only 2% in winter.

70% of the park users (280 people) spend more than one hour in the area, 10.5% spend less than one hour and 10% spend more than 2 hours in the park. The reason is that the park is not satisfactory enough for the users in terms of visual and sound landscape. Spending too long time creates an annoying feeling (Figure 9).



**Figure 9:** Time spent in the park

45% (180 people) reach the park by private car, 28% (120 people) by public transport, and a total of 22% people reach the park by bicycle and walking.

When pedestrians were asked “the most important reason for coming to the park, 172 people (44%) replied for a walk, 110 (28%) for a rest, 56 (14%) for my child (Figure 10).

When asked how do you evaluate the road passing by the side of the park, about 200 people said that it was not correct, and 150 people said that the road should be changed.

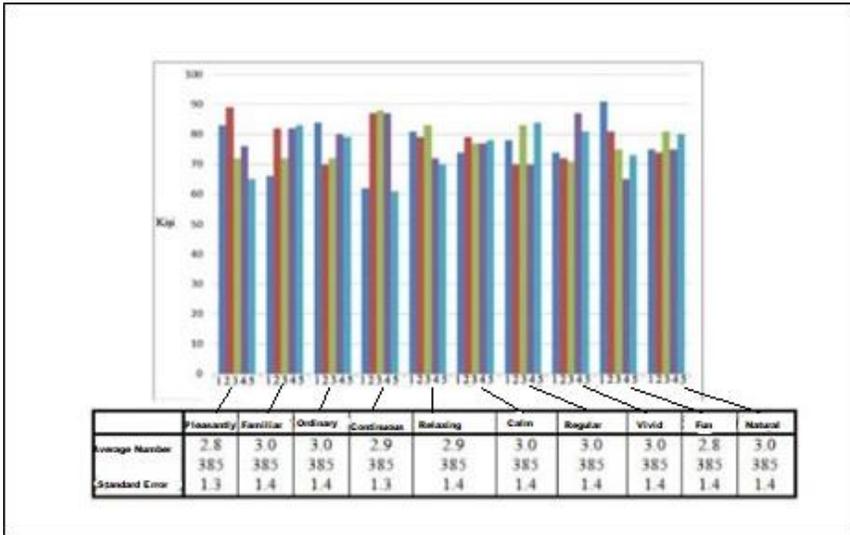
When asked "Do you warn those who make noise", about 50% of the users said no and 45% said "I sometimes warn". To the question of what kind of reaction you get when you warn the people who make noise, 300 people answered positively, about 70 people gave negative answers and very few people gave other answers.

Do you think the legal measures are sufficient? 60% of the users gave an insufficient answer to the question and 36% stated that they did not know about the laws on this subject.

Most of the people stated that the laws were insufficient because the necessary and precautions were not taken regarding the issue. Since the correct information and training on legal rules and importance is not provided, 140 people from the survey users have no idea about this issue.

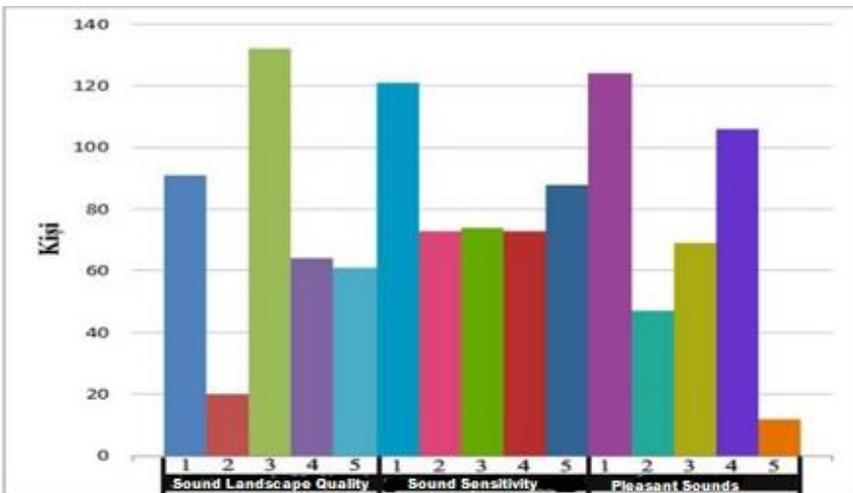
How would you describe the soundscape of the park as you wander through the park? When we evaluate the answers to this question according to the Likert scale, an average of 2.86 points out of 5 points was obtained. Since the value is below 3.00, it shows that people are not satisfied with the sound perspective of the park.

When the users were asked about their sensitivity to noise, they received an average of 3.6 points out of 5 points. Since it is more than 3, users show that they are sensitive and uncomfortable to noise pollution. The soundscape quality averaged 2.7, which means that the existing soundscape is not satisfactory for park users. A score of 3.0 was obtained from the question about hearing pleasing sounds. This means that people are moderately satisfied with the sounds heard in the park environment (Figure 10).



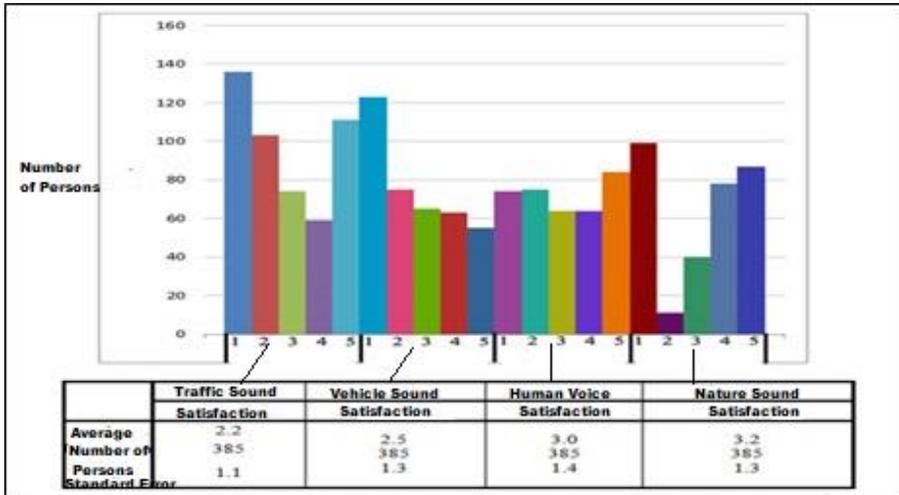
**Figure 10:** Satisfaction of the public with the soundscape in the park

Finally, survey users were asked about the degree of liking of the voices heard. They were asked to give a score between 1 and 5 when answering. When the average of the values obtained was calculated, a score of 2.98 was obtained, indicating that the visitors to the park were not completely satisfied with the sounds heard, since it was less than 3.0 (Figure 11).



**Figure 11:** Public sensitivity to noise

When the survey participants were asked about their satisfaction with the sounds in the park, it was determined that the most disturbing sound was the traffic sound with 2.2, and the most desired and liked sound was the sounds in nature (Figure 12).



**Figure 12:** Satisfaction with the sounds heard.

### 3. DISCUSSION AND CONCLUSION

Urumiyeh is a crooked and fast growing important city of Iran after 2000. The main material of the study is Urumiyeh City Park, which is located within the first district boundaries of Urumiyeh Metropolitan Municipality. Urumiyeh Park is the most important park in terms of its location and identity, being one of the most preferred parks by the people of the city in terms of its functions, and the intensity of use. In addition, it has been preferred as a working area because it has different desired and undesired sound sources.

With the surveys made, it was tried to determine the extent to which the soundscape of the park was liked by the users and the beautiful aspects and problems to be determined. Face-to-face surveys were conducted to determine the views of park users, their awareness of the auditory landscape, their preferences and perceptions.

In line with the answers given to this questionnaire, it is seen that the noise pollution disturbs the park users more in the afternoon and evening hours, which is due to the fact that the vehicle traffic is more intense during these hours. When asked about the noise level, it was rated 3.24 out of 5 by users, which indicates that the public are aware of the noise problem in the park and are disturbed by it. "How would you describe the soundscape of the park as you wander through the park?" The question was given 2.86 out of 5 points and it was observed that people were not satisfied with the soundscape of the park. When the users were asked about their sensitivity to noise, they received an average of 3.6 points out of 5. In other words, users show that they are sensitive and uncomfortable to noise pollution. The average soundscape quality was 2.7, which is not satisfactory for existing soundscape park users. The question about hearing pleasing sounds was also scored 3.0 out of 5. This shows that although the participants are satisfied with the sounds heard in the park environment, a sufficient level of satisfaction has not been reached.

According to the information obtained from the surveys, although the Urumiyeh city park is the most important park of the city, it has been determined that the noise is high and the public is disturbed by it. As a matter of fact, Bayramoğlu et al. (2014) stated that the noise in the parks is high (Bayramoğlu, 2014).

Although park users are satisfied with doing sports activities such as walking, it has been stated that they are disturbed by the sources of noise. For this reason, concave elements and walls should be used and natural sound diversity should be increased in order to highlight the desired sounds in the park such as water and bird sounds and to reflect positive sounds to spread throughout the park. As a matter of fact, Kaymaz and Belkayalı (2013) made similar suggestions (Kaymaz and Belkayalı, 2013). As suggested by Ghafari et al., (2017), high frequencies are used to reduce unwanted noise in the park; With artificial barriers, morphological changes should be made (Ghafari et al, 2017). In addition, measures can be taken with bushes and trees branching from the ground (Özer et al., 2008; Özer, 2017).

It should not be forgotten that people come to the parks to hear the beautiful sounds such as the sounds of birds and water, as well as the visual beauty. Recently, the time spent by people, especially young people, in shopping centers has increased. Unfortunately, they go to the parks less often,

and even if they do, they stay less time. Due to the Covid 19 Pandemic, people turned to parks and stayed away from shopping malls. In this process, in order to increase the interest in the parks, more careful attention should be paid to the implementation of the legal regulations together with the barriers and measures to prevent unwanted noises in the parks and a quiet environment should be provided (Kılıç and Abuş, 2018). However, with such studies carried out in the parks, the soundscape should be considered as one of the design principles of the park by determining the desired sounds, and it is very important to carry out studies to increase the variety and sound level of the desired sounds.

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# CHAPTER 3

## RESEARCH OF APPLICABILITY OF HEALING GARDENS: EXAMPLE OF EGE UNIVERSITY HOSPITAL GARDEN

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## INTRODUCTION

Hospital experience: It starts in the hospital garden before arriving at the hospital building. For this reason, hospital gardens should be arranged for their users. Within these regulations, the protection of open garden spaces is of great importance. Along with cultural changes and modern technologies, open spaces in hospitals are not enough today, and this causes treatment areas to deteriorate.

It is essential to analyze the relationship between the user and the space by approaching the physical environment in a visual context, to identify current and potential problems and propose solutions to strengthen cities' public life (Malkoç True and Kılıçaslan, 2020). Open and green areas including parks, urban forests, daily recreation areas, and residential gardens can undertake the task of changing the spatial system. Especially during epidemics, people's longing for nature increases, and this situation can lead to the emergence of various social problems. It can be stated that landscape architects need to gain experience in nature, natural factors, and health relations to design urban green areas, which are one of their working areas, in harmony with nature and to take public health into account (Mansuroğlu et al, 2021). In this context, it is necessary to specialize in hospital gardens.

The structural and environmental design of these spaces, where sick individuals experience the healing process, can directly or indirectly affect the process. When evaluated within the framework of the human-space relationship, the design of the space and the comfort it offers allow the users to spend the process more comfortably because the human being is an entity that is directly or indirectly affected by all the physical, social, cultural, and biological environment around him (Güneş Gölbey, 2021).

Considering the users in health facilities, effective regulation of open space uses; means a spacious environment and accessibility for users (Pirli, 2020). In this research study, Ege University Hospital Garden in Izmir was chosen as the main material of the research. Working in this direction; Ege University Hospital analyzes the current situation of the garden and aims to reveal how landscaping should be to make this area suitable for the needs of the users in the future.

Landscape studies and applications are very important issues to maximize the potential of garden areas in hospital facilities. Hospitals as

healthcare facilities are perceived as high-stress environments for employees and patients. Therefore, the garden and other environments outside the hospital should provide contrast to the interior space to facilitate the feeling of 'escape'. The sick people to be found in and around hospitals often represent a vulnerable population. Based on this sensitivity, the mentioned areas should be designed with special awareness of mobility and microclimate issues (Cooper & Barnes, 1995; Pirli, 2020).

**Participatory design:** It is a design approach that actively involves all users (e.g., employees, partners, customers, citizens, and end users) in the design process to ensure that the designed space meets their needs and is usable. Evidence-based studies support the participatory process. Significant benefits emerge, albeit complex, for making various decisions in the participatory design process. Landscape architects Myron A. Grant and Janet R. Carpman, who work on healthcare design, highlight a few of the overarching benefits of participating in the design process (Marcus & Sachs, 2014; Pirli 2020); helping to clarify design goals, reducing construction and implementation costs – ensuring that potential mistakes are eliminated before they reach the implementation stage, ensuring positive behavior and attitudes, creating a sense of community, and creating a marketing strategy.



**Figure 1:** Ege University Hospital Garden entrance and Atatürk Monument, before the 2019 Landscape Arrangements (Source: Pirli, 2020)

Within the scope of the research, the design principles of healing gardens were associated with holistic approaches and theories for the correct use of therapeutic landscapes and hospital gardens. As a result, this study; It brings up the benefits of the landscape architecture profession to health facilities and

presents an evaluation on increasing the restorative effects of existing environments.

## 1. HEALING GARDEN CONCEPT AND GENERAL FEATURES

Healing gardens are designed to support patients' recovery processes and reduce stressful environments. These gardens are generally designed as the gardens of health institutions such as nursing homes, rehabilitation centers, and private hospitals (Elings, 2006; Pirli, 2020). People find peace in certain places where they feel safe and comfortable (Kalaycı Önaç and Birişçi, 2022). Therefore, in places such as hospital gardens, places where users can be comfortable should be designed. In addition, the urban environment (connection from the outside) and the space should be evaluated separately. In this context, urban ecology and urban mass density effects should be observed. Its contributions to built-up urban sustainability should be investigated and it should be questioned whether it has achieved the goals set in the usage process (Altuğ and Malkoç True, 2021).



**Figure 2:** Sensory Garden sample images (Source: Url1, Url2)

Sensory gardens are a British term commonly used in schools, senior rehabilitation centers, and nursing homes. Sensory gardens; awaken the five primary senses by offering a visually pleasing, tactile, fragrant experience. Sensory gardens are structured because they benefit people living with dementia, soothe moments of stress, provide a quiet space in a school where experiential learning can be done outdoors, and help developmentally delayed children reach milestones. According to the American Horticultural Therapy Association, the medicinal garden; is a plant-based environment that includes

green plants, flowers, water, and other aspects of nature. It is designed as a resting place for users (AHTA, 2007; Pirli, 2020).

Therapeutic gardens, on the other hand, are basically a term used in healthcare settings that have the function of healing patients. These are gardens where horticultural therapy, sometimes also known as social and therapeutic gardening, is practiced. They differ from sensory and medicinal gardens in that they actively heal the sick through their gardening action. Examples of therapeutic landscapes include there are gardens designed to harmonize with a community, especially in a rehabilitation setting. These gardens allow people of all ages to access the soil and plants. An inclusive and accessible landscape design of all kinds is at the heart of the concept of the healing and therapeutic garden. According to the American Horticultural Therapy Association, the therapeutic garden is a healthcare environment. The garden offers a different physical design and program to create better therapeutic benefits for its visitors and participants (AHTA, 2007; Pirli, 2020). In this context, it is possible to see landscape architecture and design as valuable tools to increase and maintain human health and well-being.



**Figure 3:** Therapeutic Garden sample images (Source: Url3, Url4)

There is also a distinction between healing gardens and therapeutic gardens based on therapeutic landscape design (Faurest, 2014). These two terms are sometimes used interchangeably. Both are meant to improve people's well-being by spending time in a garden, either actively working or passively enjoying it. But there are subtle differences between them. Landscape architect Kristen Faurest defined the difference between them as follows: Healing

gardens express a more general concept. It generally refers to gardens designed to promote healing, but in this case healing; is seen as an improvement in physical, spiritual, emotional, and psychological as well as overall health and well-being. Healing gardens may also include memorial gardens or memorials to wars, illnesses, and tragic events (Pirli, 2020).

Clare C. Marcus & Naomi A. Sachs listed the design principles for healthcare facilities in their book “Therapeutic Landscapes An Evidence-Based Approach to Designing Healing Gardens and Restorative Outdoor Spaces” (2014):

**Accessibility:** When transitioning from indoors to outdoors, aisles should be suitable for people using wheelchairs or crutches. It is important that these spaces are safe, and all elements of the garden should be comfortable. Overall, the goal is to create an environment where people benefit and care. When users are physically and emotionally comfortable, they will be able to stay in the garden longer and benefit more from the experience. Providing safe and comfortable spaces for walking and resting, integrating spaces with plants, creating opportunities for social connections, and providing physical and emotional comfort is essential for design.

**Garden maintenance and aesthetics;** mean that all components of the space in the garden are properly preserved. Broken or damaged reinforcement elements such as pavement and seating elements or neglected plant materials can endanger user safety. On the other hand, a well-kept garden; means an environment that supports the health of patients and their relatives, visitors, and staff.

**Composition;** design possibilities, process, application, future use, and the transfer of vegetation to the design by integrating. Integrating access to nature and therapeutic gardens as a critical component of the overall healing environment results in applying the design principles and securing the necessary funding.

**Functional program:** The functional requirements of the hospital garden form the basis of how that area is designed physically and qualitatively. Guidelines and principles describe how functional needs should be addressed in any healthcare facility.

**Budget and financing;** the available financing and source of funds, as well as maintenance costs, play an important role in the implementation of the

design. Development office or philanthropy opportunities for healthcare facilities should be explored prior to the design process.

**Geographic location:** It is related to design factors such as the climate of the study area (hospital or hospital garden in health facilities), amount of daylight throughout the year, orientation to the sun, and prevailing winds. Density in the design is also important. Opportunities to start from scratch in a workspace with no surrounding green space or a workspace with nearby natural or cultural amenities are very different. Even the definition of “nature” can vary depending on cultural and regional differences, the region, and the availability of existing and potential nearby nature that is both visually and physically accessible.

At the main entrance of the hospital garden, there should be elements that will help to explore the place. Precautions should be taken in the garden considering bad weather conditions. In a few places, relaxing natural sounds can be given, which create sound in water and wind. Seeing moving water flowing in the fountain or looking at the pond, hearing the sound of running water, can provide healing benefits. Especially, hearing running water can mask other sounds that negatively affect the healing value of an area (Yücel, 2013; Pirlı 2020). Pleasant sounds can sometimes mask noises near streets and roadsides (e.g., a fountain hides the noise of nearby traffic).

## **2. PLANT DESIGN IN HEALING GARDENS**

When considered in terms of the discipline of architecture, a space in the broadest sense; is a limitation, an artificial change, or an expression of social organization that people perform in the natural / cultural environment for a purpose (Yazici et al, 2018; Gülgün et al., 2020). Strengthening these spaces with plant designs provides benefits in many ways. In this context, plant design is very important in hospital gardens. Plant design should be used very carefully, especially in cases where the hospital garden is privatized (e.g., poisonous, and thorny plants should not be used in children's hospital gardens). Plants that provide a connection with nature provide benefits for rehabilitation and healing. When hospital gardens are evaluated in general, the design of a garden dominated by herbal texture supports the psychological well-being of the user.

Generally, hospital gardens are used for resting purposes. Therefore, vegetative shading should be done in these areas. It also reduces the heat island effect of hospital gardens in these densely built cities (Alpay et al, 2013). While choosing plants, even if they belong to a theme, the ecological demands, and functional uses of the plants as well as their aesthetic appearance are taken into consideration (Çakar et al., 2020).



**Figure 4:** Boston Children's Hospital Healing Garden (Source: Url5, Url6)

Plants have a great place in the creation of aesthetic and functional spaces in landscape architecture studies. In addition, they play an important role in softening hard ground and materials such as stones, walls and structures used in the landscape (Gülgün et al., 2013; Yazici and Sağlamer, 2019).

**Table 1:** Some plants that can be used in healing gardens (Gülgün and Öztürk, 2020)

Plant name and figure	Habitus	Sensory Effect and Important Points
<i>Citrus Limon L. Burm</i>		
	<p>Evergreen shrub            Fragrant flowers            Grows in no shade            Edible fruits            Avg. height: 3 m            Avg. plant spread: 1 m            (Url7)</p>	<p>Seeing, smell, touchable, taste.            Contact of the juice of the fruit with the skin may cause irritation.</p>
<i>Thymus serpyllum (Wild thyme)</i>		
	<p>Evergreen shrub            Avg. height: 0.1 m            Avg. plant spread: 0.3 m            Grows in no shade            Edible leaves            Intense flavour and fragrance 2            (Url8)</p>	<p>Sight, smell, taste, and touch.</p>

<p><b><i>Lavandula angustifolia</i> (English Lavender)</b></p> 	<p>Evergreen shrub Fragrant flowers Attracts bees and butterflies Essential oil Furry leaves 1 Avg. height: 1.2 m Avg. plant spread: 1 m Calming 2 (Url9)</p>	<p>Seeing, smell, touchable. It's essential oil may rarely cause sensitization.</p>
<p><b><i>Mentha suaveolens</i> (Pineapple mint)</b></p> 	<p>Perennial Avg. height: 1 m Avg. plant spread: 0.8 m Attracts wildlife Grows in shade Edible leaves Furry leaves 2 (Url10)</p>	<p>Sight, smell, taste, and touch.</p>
<p><b><i>Ocimum basilicum</i> (Sweet basil)</b></p> 	<p>Perennial Avg. height: 0.5 m Avg. plant spread: 0.5 m Herb Grows in shade 1 Intense flavour and fragrance Edible seeds (Url11)</p>	<p>Sight, smell, taste, and touch.</p>

<b><i>Pennisetum setaceum</i> (Fountain grass)</b>		
	<p>Perennial                  Avg. height: 1.5 m                  Avg. plant spread: 1.5 m                  Grows in no shade                  (Ur12)</p>	<p>Seeing, touchable, hearing. No known toxic effects have been observed.</p>
<b><i>Rubus ideaus</i> (Raspberry)</b>		
	<p>Deciduous shrub                  Avg. height: 2 m                  Avg. plant spread: 1.2 m                  Grows in semi-shade or no shade                  Edible fruits                  Tea made from leaves                  (Ur13)</p>	<p>Sight, taste, touch.</p>
<b><i>Olea europaea L</i> (Olive)</b>		
	<p>Evergreen tree                  Avg. height: 10 m                  Avg. plant spread: 8 m                  Grows in no shade                  (Ur14)</p>	<p>Sight, taste, and touch.</p>

<b><i>Bellis perennis</i> (Daisy)</b>		
	Evergreen perennial Ground cover Attracts bees Avg. height: 0.2 m Avg. plant spread: 0.2 m (Ur115)	Sight, and touch.
<b><i>Viburnum opulus</i> (Guelder rose)</b>		
	Perennial shrub White flowers Bright red fruits Avg. height: 5 m Avg. plant spread: 5 m Grows in shade (Ur116)	Sight, and touch.

### 3. MATERIAL AND METHOD

#### *Material*

The garden of Ege University Medical Faculty Hospital was chosen as the research area. Ege University Medical Faculty Hospital, located in Bornova district of Izmir province, was established in 1955 and provides services in the field of health in Turkey, especially in the Aegean Region. Working area; It was deemed appropriate as a research area due to its location on the main road axis and the presence of a separate monument used extensively by patients and their relatives.



**Figure 4:** Ege University Hospital Garden (Photos of the landscaped area in 2018)

When the garden of the Ege University Medical Faculty Hospital is considered in general, it can be seen that the area does not have the opportunity for physical growth, but because the working area is located at the entrance as a sub-space in the hospital garden, it is a place where the arrangement and/or design can be strengthened.



Map Legend:

-  Bornova Metro Station
-  The area that was landscape designed again in 2019
-  Parking
-  Ege Ceremonial Feast Area (Amphitheatre)
-  Area with dense trees (*Pinus pinea*)

**Figure 5:** Research area

### ***Method of Study***

Description of Subject and Problem

- It is the phase of discovery and information regarding the current situation.
- First observations of the study area,
- Study to understand the subject/problem,

### **Data collection phase about the research area**

It is the inquiry phase to ensure the integration of the information obtained in the discovery phase by systematically collecting data.

- It covers which methods will be used for data collection and the initiation of studies on these methods and their application in the field.

In the research on the study area;

Semi-structured interview; A research meeting between two or more people. Its properties can be expressed as (Sayım 2017);

- The interviewer should report this conversation,
- Short and precise questions should be asked,
- The interviewee must be willing to answer,
- Concern about manipulating the interview time and space should be minimized,
- It requires careful listening by both parties.



**Figure 6:** Ege University Hospital Garden entrance and Atatürk Monument photographs of 2020 (Source: Pirli, 2020)

According to Sayım (2017); In semi-structured interviews, the researcher should list the topics he intends to ask, and some possible key questions should be prepared. In this context, the research interview was carried out with those who used the randomly selected area through pre-prepared questionnaires. The interviews were reported without manipulating the result. While preparing the semi-structured interview form of the study, Malkoç's doctoral thesis was used (2008).

**Table 2:** Example of a semi-structured interview form applied to users in the research (Malkoç, 2008)

<b>A. General information about users</b>							
Gender:	Age:	Employment/Profession:	City:				
<b>B. Information on the user's accessibility to the Ege University Hospital Garden</b>							
<b>1. How do you come to Ege University Hospital?</b>							
Public transport <input type="checkbox"/>	Special vehicle <input type="checkbox"/>	Pedestrian <input type="checkbox"/>	Bicycle <input type="checkbox"/>				
<b>2. Do you think public transportation is sufficient?</b>							
Yes <input type="checkbox"/>				No <input type="checkbox"/>			
<b>3. Did you have any problems in terms of accessibility?</b>							
Yes (Please specify) <input type="checkbox"/>				No <input type="checkbox"/>			
<b>C. Information on the user's intended use of the Ege University Hospital Garden</b>							
<b>4. For what purpose do you use the Ege University Hospital Garden?</b>							
Rest <input type="checkbox"/>	Waiting <input type="checkbox"/>	Eating/drinking <input type="checkbox"/>	Talking <input type="checkbox"/>	Other (Pl. Sp.) <input type="checkbox"/>			
<b>D. Information on the frequency of the user's use of the Ege Uni. Hospital Garden</b>							
<b>5. How often do you come to Ege Uni. Medical Faculty Hospital?</b>							
1 per week	More than once a week	1 per month	4 times a year	1 time per year			
<b>6. How much time do you spend on average in the Ege Uni. Hospital garden?</b>							
0-1 hour <input type="checkbox"/>	1-3 hours <input type="checkbox"/>	3-5 hours <input type="checkbox"/>	5 hours + <input type="checkbox"/>				
<b>E. Information on the User's Satisfaction with the Ege Uni. Hospital Garden</b>							
<b>7. When you think about the place in general, are you satisfied?</b>							
Yes <input type="checkbox"/>		Indecisive <input type="checkbox"/>			No <input type="checkbox"/>		
<b>8. Is there an environmental impact that negatively affects your use of the space?</b>							
Air pollution	Noise	Bad smell	Bad view	Other (Pl. Sp.)			
<b>9. Do you find the hospital garden safe as a user?</b>							
Yes <input type="checkbox"/>		Indecisive <input type="checkbox"/>			No <input type="checkbox"/>		
<b>10. In the hospital garden; are living reinforcement elements such as trees / shrubs / shrubs / seasonal / grass and ground covers sufficient and well-maintained?</b>							
Sufficient	Partially	Insufficient	Well maintained	Neglected			
<b>11. Are the other equipment in the garden of the hospital sufficient and well-maintained?</b>		Sufficient	Partially	Insufficient	Well maintained	Neglected	
	Lighting						
	Information signs						
	Plant container						
	Kiosk						
	Bin						
	Sitting elem.						
	Water elem.						
Sculpture							

**12. What can be done to use the garden of the Ege University Medical Faculty Hospital in a more qualified, cleaner, and orderly manner?**

**4. RESULTS**

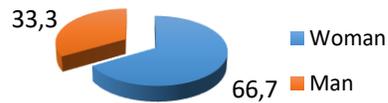
***Semi-structured interviews -General information about users***

Users participating in the semi-structured interview; Firstly, some demographic characteristics such as gender, age, occupation, and place of residence were revealed.

Semi-structured interviews were conducted with 108 users in the study area, and it was determined that 72 of the participants were women and 36 were men (Table 3).

**Table 3:** Distribution of users by gender

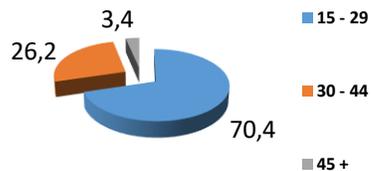
	Woman	Man	Total
<b>Number</b>	72	36	<b>108</b>
<b>Percent</b>	66,7	33,3	<b>100</b>



It was observed that the ages of the users ranged from 18 to 60 and the highest rate was 70.4%, with users between the ages of 15 and 29 (Table 4).

**Table 4:** Distribution of users by age

	15 – 29	30 – 44	45 +	Total
<b>Number</b>	76	28	4	<b>108</b>
<b>Percent</b>	70,4	26,2	3,4	<b>100</b>



When the distribution of users participating in the semi-structured interview according to occupations is examined; It has been determined that 46 of them are students, 24 are working in the private sector, 18 are working in the public sector, and 4 are retired (Table 5).

**Table 5:** Distribution of users by employment/profession

	<b>Student</b>	<b>Public sector</b>	<b>Private sector</b>	<b>Retired</b>	<b>Unemployed</b>	<b>Total</b>
<b>Number</b>	46	18	24	4	16	<b>108</b>
<b>Percent</b>	42,7	17,1	22,8	3,8	13,6	<b>100</b>

In the last part of the general information about the users, when the place of residence of the users participating in the conversation is questioned; 83.7% Izmir (Narlidere, Bayraklı, Buca, Bornova, Gaziemir, Karşıyaka, Konak), 13.1% Manisa (Turgutlu, Soma, Merkez), 1.6% Uşak and 1.6% It was determined that ten of them lived in Muğla.

### *Information on the user's accessibility to the Ege University Hospital Garden*

In this section, the physical access of the users participating in the interview to the work area was questioned (Table 6).

**Table 6:** Distributions of users' space accessibility

	<b>Ranges</b>	<b>Number</b>	<b>Percent</b>
<b>How do you come to Ege University Hospital?</b>	Public transport	82	76
	Pedestrian	4	4
	Special vehicle	18	16
	Bicycle	4	4
	<b>Total</b>	<b>108</b>	<b>100</b>
<b>Do you think public transportation is sufficient?</b>	Yes	86	80
	No	22	20
	<b>Total</b>	<b>108</b>	<b>100</b>
<b>Did you have any problems in terms of accessibility?</b>	Yes	14	13
	No	92	87
	<b>Total</b>	<b>108</b>	<b>100</b>

The answers given on the problems experienced in terms of accessibility; It has been determined that heavy traffic with private vehicles and parking problems in the hospital garden, inadequacy in public transportation, the intersections and traffic lights around the hospital are dangerous for bicycle use, public transportation is very crowded, and the time problem in public transportation makes accessibility difficult.

### ***Information on the user's intended use of the Ege University Hospital Garden***

In this section, it was questioned for what purposes the users participating in the interview used the workspace (Table 7).

43% of the users who participated in the interview stated that they used the work area primarily for waiting, and 37% for rest, and 2% stated that they used the other (smoking, parking a car) purpose.

**Table 7:** Data on users' intended use of space

	<b>Ranges</b>	<b>Number</b>	<b>Percent</b>
<b>For what purpose do you use the Ege University Hospital Garden?</b>	Rest	40	37
	Waiting	46	43
	Eating/drinking	14	13
	Talking	6	5
	Other	2	2
	<b>Total</b>	<b>108</b>	<b>100</b>

### ***Information on the frequency of users' use of the domain***

In this section, it is questioned how often the users participating in the interview use the workspace and how much time they spend on average (Table 8).

**Table 8:** Information on the frequency of users' use of the space

	<b>Ranges</b>	<b>Number</b>	<b>Percent</b>
<b>How often do you come to Ege Uni. Medical Faculty Hospital?</b>	1 per week	6	6
	More than once a week	22	20
	1 per month	24	22
	4 times a year	28	26
	1 time per year	20	19
	Other	8	7
	<b>Total</b>	<b>108</b>	<b>100</b>
<b>How much time do you spend on average in the Ege Uni. Hospital Garden?</b>	0 – 1 hour	40	37
	1 – 3 hours	54	50
	3 – 5 hours	10	9
	5 hours +	4	4
	<b>Total</b>	<b>108</b>	<b>100</b>

### *Information on the User's Satisfaction with the Ege University Hospital Garden*

In this section, whether the users are generally satisfied with the hospital garden; In general, the satisfaction of the hospital garden has been examined under three headings as possible negative environmental effects in the use of the garden, security, plants, and other equipment elements (Table 9).

**Table 9:** Information on user satisfaction I

	<b>Ranges</b>	<b>Number</b>	<b>Percent</b>
<b>When you think about the place in general, are you satisfied?</b>	Yes	26	24
	No	34	32
	Partially	48	44
	<b>Toplam</b>	<b>108</b>	<b>100</b>

**Table 10:** Information on user satisfaction II

	<b>Ranges</b>	<b>Number</b>	<b>Percent</b>
<b>Are there any environmental impacts that negatively affect your use?</b>	Air pollution	10	9
	Noise	38	28
	Bad smell	16	14
	Bad view	32	33
	Other	12	16
	<b>Total</b>	<b>108</b>	<b>100</b>

16% of the environmental impacts negatively affecting the use were stated as other (not cleaning the environment sufficiently and not being used properly by people, peddlers occupying the sidewalks, irregularity, presence of stray animals) (Table 11).

**Table 11:** Information on user satisfaction III

	<b>Ranges</b>	<b>Number</b>	<b>Percent</b>
<b>Do you find the place (hospital garden) safe as a user?</b>	Yes	16	15
	No	28	26
	Partially	64	59
	<b>Total</b>	<b>108</b>	<b>100</b>

The 26% do not find the place safe; in addition, stated that there are insufficient security personnel, the passage of vehicles poses a danger to users, there is no safe place for children, and they do not feel psychologically safe due to the crowd, and they are not safe due to the lack of lighting in the evening (Table 12).

**Table 12:** Information on user satisfaction IV

	<b>Ranges</b>	<b>Number</b>	<b>Percent</b>
<b>Are living reinforcement elements such as trees / shrubs / shrubs / seasonal / grass in the place (hospital garden) adequate and well-maintained?</b>	Sufficient and well maintained	12	11
	Sufficient and neglected	30	28
	Partially adequate and well maintained	34	31
	Insufficient and well-maintained	4	4
	Insufficient and neglected	28	26
	<b>Total</b>	<b>108</b>	<b>100</b>

Considering the inanimate reinforcement elements in the research area, lighting elements, plastic element (sculpture) and water element took the first three places in order of sufficiency and maintenance (Figure 7; 8).

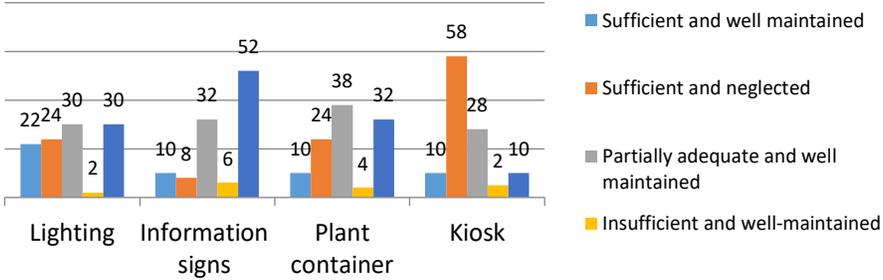


Figure 7: Information on user satisfaction V

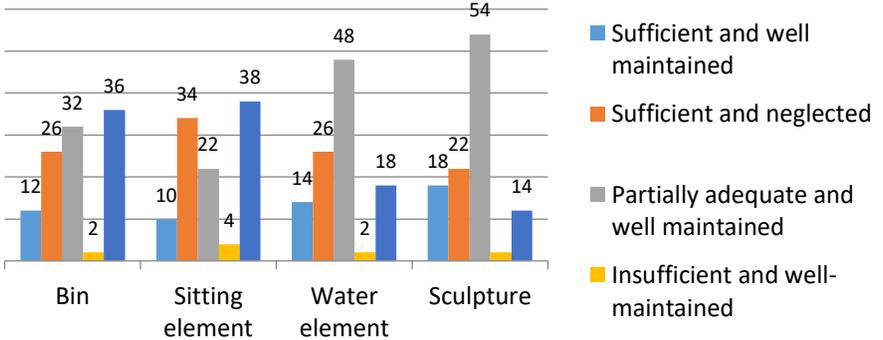


Figure 8: Information on user satisfaction VI

In the semi-structured interviews, the last question to the users was “What can be done to make the garden of the EU Medical Faculty Hospital and this place more qualified, cleaner, and more useful in terms of order?” To the question, 28% of the users stated that the place should be rearranged for patients and their relatives, and 15% stated that the vehicle density in the hospital affects the use of pedestrians and that the vehicle roads should be safe (Table 15).

**Table 15:** Opinions of users in order to use the space more efficiently

	<b>Ranges</b>	<b>Number</b>	<b>Percent</b>
<b>What can be done to use the garden of the Ege University Medical Faculty Hospital in a more qualified, cleaner and orderly manner?</b>	The garden must be well maintained	10	7
	Vehicle entry must be blocked	14	15
	Information signs must be legible	6	6
	Should be rearranged	17	28
	Cleanliness should be increased	20	11
	Reinforcement elements should be increased	8	7
	Green space should be increased	18	11
	Security problem needs to be fixed	3	2
	Everything is positive	2	2
	No idea	10	11
<b>Total</b>	<b>108</b>	<b>100</b>	

## 5. CONCLUSION AND SUGGESTIONS

In this study, which aims to investigate the effects of the Ege University Medical Faculty Hospital Garden on the use process of the hospital's front entrance and the general condition of the hospital in 2019, a semi-structured interview method was used to determine user behaviors and user opinions in the research area. The semi-structured interview was evaluated under separate headings in terms of the user profile, accessibility, the purpose of use, frequency of use, activities performed, user satisfaction, and reinforcement equipment elements.

When evaluated in terms of user profile, the garden of the Ege University Medical Faculty Hospital, which is considered as a research area, has the feature of bringing people from all age groups together, as it is also an entrance.

Of the users participating in the semi-structured interview, 66.7% are women users and 33.32% are men users.

The structure of the research area as a resting area and for eating and drinking affects the user profile, and besides the fact that 83.7% of the users

live in the central districts of Izmir, they are used by many users from different cities during the day.

When the research area is evaluated in terms of accessibility; Due to the proximity of Izmir Metro Bornova station, the hospital can be easily accessed via the metro, by various means of transportation such as municipal buses, taxis, and minibusses. 76% of users prefer public transportation and 80% of them stated that public transportation is sufficient for reaching the area. In cases where the use of private vehicles is mandatory, the vehicle entrance affects the users negatively, so there is a need to reconsider the existing parking areas.

When the usage purposes of the area were analyzed, it was determined that the users used the area mostly for purposes such as resting, eating, drinking, and chatting after waiting.

Looking at the frequency of use, 26% of the users stated that they use it four times a year, 22% once a month and 20% more than once a week.

When the research area is evaluated in terms of user satisfaction; 44% of users stated that they were partially satisfied. Moreover 59% of users stated that the area is partially safe, and this is due to insufficient security. When evaluated in terms of reinforcement elements, it was generally found to be partially successful.

Other reinforcement elements in the research area; The adequacy, quality, and well-maintained aspects were handled one by one, and as a result of the evaluation, the urban equipment elements were found to be partially adequate and well-maintained. When evaluated in terms of the reinforcement elements related to the plant design, it was concluded that the green area can be increased, but it is partially sufficient and well-maintained.

It is possible to identify and solve problems related to use in the field and increase productivity, based on the evaluation study in the use process carried out in the example of the garden of Ege University Medical Faculty Hospital.

Evaluations made during the use process will shed light on new studies and will allow deficiencies to be resolved during the design phase.

Although the research area is partially successful by the users, it needs some arrangements to make the area more functional, dynamic, and attractive.

- In order to eliminate the crowd and conflict at the entrance of the hospital, guiding signs suitable for the sick and elderly should be used,

- Afforestation and green areas should be increased to eliminate the negative image of the built environment,

- It should be more usable for patients and their relatives,

- Security measures should be increased to ensure the safety of users,

- The maintenance of the sales kiosk should be increased,

- Vehicles other than the parking lot should not be allowed to park on the sidewalks,

- Due to the excessive use of the space, more hygienic environments should be provided by increasing the cleanliness,

- Seating elements must be suitable for climatic conditions (rain, etc.),

- Lighting elements should be arranged for evening use,

This study, which was carried out by considering the garden of EU Medical Faculty Hospital, was carried out within the scope of 2018 data. This field of study needs to be reconsidered in terms of being more functional and socially functional, and in terms of usability. In addition, if it is rearranged within the framework of the surveys and the above-mentioned suggestions, a more positive, more functional, and more suitable usage area will emerge for the users of the area. In this direction, a positive situation will be revealed for users.

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# CHAPTER 4

## LANDSCAPE REVIEWS WITH USER PARTICIPATION: ZEYTİNBURNU MEDICAL AND AROMATIC PLANTS GARDEN

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## **INTRODUCTION**

Throughout history, people have used the garden as a shelter and a means of relaxation to get rid of sadness and pain (Gerlach-Spriggs, Kaufman and Warner, 1998). Urban living spaces with a natural appearance are very important to cope with stress and to be physically and psychologically healthy (Erduran Nemutlu, 2016). Today's cities that develop without a plan, on the other hand, narrow the areas where people can touch the soil and cut off their contact with nature. This situation negatively affects the physical and mental health of people. The most important of the urban reinforcement areas, which aim to reunite the people in the cities with nature, are the urban open and green spaces (Çelik Çanga, 2021).

Open green spaces, establishing the mass-space balance in residential areas, providing physical balance and organic integrity (Çelik and Erduran, 2011), strengthening neighborly relations (Erduran Nemutlu et al., 2021), beautifying the environment, reducing the stress of daily life, contributing to the development of individuals. It has functions such as providing and supporting socialization, increasing air quality, shielding noise, and creating a habitat for wildlife.

One of the areas that fulfill all the ecological, economic, social, psychological and recreational functions of open and green spaces is medicinal and aromatic plant gardens. Thematic gardens such as medicinal and aromatic plants garden, healing garden, phytotherapy gardens are effective gardens for raising awareness and consciousness of people living in cities against sustainable natural systems. As Erduran Nemutlu (2017) stated, these areas enable individuals to interact directly with nature, gain permanent learning habits and internalize environmental values.

The medicinal herb gardens are the first academic botanical gardens in Europe. Zeytinburnu Medicinal and Aromatic Plants Garden, which is the study area, is Turkey's first medicinal plants garden located in Istanbul and was established on a 14-decare land. The aims of the establishment; to research, produce and promote medicinal plants, to protect and develop plant diversity, to encourage the cultivation of medicinal plants, to provide study areas and materials for educational programs, and to lay the groundwork for studies on the use of medicinal flora. It was established with the cooperation of Zeytinburnu Municipality and Merkezefendi Traditional Medicine Association.

There are more than 700 plants. There is a glass greenhouse and a small greenhouse next to it. A building in the area, in this building; There are classes where trainings are given, a herbarium room, a plant collection room, a library with publications, and sales departments for natural products. In the backyard section; There are sections with cats, dogs, rabbits, ducks, roosters, chickens, turtles, bees, birds and insects (Anonim, 2009).

In the Zeytinburnu Medicinal and Aromatic Plants Garden, besides the cultivation of medicinal and aromatic plants; Pregnancy, natural birth, making natural ointments, making natural cleaning materials, plant breeding, landscaping, breathing training, etc. are provided for both protecting and gaining health. There are conference halls, exhibition halls and a library for these trainings. Zeytinburnu Medicinal and Aromatic Plants Garden can be reached by bus, metro, metrobus and private vehicle. In addition to carrying the goals of an academic botanical garden, this garden is one of the most visited open-green areas as a recreation area.

The most basic function of a garden is to meet the physical-social-emotional needs of its user (Johnson, 1995; Li and Mander, 2009). In order to make landscape evaluations with user participation, a survey was conducted based on face-to-face interviews in Zeytinburnu Medicinal and Aromatic Plants Garden. In the surveys, the user profiles, the frequency of using this area, the emotions they feel in this area, the senses with which they perceive the landscape of the area, and the arrangements they want in this area were questioned. It is aimed that the results obtained will shed light on the gardens to be designed in the future.

## **1- MATERIAL AND METHOD**

The main material of the study consists of the Zeytinburnu Medicinal and Aromatic Plants Garden in Istanbul and the surveys made in this area. In addition, written and drawn scientific sources related to the subject, impressions obtained through on-site investigations, and photographs taken were also evaluated as material.

The designs made in line with the wishes and needs of the users are always more successful. Based on this idea, the survey method based on face-to-face interviews was used in this study. After the questions were prepared, a trial survey was conducted with 10 people, incomprehensible questions and

misunderstood questions were determined and after the necessary arrangements were made, the survey questions were finalized and applied.

The systematic sampling method was used in the research, and the number of samples reached for the research area was calculated according to Vural (2012). According to Vural (2012), the systematic sampling formula is as follows;

$$n = N \frac{t^2 pq}{d^2 (N-1) + t^2 pq}$$

In the formula:

N: Number of individuals in the target audience

n: Number of individuals to be sampled

p: Frequency of occurrence (probability of occurrence) of the investigated event

q: Frequency of non-occurrence of the investigated event (probability of not occurring)

t: Theoretical value found according to the t-chart at a certain level of significance

d: Given as the accepted sampling error according to the incidence of the event.

According to this:  $p = 0.20$   $q = 0.80$   $t = 1.96$  ( $SD = 0.05 \times$  degrees of freedom, theoretical t value was found from the table)

The universe of the research is Zeytinburnu Medicinal and Aromatic Plants Garden. The number of samples for this area;

$N = 41128$  (Number of visitors to Zeytinburnu Medicinal and Aromatic Plants Garden)

$n = 41128 \times \frac{(1.96)^2 \times 0.20 \times 0.80}{(0.05)^2 \times (41128-1) + (1.96)^2 \times 0.20 \times 0.80}$

$n = 243$  questionnaires (250 questionnaires) were determined as number.

The survey was carried out between 01.01.2019-01.01.2020 by randomly selected people based on face-to-face interviews, by going to the field at different times and working hours. Questionnaire questions were in compliance with ethical principles and ethics committee certificate was obtained. In the evaluation of the data obtained from the questionnaires, Frequency analysis,

which is one of the analyzes included in the SPSS16 Package Program and showing the observation frequency and percentage distribution of the data, and Crosstabs analysis, where we can obtain the comparison data resulting from the cross-correlation between the two variables, were used.

**2. RESULT**

In the study, participant profiles were primarily questioned. According to the answers received; majority of the participants are male (54.80%), age range of 26-35 (26.40%), married (52.40%), high school graduate (31.60%), worker (26.40%), monthly income is 2501 -5000 ₺ (27.60%) were determined to be among the people (Table 1).

**Table 1:** Participant Profile

Profile Properties		Number	%	Profile Properties		Number	%
<b>Gender</b>	Female	113	45,20	Student	44	17,60	
	Male	137	54,80	Public employee	35	14,00	
<b>Age Groups</b>	15 age <	19	7,60	Retired	35	14,00	Profession Groups
	15-25 age	38	15,20	Worker	66	26,40	
	26-35 age	66	26,40	Self-employment	17	6,80	
	36-45 age	63	25,20	Housewife	38	15,20	
	46-55 age	38	15,20	Unemployed	8	3,20	
	56-65 age	15	6,00	Other	7	2,80	
	66 age >	11	4,40	500 ₺ <	48	19,20	
<b>Marital status</b>	Married	131	52,40	501-1000 ₺	17	6,80	Average Monthly
	Single	85	34,00	1001-1500 ₺	22	8,80	
	Divorced	34	13,60	1501-2000 ₺	39	15,60	
<b>Educational Status</b>	Illiterate	14	5,60	2001-2500₺	43	17,20	
	Primary school	18	7,20	2501-5000 ₺	69	27,60	
	Middle school	43	17,20	5001₺ >	12	4,80	
	High school	79	31,60	No	103	41,20	
	Associate degree	47	18,80	1-2 Children	89	35,60	
	Undergraduate	37	14,80	3-4 Children	50	20,00	
Postgraduate	12	4,80	More than 5 children	8	3,20	Child Possession	

10.40% of the people who participated in the survey stated that they were employees of this garden. Other participants stated that; 46.80% attend this garden as a one-time visitor, 16.8% for healing purposes, 11.6% for recreational purposes at intervals, and 14.40% to attend trainings on medicinal and aromatic plants is coming.

The majority of the participants (56%) stated that they learned about Zeytinburnu Medicinal and Aromatic Plants Garden over the internet. Other

sources of information on this subject are mediation by friends/relatives (39%), television (3%), newspaper (1%) and other without explanation (1%).

51.2% of the participants stated that they reached this area by public transport, while 34.8% of the other majority stated that they reached this area by private vehicles. Other participants' modes of transportation are walking, cycling and other options. In addition, the vast majority of the participants (95.6%) stated that they did not have any problems in accessing the area.

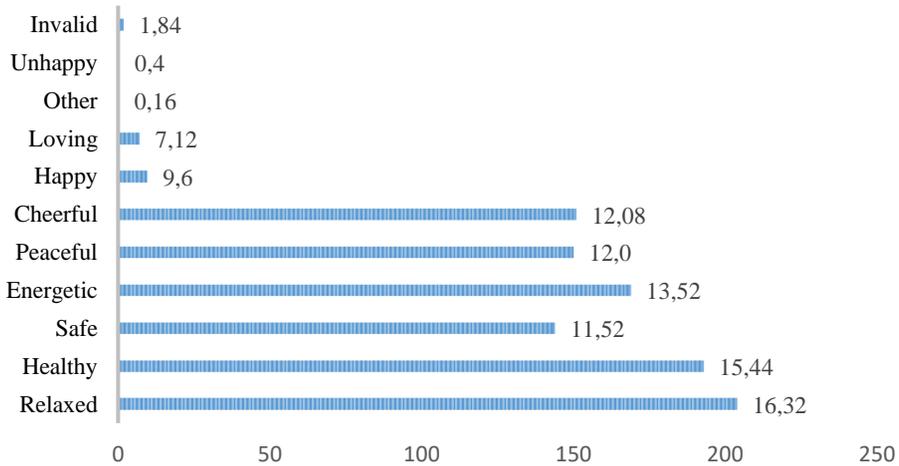
According to the answers received from the questions about the time spent by the participants in this area, the day and season they prefer to visit, and who they prefer to visit the area; The majority of the participants spend 1-3 hours (48.4%) in this area, they prefer to visit on Saturdays (24.00%) and in the summer (38.00%), the majority of them are with their family members (55%, 60) prefers to visit (Table 2).

**Table 2:** Area Usage Cases

Area Usage Cases	Number	%	
<b>Time spent in the area</b>	Less than 1 hour	25	10,00
	1-3 hour	121	48,40
	4-5 hour	58	23,20
	More than 6 hours	33	13,20
	All day	13	5,20
<b>Preferred day for visit</b>	Monday	16	6,40
	Tuesday	15	6,00
	Wednesday	22	8,80
	Thursday	28	11,20
	Friday	55	22,00
	Saturday	60	24,00
	Sunday	54	21,60
<b>Preferred season for visit</b>	Spring	91	36,40
	Summer	95	38,00
	Autumn	50	20,00
	Winter	14	5,60
<b>Preferred persons for visit</b>	Family	139	55,60
	Friend	51	20,40
	Alone	60	24,00

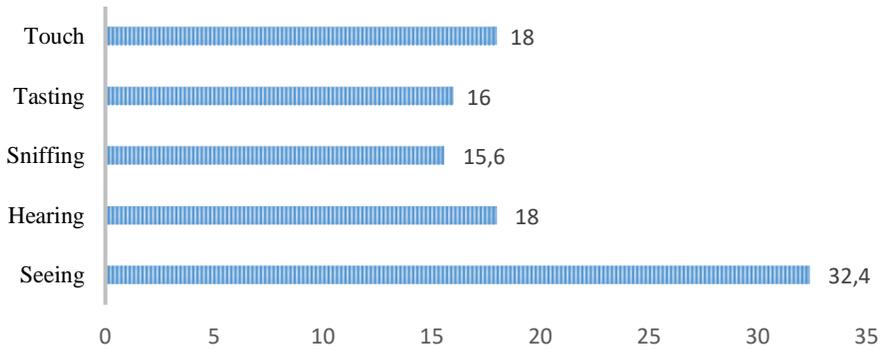
People go to all kinds of recreation areas such as parks, gardens and green areas because they feel positive emotions. As Erduran and Kabaş (2010) stated in their study, these areas provide the residents of the city to feel renewed by creating an opportunity to rest. The fact that such areas make users feel positive emotions depends on the landscape of the area. Well-designed open and green spaces using animate and inanimate landscape elements also make their users feel good. When the landscape of the Zeytinburnu medicinal and aromatic

plants garden was questioned in terms of the emotional attributes it felt, the visitors stated that they felt mostly “relaxed”, “healthy” and “full of energy” (Figure 1).



**Figure 1:** Emotions of visitors in Zeytinburnu medicinal and aromatic plants garden

Experiencing a landscape is realized through different senses such as seeing, hearing, smelling, tasting and touching. The bond that people establish with nature through their senses creates multi-faceted positive effects (Ulrich and Parson 1992). An open-green space should stimulate the senses (Stark, 2004). Because people establish their relationship with their environment through their senses. In order to determine the role of the senses in landscape design, the opinions of the visitors on this subject were also questioned and according to the answers, 32.4% of the participants saw, 18% of them heard, 15.6% of them smelled, 16% of them tasted and 18% of them said. they gave the answer that they perceive by touching (Figure 2).



**Figure 2:** The senses that the participants perceive the landscape

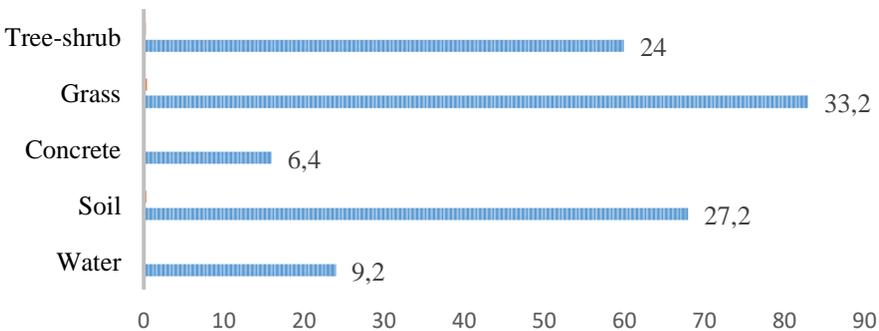
Different user types can perceive the landscape with different senses. In terms of this relationship, according to the situation in the Zeytinburnu medicinal and aromatic plants garden; In terms of gender, both male and female groups perceive the landscape most with their visual senses. As Vapaa (2002) states, the sense that definitely reacts to a design is sight. Women stated the sense of smell in the second place and the sense of touch in the second place in men. People aged 65 and over, representing the advanced age group in terms of age groups, stated that they perceive the landscape with their sense of touch (Table 3).

**Table 3:** The relationship between the user profile and the perception of the landscape

Participant Profile		Seeing (%)	Hearing (%)	Sniffing (%)	Tasting (%)	Touch (%)	None (%)
Gender	Female	38	17	25	17	14	2
	Male	43	28	14	23	25	4
Age Groups	15 age <	6	3	1	4	4	1
	15-25 age	19	5	5	4	4	1
	26-35 age	21	12	11	11	7	4
	36-45 age	9	14	13	16	11	-
	46-55 age	20	3	6	4	5	-
	56-65 age	5	5	1	1	3	-
	66 age >	1	3	2	0	5	0
Educational Status	Illiterate	1	6	2	3	2	-
	Primary school	10	3	2	2	1	-
	Middle school	16	7	9	7	4	-
	High school	27	12	13	7	14	6
	Associate degree	12	10	8	7	10	-
	Undergraduate	15	2	3	11	6	-
	Postgraduate	0	5	2	3	2	-

Profession Groups	Student	15	5	4	7	7	6
	Public employee	11	6	3	13	2	-
	Retired	13	5	3	5	9	-
	Worker	5	2	-	1	-	-
	Self-employment	18	13	12	8	15	-
	Housewife	5	3	5	2	2	-
	Unemployed	13	10	9	3	3	-
	Other	1	1	3	1	1	-
Average Monthly Income	500 ₺ <	17	10	5	6	6	4
	501-1000 ₺	7	3	2	1	2	2
	1001-1500 ₺	5	7	4	5	1	-
	1501-2000 ₺	8	5	12	5	9	-
	2001-2500 ₺	15	8	5	3	12	-
	2501-5000 ₺	27	11	9	16	6	-
	5001 ₺ >	2	1	2	4	3	-

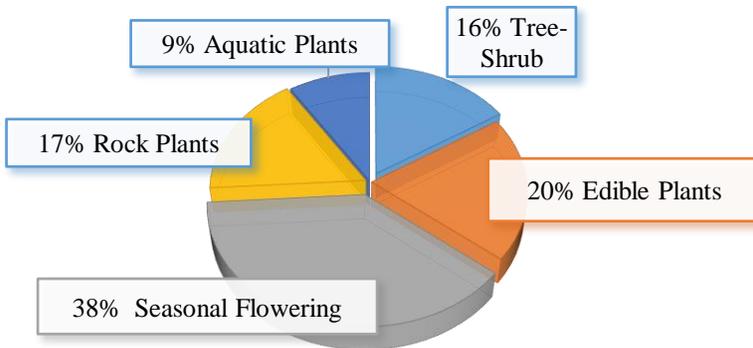
Open and green spaces are areas where people can get away from their daily stresses. All green spaces have positive effects on people (Rawlings, 1998). There are indoor and outdoor areas planned in accordance with their functions within the Zeytinburnu medicinal and aromatic plants garden. Although closed areas should be closed due to the function they undertake, the majority of the visitors (75%) stated that they would like to see an open area instead of closed areas. With a rate of 33.2% in open areas, the most desired ground is grass areas. This is followed by soil floors.



**Figure 3:** Surfaces preferred by the participants

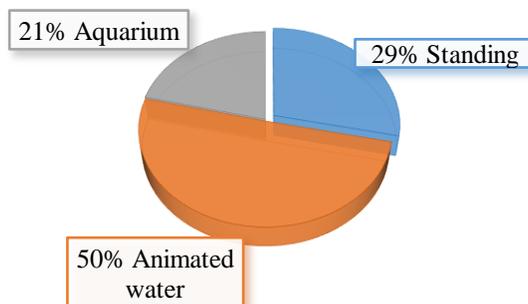
Although today's urban life distances people from plants, plants accompanied people in all areas of life in ancient times (Anonymous, 2009). From this point of view, the participants were questioned about the plant group

they would like to see more in this area, and 38% of them stated their preference as seasonal flowering plants (Figure 4).



**Figure 4:** Plant groups that the participants would like to see

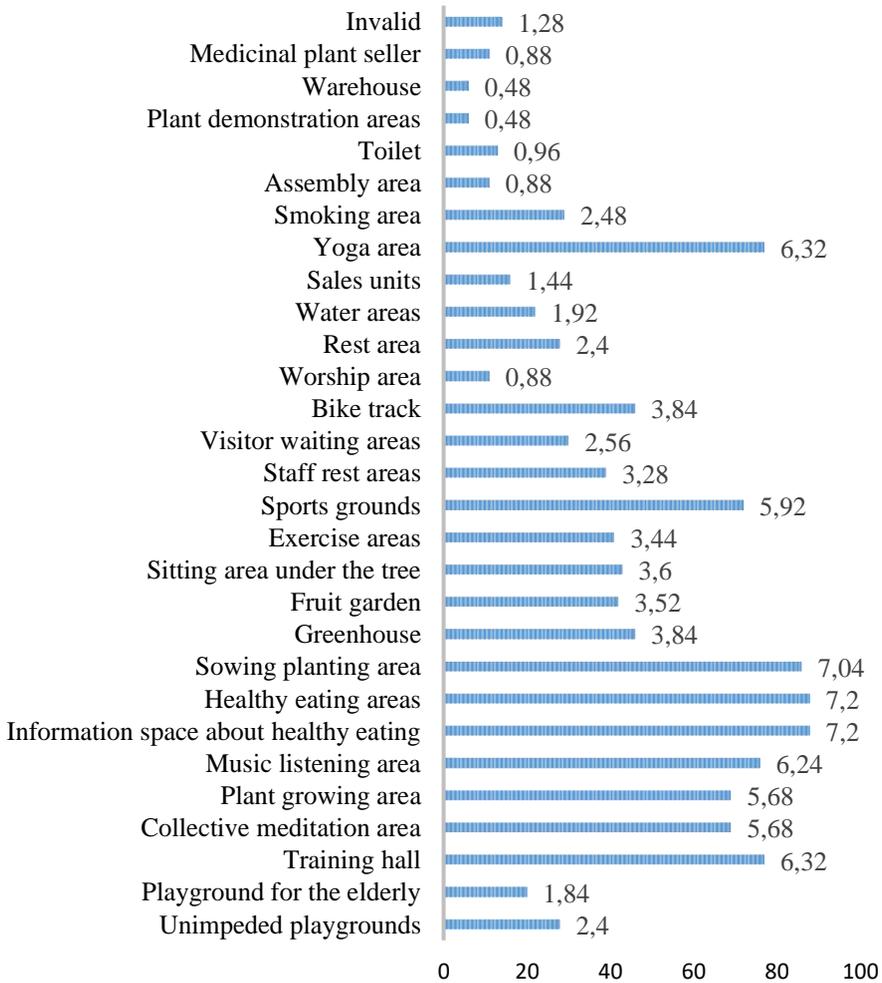
One of the most important elements that add naturalness to a landscape is the water element. The most preferred water element by the participants in this area is moving water (Figure 5).



**Figure 5:** Participants' preferences about water elements

According to the preferences of the participants about the equipment areas they want to be in this area; The equipment areas they wanted the most were preferred equally with the areas of healthy eating (eating and drinking) (7.2%) and the information area about healthy eating (7.2%). This is followed

by planting-planting areas (7.04%), yoga area (6.32%), training hall-lecture (6.32%) (Figure 6).



**Figure 6:** Usage areas preferred by visitors

### 3. CONCLUSION

While the urbanization process brought along industrialization and economic developments, it also became a process that increased the negativities in human behavior and health, and decreased the mental health of the societies and accordingly the physical health. Due to the restorative and healing effects

of natural environments, people's living together with nature positively affects their physical and mental health. In order for this effect to be even stronger, it should be designed in a way that responds to the wishes and expectations of the user. The aim of this study, which was carried out in Zeytinburnu Medicinal and Aromatic Plants Garden, is to make user-oriented landscape evaluations and to shed light on new designs by making inferences in this direction. The results from the study are:

The wide variety of user profiles makes open-green space planning and design more complex. Designing indoor and outdoor areas, equipment and activity types that can meet the needs of every user type requires including all effective parameters in the process and interdisciplinary work. For this reason, user preferences should be taken into account in areas where the user profile will be very diverse and which serve all the people of the city, and for this, their preferences should be questioned by conducting surveys.

As in Zeytinburnu medicinal and aromatic plants garden, people use open-green areas very intensively in summer and on weekends. The size of the activity areas, the variety of open and closed areas designed in accordance with their functions, and the carrying capacity in their size should be taken into consideration. In addition, attractive areas and activities should be designed to distribute the use of such areas to other seasons.

One of the most effective ways to improve the physical and mental problems caused by urban problems is open-green areas, parks and all kinds of recreation areas designed in accordance with the demands of the users in the cities. Well-designed open and green spaces that meet the active and passive recreation needs of people ensure their users to be healthy by giving them positive emotions. Therefore, as a social reinforcement area, urban open and green spaces should have a certain concept and include equipment area, equipment element, natural-cultural-artistic landscape elements and activity types in accordance with the concept. So much so that, as a garden with a concept, the landscape of the Zeytinburnu medicinal and aromatic plants garden gives positive emotions to almost all of its users.

Suppression of emotions causes stress and depression (Minter 1995), which increases the susceptibility to mental illnesses such as stress/depression (Cooper Marcus and Sachs 2014). Since people establish communication with their environment through their senses, urban open and green space systems

should have the feature of activating all senses of people. The factors that can be seen, touched, smelled, felt and heard provide sensory stimulation. The most important sense that every person communicates with their environment, regardless of the user profile, is seeing. As in the example of the Zeytinburnu medicinal and aromatic plants garden, the activation of other senses is related to the person's profile (gender, age, education, income level, special conditions such as disability). The physical abilities, wishes, preferences and lifestyles of elderly people, especially in the advanced age group, are very different. His eyesight and hearing are reduced. For this reason, public open and green spaces with a wide variety of user profiles other than private areas should be such as to motivate users and make them feel good by activating multiple senses (seeing, hearing, touching, smelling, tasting) at the same time.

An area dominated by herbal tissue supports people's psychological well-being (Larson & Kreitzer, 2004). As in the example of the Zeytinburnu medicinal and aromatic plants garden, users prefer to have many open areas with grass and soil surfaces and seasonal colorful flowers. For this, a planting design should be made in green areas where the flowering times of the plants are taken into account and seasonal transitions are noticed.

Water, which is one of the natural landscape elements, has properties that awaken all the senses. Water provides a wide variety of positive emotions with its relaxing, rehabilitating, stress-free, peaceful, exciting and joyful properties (Çelik Çanga, 2020). For this reason, as stated by the participants in their preferences, still or moving water shows that can be used actively or passively in open and green areas should be included.

Spatial diversity is very important in open and green space systems. Although the variety of venues is not very complex, it should be interesting, peaceful, appealing to various age groups, and reflect the design concept. In this survey conducted in the Zeytinburnu medicinal and aromatic plants garden, the participants prefer that there are healthy eating areas (eating and drinking) and information areas about healthy nutrition in this garden in accordance with the concept of space. Other preferences are also suitable for the concept of space. In this case, it has been concluded that open and green space systems must have a concept and a variety of spaces planned in accordance with the concept is required.

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# CHAPTER 5

## INTERNATIONAL PROJECT STUDIES TO SUPPORT LANDSCAPE AND ORNAMENTAL PLANTS SECTOR BUSINESSES: MERSIN (TURKEY) CASE

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## **INTRODUCTION**

### **1. SITUATION OF THE SECTOR IN WORLD**

Current data show us that agriculture is a big entrepreneurship sector and it has become the application area of advanced technology and knowledge, so a great value added chain can be established here. Considering the global climate imbalances experienced in the world in recent years, the strategic nature of the sector and finally Turkey's agricultural potential, it will automatically emerge that agriculture should play a central role in Turkey's development. Economic historical data show that there is no example of an undefined industrializing principle with a certain area and population size, including Japan, which has almost no agricultural potential. The importance of the agricultural sector will continue to increase in terms of protecting and developing its political independence and natural vegetation. In this sector, ornamental plants constitute an important branch of agricultural production, which contributes significantly to the economy in many countries of the world and in Turkey, and has a great impact on social life in terms of the amount of labor it uses (Yeler and Şatır, 2020).

The production of ornamental plants under the landscape area in the world started to gain importance at the beginning of the 20th century. Today, the landscape and ornamental plants sector can be described as a sector in which rapid change is seen in the world. It is observed that per capita consumption of ornamental plants has increased in most countries due to globalization and its effect on income in different regions of the world. Accordingly, competition in the world is increasing. The ornamental plants sector is considered to be a sector that provides high added value to the economy and creates significant employment. (OASBMİB, 2010).

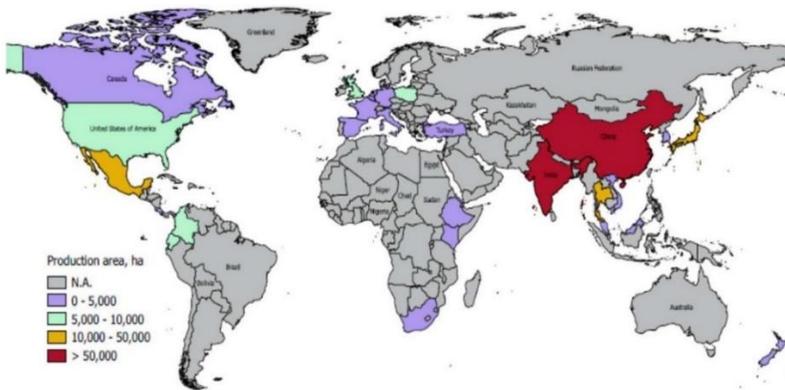
Ornamental plants are produced in more than 50 countries around the world. Among these countries, there are many developing countries as well as developed countries. Developing countries gain significant income from the sector by using suitable production and cheap labor opportunities (Yeler et al., 2018). Cut flowers, which form the most important subgroup of ornamental plants in some countries, have become one of the traditional main export products. Examples of these countries are Colombia, Israel, Kenya, Ecuador. (Bay, 2011). World ornamental plants trade volume is over \$42 billion.

Ornamental plant consumption is particularly focused on markets with high purchasing power such as Europe, the United States, and Japan. (OASBMIB, 2021).

The importance of the sector in the world is increasing with its great export potential. ornamental plants; It is classified under four product groups according to common usage purposes and traded:

- Cut Flowers
- Indoor (Potted) Ornamental Plants
- Outdoor Ornamental Plants
- Natural Flower Bulbs (Subasi et al., 2010)

According to 2020 data, world cut flower and potted plants production is carried out on a total area of 749,200 ha (Figure, 1).



**Figure 1:** World Ornamental Plants Production Areas (ha) (ITC Trade Map, 2019)

77% (580,000 ha) of the world's ornamental plants production areas are located in the Asia/Pacific region. Among the Asian countries, the important producers are China and India. The majority of these productions are cut flowers and potted plants (Table, 1).

**Table 1:** World Cut Flower and Potted Plants Production Areas (AIPH Statistical Yearbook, 2020)

<b>Regions</b>	<b>Production areas (ha)</b>
Asia/Pacific	580,000
Europe	60,000
Central/South America	55,000
North America	30,000
Africa	18,000
Middle East	6,200
<b>Total</b>	<b>749,200</b>

11% of the world's ornamental plants production is made by Central and South American countries. Mexico, Colombia, Ecuador in Central America; Brazil is an important producer country in South America. These countries have production advantages such as favorable climatic conditions and low land and labor costs. Thanks to favorable climatic conditions and foreign investments, Latin American countries have become an important export region for both the American and European markets. European Union countries provide 8% of the world's ornamental plants production. Among the European Union countries, the most important producing countries are Italy, Netherlands, Germany and Spain. The European Union is the region with the highest productivity per hectare in the world. According to the data of 2020, ornamental plants worth 35.500 million € are produced in the world (Table, 2). According to production values, the regions with the highest production in the world are Asia/Pacific Countries, European Union Countries and China (OASBMIB, 2021).

**Table 2:** World Ornamental Plants Production (AIPH Statistical Yearbook, 2020)

<b>Region/ Countries</b>	<b>Production Value (Million €)</b>
Asia/Pacific Countries	15.000
Europe Union	11.000
Chinese	7.739
USA	3.297
South/Central America	3.000
Holland	2.330
France	1.593
Germany	1.391
Italy	1.166
Africa	1.000
Canada	805
<b>World Total</b>	<b>35.500</b>

## 2. SITUATION OF THE SECTOR IN TURKEY

Turkey has a very rich diversity in terms of ornamental plants. Turkey has important advantages in ornamental plants cultivation due to its suitable climatic and geographical conditions, proximity to market countries and cheap labor force. In Turkey, ornamental plants are produced in a total area of 54,128 da in 2020 (Table, 3) (OASBMİB, 2021).

**Table.3:** Ornamental Plants Production Areas of Turkey (ha) (TUIK, 2020)

<b>Product group</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Outdoor Ornamental Plants</b>	37.307	37.699	39.739
<b>Cut Flowers</b>	11.920	12.374	12.183
<b>Indoor (Potted) Ornamental Plants</b>	2.081	1.992	1.706
<b>Flower Bulbs</b>	494	412	498
<b>Toplam</b>	<b>51.803</b>	<b>52.477</b>	<b>54.128</b>

Turkey has important advantages in ornamental plants cultivation due to its suitable climatic and geographical conditions, proximity to market countries and cheap labor force. Commercial cut flower production in Turkey started in and around Istanbul in the 1940s, and then Yalova became an important production center. Cut flower export, which started to be made from Antalya since 1985, has rapidly increased the flower production areas in this region. The indirect promotion of export-oriented production and the facilitation of plant material import led to significant increases in the area and amount of cut flower production. Turkey has a share of approximately 7 per thousand in the world production of ornamental plants. Ornamental plants are produced in 28 provinces in our country. The provinces with the highest production are İzmir, Sakarya, Antalya, Yalova, Bursa, Isparta, Adana and Mersin, respectively (Yeler and Şatır, 2020).

In order for Turkey to achieve the medium and long-term targeted export volume of 500 million dollars and to create employment for 300,000 people, it is essential for the Turkish ornamental plants sector to make new breakthroughs. Outdoor plants, on the other hand, are one of the most important branches of the ornamental plants sector with the developing environmental awareness and plant requirements in design. The most important need is to find

new markets and to enter these new markets with new products. The most effective way to meet this requirement is to gain an effective position in new markets, which are developing and developing and whose consumption is based on imports (Yeler, 2017).

The provinces where ornamental plants production is made the most on the basis of area in Turkey are İzmir, Sakarya, Antalya, Bursa and Yalova, respectively. Sakarya, Yalova, Istanbul, Adana, Mersin, Osmaniye have an important place in the production of indoor and outdoor plants (Bay, 2011). The amount of ornamental plants production for the provinces is given in Table 4.

**Table 4:** Ornamental Plants Production in Turkey by Provinces

<b>Production Quantities (pieces)</b>					
	<b>Cut Flower</b>	<b>Flower Bulbs</b>	<b>Indoor (Potted) Ornamental Plants</b>	<b>Outdoor Ornamental Plants</b>	<b>Total</b>
<b>Antalya</b>	489.142.34	19.600.3	7.531.500	13.426.000	529.700.20
<b>İzmir</b>	235.735.40	39.363.8	1.865.050	204.288.13	481.252.38
<b>Yalova</b>	44.269.130	5.815.00	6.983.600	101.959.60	159.027.33
<b>Isparta</b>	117.180.00				117.180.00
<b>Adana</b>	23.760.000		16.160.000	30.579.500	70.499.500
<b>Ankara</b>	151.500	40.000	409.370	50.323.000	50.923.870
<b>Konya</b>	40.400.000			4.526.500	44.926.500
<b>Sakarya</b>	1.600.000		790.000	39.438.620	41.828.620
<b>Istanbul</b>	14.756.862		500.000	20.961.790	36.218.652
<b>Mersin</b>	11.450.056		8.288.610	7.517.160	27.255.826
<b>Bursa</b>	5.517.000		3.215.495	13.055.470	21.787.965
<b>Tokat</b>	12.723.000			508.505	13.231.505
<b>Manisa</b>				11.714.500	11.714.500
<b>Eskişehir</b>		2.500	10.500	9.483.550	9.496.550
<b>Kocaeli</b>	675.000	32.000	1.136.000	5.680.000	7.523.000
<b>Others</b>	15.104.932	6.562.00	1.568.690	15.647.370	38.882.992
<b>Total</b>	<b>1.012.465.</b>	<b>71.415.6</b>	<b>48.458.815</b>	<b>529.109.699</b>	<b>1.661.449.4</b>

## **2.1. Situation of the Sector in Mediterranean Region and Mersin**

The share of the Mediterranean region in the production of ornamental plants is 25% of the country, while the share of Antalya province is 15% and the Mersin-Adana (Çukurova) region is 5%. The main product groups in the export of ornamental plants in our country are live plants (indoor and outdoor plants, seedlings, saplings), cut flowers, bulbs, mosses and tree branches. Our

ornamental plants export started 20 years ago and it shows regular development every year. Turkish exporters take advantage of Turkey's geographical location and proximity to major consumption centers. Turkish flowers are exported to more than 55 countries around the world. In recent years, exports of ornamental plants, steel and rooted seedlings, and outdoor-landscape plants, which are in the living plants group, continue to increase in parallel with the developments in foreign contracting services. For companies that decide to invest in the ornamental plants sector in Turkey, there is an environment where production can be made in modern, computer-controlled and high-tech greenhouses equipped with all kinds of equipment. Ornamental plants sector in Turkey is a sector that creates high added value and employment by 95%. 25 thousand people are employed only in the export part of the sector, and the indirect employment in the sector is approximately 300,000 people. The sector contributes to the social structure in the country and in our city where the project will be implemented, by creating new job areas and providing accommodation and education opportunities to the employed segments (Aslantaş and Yeler, 2016).

Although the region covering Mersin-Adana and other Mediterranean provinces has a very high potential for growing and exporting ornamental plants, which serve in the landscape sector, this potential is used at a very low rate. The Mediterranean Region, especially the Eastern Mediterranean region, has a special importance in terms of productivity and production potential throughout the country. Along with suitable climatic conditions, the long vegetation period extending until December allows certain groups of ornamental plants and especially Mediterranean plant species to be grown outdoors (Yeler et al., 2018).

Mersin province has a special importance in terms of productivity and production potential throughout the country. Along with suitable climatic conditions, the long vegetation period that hangs until December allows ornamental plants to be grown outdoors or in unheated greenhouses. In Mersin, where the annual average temperature is around 18 °C, the days when the lowest temperature is higher than 10 °C are more than 8 months, and the total of the days when the temperature is between 0 and -10 °C is 10 days. In this case, it makes an important contribution to the opening of Mersin province to ornamental plants production and export (Subaşı, 2010).

Ornamental plants production, which started with the establishment of a commercial enterprise in Mersin in 1965, has made significant progress today. The production share of our region in the ornamental plants sector is 1%. Although Mersin is the city with the largest area in the region with a total area of 1.582.988 ha (agricultural land, meadow-pasture, forest-heath, other), it has an international port, free zone activities, organized industrial zones and an international airport. As an important center of international trade, it wants to improve both its production share and export volume in the ornamental plants sector with its experience in contracting services and its qualified and educated workforce in outdoor-landscape. In the study conducted in 48 enterprises in the region, the average experience of enterprises and the sector was determined as 13.02 years. 70.83% of the enterprises operate only outdoors, while 29.17% operate in outdoor and indoor plants. When we examine the sector in terms of financing, businesses in Mersin use equity at the rate of 84%, loans at the rate of 12%, and both equity and loan use at the rate of 4% (Yeler et al., 2016).

Companies were brought together with invited meetings under the leadership of Mersin Chamber of Commerce and Industry in order to establish a supportive and inclusive cooperation at the national level, especially in the Mersin-Adana region for the ornamental plants sector and covering the province of Antalya. This process was started as of 2009, financial support for projects under an institutional roof, with the acquisition of the EU Project in 2010 and MersinFlora clustering studies were initiated. With this clustering work created, businesses came together under a single roof and had the chance to benefit from project supports, as well as they had the opportunity to develop their own businesses with the gains they had and to increase their export capacity. Many activities, activities, meetings and travels were carried out within the scope of these projects. Businesses were able to both participate in these trips on behalf of the companies they own, and assign the person or persons working in their relevant units for training and travels.

### **3. COMPLETED SECTOR PROJECTS IN MERSIN**

#### **3.1. European Union Project**

*Development & Investment Strategy for Outdoors Ornamental Plants Sector*

### **3.1.1. Project Description**

Within the scope of the Civil Society Dialogue II - Fisheries and Agriculture Grant Program carried out by the Ministry of European Union, the partners of the 12-month project with a budget of 151 thousand Euros, carried out under the coordination of Mersin Chamber of Commerce and Industry, are Mantova Chamber of Commerce and Mersin Province Citrus Producers Union, Alata Horticultural Research Station. and the Ecological Life Entrepreneurs and Volunteers Association are also participating institutions.

### **3.1.2. General Aim**

The project includes researching and comparing EU practices in the Outdoor Ornamental Plants Sector, creating a Mersin-focused development and investment strategy and conducting awareness raising studies. In addition, the “Ornamental Plants Project” can be defined as a social development project for our country and region. It is aimed to create a model for both companies and organizations that make large-scale production and want to invest, and people who want to produce like family businesses on small-scale lands, so that they can produce alternative outdoor ornamental plants in the agricultural sector. With the sector-oriented 'Manuals' to be distributed in order to increase awareness and awareness in the ornamental plants sector, reaching high-level professionalism and quality service delivery in production, marketing, nursery management, standards and R&D, development of the sector and related services throughout the province, related institutions and organizations It is aimed to increase cooperation (MTSO, 2011).

### **3.1.3. Special Aim**

Sustainable production methods, new technologies, marketing, nursery management, analysis of standards that will increase competition and productivity in the ornamental plants market,

Analysis of marketing channels and related institutions, examination of EU market standards for Mersin and determination of the marketing strategy of the related sector,

Examining good practices, observing and comparing organizational structures and services to create investment models to provide advantages in attracting investors to the sector,

Defining EU policies, opportunities and financial incentives, and conducting sectoral development and awareness-raising lobbying activities among sector leaders,

Carrying out training activities within the scope of raising awareness in the agricultural sector in order to increase the interest of individuals in the sector and encourage their investments, as well as ecological advantages,

Strengthening communication and cooperation between relevant institutions and marketing channels in EU and Mersin business networks.

### **3.1.4. Project Activities**

#### **3.1.4.1. Sector working meetings**

##### ***14 July 2011, Project Opening Meeting:***

Presentation and opening meeting of the project, which was held on 14 July 2011, consisting of sector representatives, people interested in the sector and members of the press.

##### ***12 August 2011, Mersin Flora Meeting:***

A company meeting was held under the name of Mersin Flora, where 30 company representatives from the Ornamental Plants Sector took part and discussed what needs to be done for the development of the sector with the joint works thought to be carried out within the scope of the project.

##### ***12-13 January 2012, National Ornamental Plants Project Workshop***

In order to determine the Strategic Plan for the studies to be carried out for the ornamental plants sector and to meet with our existing companies the Ornamental Plants Project Team, A two-day workshop was held with the participation of Prof. Dr. M. Ercan OZZAMBAK (Ege University, Izmir) and Prof. Dr. Zerrin SOGUT (Cukurova University, Adana).

##### ***February 24, 2012 Sector Joint Production Center Project Working Meeting***

- A working meeting was held with 15 company representatives about the production center and the project of establishing a partnership, which is planned to be realized as Mersin Flora Working Group. Tarsus Municipality

officials also attended the meeting with the aim of providing institutional support.

#### **3.1.4.2. Sector Information Meetings:**

##### ***14 July 2011, Ziraat Bank Agricultural Loans Information Meeting***

- 20 company representatives from the ornamental plants sector, new entrepreneurs who want to invest in the sector, EU sector experts and Ziraat Bank experts took part in the meeting.

- Information about the situation of the sector in Europe was given by EU experts.

- With the presentation made by Ziraat Bank Mersin Branch Manager and Agricultural Loans Specialist, information about agricultural loans was given.

##### ***07 February 2012, SME Supports Meeting***

- An information meeting on SME Supports was held with the participation of 30 company representatives for ornamental plants producer companies and relevant persons.

- At the meeting, KOSGEB Mersin Service Manager gave information about KOSGEB SME Supports and Çukurova Development Agency Specialist gave information about Agency Supports.

##### ***February 24, 2012 Plant Passport Meeting***

- An information meeting was held on the Plant Passport application, which has recently started to be implemented for companies related to the sector.

- At the meeting, an informative presentation was made by the experts of Mersin Provincial Directorate of the Ministry of Food, Agriculture and Livestock.

#### **3.1.4.3. Sector Technical Education**

##### ***20-24 February 2012, Alata Horticultural Research Station Technical Training***

- Certified horticultural technical training was given by 4 expert trainers for those who are in the sector and want to be interested in the sector, which was held with the participation of 40 trainees at the Horticultural Research Station, which is a partner institution of the project, and lasted for 5 days.

- Training certificates were presented to the trainees by the ornamental plants project team at a ceremony held at the MTSO Assembly Hall on February 24, 2012.

***International Sector Review Visits***

It is aimed to examine the EU models and to plan new models to be created for our region during the study visits of the Foreign Sector. In this context, Italy, Spain and the Netherlands, which are among the most important countries of the sector in Europe, were visited.

***15-24 September 2011, Italy Visit:***

- Businessmen, academicians, researchers, public institution representatives and project technical team took part in the KOSGEB supported 18-person delegation organized to Pistoia, Padova, Mantova and Sicily regions (Figure, 2).



**Figure 2:** Italy Visit (Italy, 2011)

- Companies that are among the biggest companies in Europe such as Piante Faro and Giorgia Tesi were visited and bilateral business meetings and information sharing were realized (Figure, 2).



**Figure 3:** Piante Faro and Giorgia Tesi Visit (Italy, 2011)

- Flormart 2011 Fair, one of the biggest fairs in Europe, was visited in Padova, and agricultural machinery purchase agreements and commercial cooperation meetings were held with our companies in the delegation.

- Mantova Chamber of Commerce was visited and discussions were held on bilateral cooperation and what needs to be done in order to implement good models in our country (Figure 4).



**Figure 4:** Mantova Chamber of Commerce Visit (Italy, 2011)

- Joint production and cooperation models (cooperatives, unions, associations, etc.) were examined in the regions of Pistoia, Mantova and Padova, and information was shared about the models suitable for our region (Figure, 5).



**Figure 5:** Pistoia, Mantova and Padova Visit (Italy, 2011)

- The University of Catania Botanical Garden located in the Sicily region was visited and information and experience were shared about ornamental plants production techniques (Figure, 5).



**Figure 6:** The University of Catania Botanical Garden Visit (Italy, 2011)

**5-7 October 2011, Spain Visit:**

- The Iberflora 2011 Ornamental Plants Fair held in Valencia, with a 7-person inspection committee consisting of researchers, institution representatives and experts, participated with a stand as Mersin Flora, representing our country (Figure, 7)



**Figure 7.** Iberflora Fair Visit with Participation (Spain, 2011)

- 300 Mersin Flora introductory catalogs were distributed at the fair, where many of the leading companies in Europe took part and the industry came together.

***October 31st - November 5th 2011, Visit to Holland:***

- A delegation of 8 people, consisting of researchers, institution representatives and experts, was visited to examine the technological developments, marketing, production and standards related to the sector in the Amsterdam region (Figure,8).



**Figure 8:** Holland Visit (Holland, 2011)

- Production control and certification company (MPS) was visited and what should be done for quality production and certification was examined (Figure, 9).



**Figure 9:** Production Control and Certification Company (MPS) Visit (Holland, 2011)

- Flora Holland, Europe's largest flower sale auction, was visited, and the process from plant sale to transfer was examined and information was shared by subject experts (Figure, 10).



**Figure 10:** Flora Holland Visit (Holland, 2011)

- Horti Fair, Flora Holland and International Floriculture Trade Fair fairs, which are held simultaneously in Amsterdam and are one of the largest Ornamental Plants Fairs in Europe, were visited and bilateral meetings were held with sector-oriented companies.

#### **3.1.4.4. Foreign Delegation Visit Turkey**

##### ***29 February - 3 March 2012, Italian Expert Delegation Visit to Turkey***

- At the meeting held in KOSGEB Mersin Service Directorate, with the participation of EU experts and the project team, informative presentations were made about Ziraat Bank Credit Supports, KOSGEB Supports, Çukurova Development Agency Supports and Certification Firm.

- During the visit to Çukurova University Subtropical Fruits Research and Application Center, lecturers were informed about the studies carried out in the center.

- EU experts visited Mersin Agriculture Fair with the project team and had one-on-one meetings with the companies participating in the fair. In addition, during the visit made to the Agriculture-Food platform stand, information was given about the activities related to agriculture in our region.

#### **3.1.4.5. Ornamental Plants Cluster, Mersin Flora**

Cluster has been established in 2011, and it is integrated by 18 producing and exporting companies. Sector firms include producers and exporters of live plants. Over 150 species in number of varieties of plants produced within the Mersin region. The great diversity of climate and microclimates of the region allows harvesting native species. The sector is a business community that is

trained, responsible, professional and organized through the cluster (Figure, 11).



**Figure 11.** MersinFlora Cluster Logo

In 2012 underneath of Mersin Chamber of Commerce and Industry, cluster has started a new project, “Increasing the Capacity of Outdoor Ornamental Plants Production” in order to become professionals in the sector. This project is funded by Ministry of Economy of Turkish Republic for three years. Cluster has finished Situation Analysis (SWOT-Competitiveness), Trainee programs, and now is ready to search for new markets and companies in order to increase the trade potential and growth. The vision and aim of all the events of the cluster is focused to increase production to be able to satisfy the growing, marketing & investing demand at the global level. It offers support to small growers and businesspeople, and makes easier the resolution of investment opportunities, marketing issues, guiding efforts in the sector, as well as participating in national and international tradeshow.

### **3.2. Ministry of Economy Supporting the Development of International Competitiveness (URGE) Project:**

*Producer Clustering Project for Increasing Foreign Trade Capacity in Outdoor Ornamental Plants Sector*

#### **3.2.1. General Aim:**

Within the scope of the project, the production processes, product types and standards of companies producing ornamental plants in the Mersin region are developed in order to provide competitive advantage in the target markets to be determined within the scope of the project; improving the foreign trade capabilities of companies; It is aimed to determine possible cooperation areas between companies in foreign trade activities and to support the clustering with joint activities (MTSO, 2014).

### **3.2.2. Special Aim**

For this project, the following specific objectives have been determined;

The representatives of the sector and their businesses meet on a common ground and come together to create common benefits and value,

Eliminating the deficiencies of the needs of the sector and businesses with a conscious cluster logic approach to the existing experience,

Increasing their export shares by enabling them to reach new markets,

It is envisaged that the region will become a center that exports ornamental plants.

Our country's ornamental plants sector has chosen the European markets as its target, whose welfare level is increasing gradually, and whose consumption of ornamental plants reaches higher levels in parallel with this increase, and which can only meet the consumption through imports. Within the scope of the said strategy, the project aims to enter the markets of these countries by organizing sectoral study visits to Italy, Spain and the Netherlands, where sectoral delegation organizations were organized, and market research visits to Azerbaijan, Turkmenistan and Iraq from the Eastern countries.

Italy, Spain and the Netherlands are already very important consumption centers, while Azerbaijan, Turkmenistan and Iraq are markets that are getting richer and their ornamental plant consumption is increasing in parallel with this development. Capturing an effective position in these markets will provide important advantages for our country's outdoor ornamental plants sector to become a strong actor on an international scale in the future.

For these purposes, the objectives of the three-year project are;

Establishing a cluster of outdoor ornamental plant producers in the region (at least 40 members),

To make the region an attraction center exporting outdoor ornamental plants (Increasing the current export value by 3 times),

Ensuring the development of joint marketing, research and business development programs by the Cluster (at least 9 programs as Marketing 3, Research 3 and Business Development 3)

Ensuring the professionalization of cluster members with a corporate management approach within the framework of a firm strategy in foreign trade activities, increasing the number of foreign trade companies (at least 15 firms)

To increase the export figures of cluster members. (at least 20% increase)

### **3.2.3. Selection of Participating Businesses in the Project**

Selection of the enterprises in the target group, "Development and Development in the Outdoor Ornamental Plants Sector", which was carried out under the coordination of Mersin Chamber of Commerce and Industry, with the aim of researching and comparing EU practices regarding the Outdoor Ornamental Plants Sector, creating a Mersin-focused development and investment strategy and raising awareness for the investors in the sector. Within the scope of the "Investment Strategy Project", among our companies gathered under the name of Mersin Flora, which includes all companies related to the sector, by the experts in the project, as well as by the R&D experts of the Central Anatolian Ornamental Plants and Products Exporters' Association, among the companies in the Mediterranean region that have a significant export potential;

Exporting outdoor ornamental plants and having the capacity to respond to the demands of the said markets if there are alternative markets,

Having a certain export volume or potential,

Those who want to contribute to the formation of a cluster of outdoor ornamental plant producers in the region and have this potential,

Desiring the development of joint marketing, research and business development programs by the Cluster,

Wanting to professionalize the members of the cluster with a corporate management approach within the framework of a company strategy in foreign trade activities,

A strategy aiming to increase the export figures of the cluster members and the region will be formed, and companies with this potential have been selected.

### **3.2.4. Project Activities**

As part of the project, meetings were held with project partners and stakeholder companies. In these meetings, interviews were held on the operation of the project, the planning of domestic and international technical trips, trainings and seminars for companies, and the analysis of the problems of the sector (Figure, 12).



**Figure 12:** Project Meetings (Mersin, 2013)

Within the scope of the trip to China with 11 participating exporting companies, a program consisting of bilateral business meetings, meetings with official institutions, company meetings, fair visits and technical trips was followed. In this context, especially during the visits of government institutions, information about the trade between the two countries was exchanged, and the problems faced by the companies during this trade were discussed and solution-oriented approaches were made (Figure, 13).



**Figure 13:** Meetings with Government Agencies (Shanghai, 2013)

Within the scope of the same trip, the company participated in the 15th HortiFlorexpo IPM Shanghai fair, which was established in Shanghai, one of the largest cities in the country, which hosts many national and international participants (Figure, 14).



**Figure 14.** Fair Participation with Businesses (Shanghai, 2013)

### 3.2.5. Identified Issues

The most obvious problems in increasing export capacity and raising standards in the sector are;

- Production techniques (Lack of Education, Consultancy),
- Trimming/shaping (Creating more added value),
- Fertilization,
- Irrigation,
- Agricultural struggle,
- Institutionalization,
- Financing,
- It emerged as creating new markets (market research).

## 4. CONCLUSION AND SUGGESTIONS

### Strategic Issues Suggested to be Solved in the Sector

Within the scope of all these projects and studies, 23 strategic issues were determined and priority structure study was carried out in order to achieve strategic goals. The studies to be carried out on the following topics in the sector will provide great added value in terms of strengthening the future of the enterprises in the sector;

- Consolidation of Land
- Institutionalization / Restructuring
- Information System
- Land Use Planning

- Soil Survey and Mapping
- Legislation / EU Process
- Land Distribution
- On-Land Development Studies
- Financial Structure
- Training Planning and Creation
- Providing Technical Infrastructure
- Motivation Management
- Management of Strategic Objectives
- Coordination
- Institutional Expansion (Integration)
- Agricultural Efficiency
- Project Management
- Business Size Development
- Audit and Control
- Planning and Projecting
- Irrigation Management and Development
- Employment Process / Human Resources Management
- Logistics Integration

In addition to this situation assessment;

Geographical advantages of the Mediterranean region, especially in the Mersin-Adana region, climate, soil fertility, location, logistics advantages, agricultural culture, agricultural workforce, capital assets, inter-institutional cooperation and expertise in clustering support activities

Trade skills of existing companies, trade volume, correct use of the sector's potential,

Institutional Support; Central Anatolian Ornamental Plants and Products Exporters' Association, Akdeniz University, Horticultural Research Station, Çukurova University, Food, Agriculture and Livestock Provincial Directorate, Ornamental Plants Vocational High School, etc.,

Implementation of the Development and Investment Strategy Project in the Outdoor Ornamental Plants Sector, fresh information, determinations and motivation,

Support environment for Clustering Activities in Turkey (Ministry of Economy-UR-GE, KOSGEB Cooperation Force Program, Development Agency priorities, Ministry of Agriculture priorities, rural development supports etc.)

Contribution of the sector to socioeconomic development (employment, foreign trade, value-added production in agriculture, profitability rates)

When Ornamental Plants production is considered as a non-food agricultural product, it is an environment-friendly, ecological & aesthetic sector that adds value by offering an alternative product on tired, polluted soil.

Creating synergy / compatible-market with other developing sectors (example: tourism)

Creating opportunities to create good conditions for the female workforce

Potential to attract national and international investors

Although it takes time to produce the product, the production is insufficient, but the availability of serious commercial capacity needs to be used.

## **ACKNOWLEDGEMENT**

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# CHAPTER 6

## CONCEPT OF TEMPORARY SPACE AND APPLICATION EXAMPLES

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## **INTRODUCTION**

Centuries ago, people who lived a nomadic life of hunting and foraging built temporary shelters using materials such as animal skins, bones, and trees (Bridge, 2019). Mankind continued its nomadic existence by settling in Mesopotamia, which had suitable climatic conditions. Settled human communities have made environmental interventions to meet their needs and have created various cultural activities (Leick, 2001). Limited spaces that contain all vital activities have emerged at this point (İzgi, 1999).

The spaces that shape users' behavior (Roth, 2000) are classified according to their physical qualities, like urban space / rural space, natural space / artificial space, and interior space / outer space (Özkan ve Küçükerbaş, 1993). In this classification, the concepts of permanent space / temporary space are included to support the research.

Spaces that play a role in establishing a relationship between space and the user, are open to user intervention, flexible, an alternative for various uses, have experimental quality, are easy to disassemble and install, are portable, can be installed in a short time, and serve to discover the new potentials and deficiencies of the space in which they are placed are called temporary spaces (Lehtovuori ve Ruoppila, 2012; Asato, 2018; Keser, 2022).

The concept of temporary space, shaped by changes in the history of humanity, has been examined within the scope of the research, and examples applied by considering the classification of temporary spaces according to their purpose of use (Keser, 2022) are included. In this research, a step was taken to make the concept of temporary space better known, and a foundation was laid for future research on temporary space and related concepts.

### **1. THE CONCEPT OF TEMPORARY SPACE**

Cities are accessible spaces for everyone, regardless of the background, gender, race, and socio-economic status of individuals. When intervening in cities, it should not be forgotten that a multicultural life is lived here, and individuals are constantly changing (Ormachea, 2011). The reality of a world where change is constant and even accelerating is that nothing is permanent (Armada, 2012).

Things that are not long-lasting and exist for a certain period of time are defined as “temporary” (Turkish Language Association, TDK, 2022).

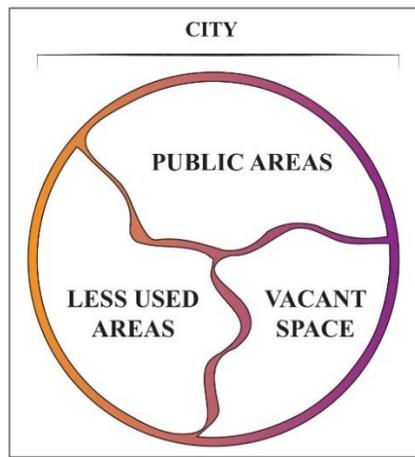
When the relationship between the concepts of temporary and planned is examined, one is long-term, and the other adapts to rapid usage changes (Ormachea, 2011). The state of non-permanence is called "temporariness" (Turkish Language Association, TDK, 2022). According to De Girolamo (2012), impermanence refers to a finite period of time, a certain period of time, a certain beginning, and an end.

The concept of temporary and permanent design should not be considered separately. These two design approaches should be seen as complementary to each other. The permanent design makes possible the activities of users in the area where they live. On the other hand, the temporary design helps a variety of activities by getting people interested in the urban environment (Paukaeva et al., 2021).

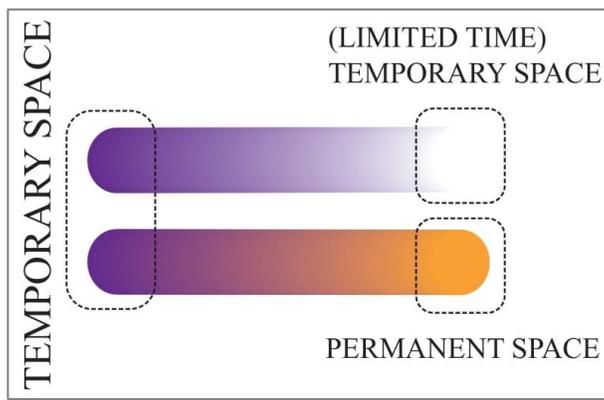
Temporariness is the most important tool in developing imperatives that push for permanence (Lehtovuori and Ruoppila, 2012). Including temporary spaces in urban areas and thus providing temporary uses is a popular way to create a long-lasting cultural impact. Giving space to temporary spaces in urban spaces and offering temporary uses is widely used to create a lasting cultural impact. (Armada, 2012).

Spaces that make the urban area a flexible space and allow temporary uses are called "temporary spaces" (De Girolamo, 2012). When temporary architecture is regarded as not permanent, it is seen that it has existed in one form or another from prehistoric shelters to the present day. These spaces offer a lot of alternatives to the activities and uses that are already going on in cities. Lehtovuori and Ruoppila (2012) say that new uses are experimental at the beginning, open to creative uses, and allow for reuse.

According to Galdini (2020), temporary spaces are unused spaces that are fit to serve as an urban laboratory to recreate a particular part of the city. De Girolamo (2012) defines dysfunctional areas as producing unexpected activities. However, the use of temporary spaces is not limited to unused spaces. Temporary spaces in urban public spaces, in areas that aren't being used or that aren't being used enough, in all parts of the city and even in the countryside, can be used in different ways to see what else is possible outside of the current environment (Lehtovuori and Ruoppila, 2012).



**Figure 1:** Use of temporary spaces in cities (Keser, 2022)



**Figure 2:** Transformation of temporary spaces into temporary or permanent spaces (Keser, 2022)

Although temporary spaces are initially positioned as temporary (Haydn and Temel, 2006; Galdini, 2020), they can become permanent depending on preference. According to Lehtovuori and Ruoppila (2012), temporary spaces are a type of thing that exists between immediate events and long-term changes.

Temporary uses can occur only once for a limited time. There are also temporary usage spaces that repeat every year and change their duration and location. Also, once these spaces become popular and are seen as an important

part of the new character of the place, they can become permanent spaces.

In finite periods where various uses are offered, temporary space activities can be formal or informal, legal or illegal, planned or unplanned (De Girolamo, 2012). In the past, it was done outside of the formal planning process, but according to Lehtovuori and Ruoppila (2012), these spaces are becoming more and more a part of the formal planning process as development phases progress.

Once you've done things step by step, it's easier to switch to temporary uses and use an iterative strategy as a way to get to the end point (Lehtovuori and Ruoppila, 2012). It can be a unique place for experimenting where ideas can grow over time (Oswalt et al., 2004).

Temporary spaces create a sense of place in addition to providing services in areas where it is difficult to provide a service. Thanks to their impact, it is easier to determine the role of the public sphere in society. The fact that these spaces are movable further increases their capacity to be meaningful spaces. Users can move the piece(s) and transform the space as they see fit. This creates a meaningful relationship between space and the user.

When their general characteristics are examined, temporary spaces are easy to disassemble and install, lightweight, portable, flexible, adaptable, and reusable. They can be installed quickly, with less planning, and have less risky, cost-effective solutions (Asato, 2018). The flexibility of the temporary design offers multiple scenarios for effective and complementary use (Paukaeva et al., 2021). Given the adaptability of temporary spaces, the study of Paukaeva et al's (2021) research appears to be an effective approach for revealing new urban design options suitable for seasonal uses in various climates. It effectively reveals the possibilities of the place, is compatible with rapid usage changes, encourages change and revision, and has a structure that allows the reusing of resources (Ormachea, 2011). Waste materials can also be used when creating temporary spaces. Thus, efficient waste management is ensured. Shigeru Ban's work is an example of this.

Lehtovuori and Ruoppila (2012) explain the advantages and benefits of temporary spaces as follows:

- It provides a suitable environment for ongoing or new creative uses.
- It is possible and easy to create functional urban spaces with the rapid spread of activity in space among communities of interest.

- It is an important tool in discovering the new potential of spaces.
- It has a great influence on making a place attractive.
- It has the potential to create significant impacts at small costs.
- The analyzer is in structure.
- It has the property of bringing together every individual in society and helping to build bridges between individuals.
- Allocating an unused space to temporary uses can provide financial gain.
- A non-commercial use may attract commercial use.

Perkovic (2013) included the benefits as follows:

- When the economic benefits are examined, the event offers cost-effective uses for homeowners and users.
- Looking at its social benefits, it is aimed at bringing together all segments of society and facilitating public communication.
- It supports the democratic participation of users from all walks of life to ensure urban development.
- It offers an experimental environment to facilitate adaptation to the urban development process.

When the literature on temporary spaces was examined, it was found that there was no consensus. At this point, various concepts are included to express temporary spaces. Some of these are; temporary space/temporary use, installation, pop-up space, experienced space, and flexible space. This study proceeds through the concepts of temporary space / temporary use.

## **2. EXAMPLES OF APPLIED TEMPORARY SPACES**

To make the concept of temporary space more understandable, examples of temporary spaces from around the world and Turkey are included. Keser (2022) classified temporary spaces thematically by considering their intended use.

## 2.1 Temporary Spaces Used in Times of Disaster

### *Fold&Float*



**Figure 3:** General information about Fold&Float a) Fold&Float outer view, b) Fold&Float interior view (Ravenscroft, 2019)

SO? architecture firm has put forward a research project on where everyone will be sheltered in the event of an earthquake. Between September 22 and November 11, 2018, the emergency shelters called Fold & Float in the Istanbul Golden Horn were built as floating structures. The prototype, which can accommodate up to 6 people, has a kitchen, seating area, and sleeping areas with fixed furniture. The building is easy to put together and can be broken down (Ravenscroft, 2019; SO? Architecture & Ideas, 2022).

## 2.2 Temporary Spaces Used for Educational Purposes

### *Temporary Tiger*



**Figure 4:** General information about Covid Classroom a) Temporary Tiger outer view, b) Temporary Tiger interior view (Temporary Tiger – Covid Classroom, 2022)

As a way to deal with the problems caused by the COVID-19 pandemic, Little Tiger Chinese Immersion School contacted Murray Logge Architecture before the fall semester of the 2020 school year started. They asked them to design an outdoor classroom that could be used over the summer and could be built quickly and cheaply. The classroom was built in about 1 week; it can protect children from the sun, can be easily removed and installed, and is flexible and affordable. Children use the classroom as a play structure when it is not in use. The walls are suitable for climbing (Temporary Tiger, COVID Classroom, 2022).

### 2.3 Temporary Spaces as Entertainment – Playground

#### *Airship Orchestra*



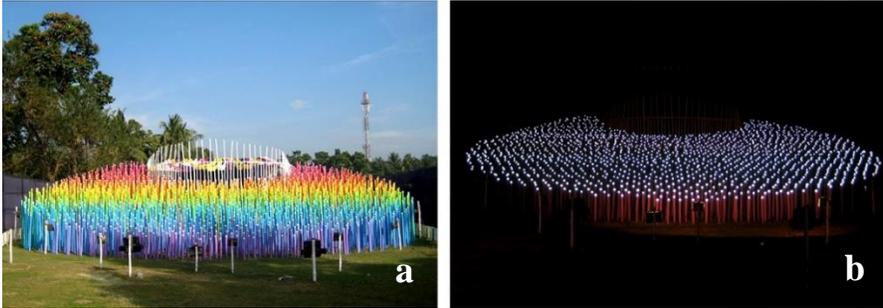
**Figure 5:** General information about Airship Orchestra a) Airship Orchestra view 1, b) Airship Orchestra view 2 (Weinstein, 2021).

The temporary artwork The Airship Orchestra is a mystical tribe of 16 extraterrestrial inflatable sculptures. The orchestra is powered by a fully networked system of built-in motion sensors that enable its characters to respond to passersby. The work includes an aesthetic, dynamic, and productively sound environment that spans an area of 500 square meters, synchronized with light, functioning both day and night. It is developed with certain characters who take on vocal positions, such as tenor, baritone, or soprano. The produced notes are played in real-time, and the sound improves as visitors interact with the characters. The primary goal of creators is to promote intergenerational connection and joy in the public sphere. The LED

eyes added to the characters are an important element that strengthens the user's relationship with the work (Abdel, 2021).

## 2.4 Temporary Spaces Used as Places of Worship Bamboo Pavilion

### *Bamboo Pavilion*



**Figure 6:** General information about Bamboo Pavilion a) Bamboo Pavilion day view, b) Bamboo Pavilion night view (Chaudhuri, 2012).

The Bamboo Pavilion is a temporary temple pavilion built for a local socio-religious festival in a small town on the coast of Calcutta. The guiding principle of the temporary temple built to house an idol, which is the festival's focal point, is the concept of continuous movement. The Bamboo Pavilion is designed using close to 1800 bamboos, whose lengths vary. The bamboo is regularly fixed to the ground and painted in spectral tones. Each bamboo is adorned with retro-reflective vinyl stickers. The stickers and halogen lights gave the pavilion the desired glare effect. While the pavilion is seen in bright, fun colors in the celebratory atmosphere during the day, it has taken its place in the festival as an unusual source of festive lighting at night. The bamboo, which was planned to be reused after the festival, was used as a decorative fence for a football field in the region (Bamboo Pavilion, 2012; ArchitectureLive, 2017).

## 2.5 Temporary Spaces Used for Accommodation

### *Casa Cor*



**Figure 7:** General information about Casa Cor a) Casa Cor view 1, b) Casa Cor view 2 (Casa Cor, 2021).

The temporary space Casa Cor, which appeared in 2021 as a result of the pandemic process, was designed with the idea that we began living in our balloons, afraid of being permeable. The temporary inflatable bubbles with a diameter of 3–4 meters that adapt to the terrain designed by Diego Raposo + Arquitectos provide personal space to the user and create a sheltering environment intertwined with nature. The project is designed and implemented to make the best use of the existing vegetation, reduce the amount of intervention in the space, respect nature, and have a low environmental impact. The use of natural materials in furniture, fabrics, and rugs has been given top priority (Casa Cor, 2021).

## 2.6 Temporary Spaces Used in Healthcare

### *Emergency Quarantine Facility*

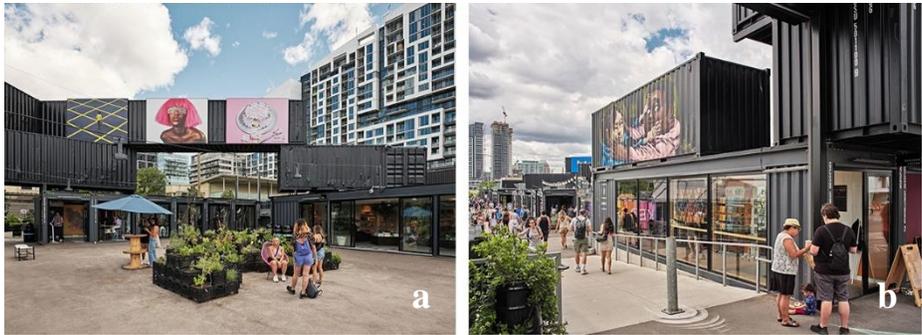


**Figure 8:** General information about Emergency Quarantine Facility a) Emergency Quarantine Facility outer view, b) Emergency Quarantine Facility interior view (Emergency Quarantine Facility; 2020).

With hospitals reaching full capacity during the COVID-19 pandemic, in 2020, the WTA Architecture and Design Studio designed a 6 x 26 meter facility built of wood and sheathed in plastic, equipped with 16 beds, two toilets, two showers, and designated docking and exiting areas. The Emergency Quarantine Facility, born from the ideas of temporariness and discontinuity, is a temporary structure aiming to increase hospitals' capacity by accommodating mild and asymptomatic COVID-positive patients. The facility's structure can be extended or shortened according to the number of patients. The first example of the structure, which consists of materials that are easy to use, flexible, and easily available, was built in 5 days. The Emergency Quarantine Facility has been used more than once and turned into a network with 1,000 beds (Emergency Quarantine Facility, 2020).

## 2.7 Temporary Spaces Used for Commercial Purposes

### *Stackt*



**Figure 9:** General information about Stackt a) Stackt view 1, b) Stackt view 2 (Industryous Photography, 2019).

Designed in 2019, Stackt is Canada's largest shipping container market. It is built on 2.4 acres. It is made of redesigned shipping containers, stacked and organized to create a social hub and an active marketplace for the community. The space has shops, food and beverage outlets, and open spaces for various events. The container market, which has a modular structure, is easily disassembled and transportable. It is planned that the location where it is located will be converted into a park in the future. Therefore, Stackt is designed for temporary use. 120 containers were used in the design. These containers are arranged in grid-like shapes to create sales units, walkways, and open-air courtyards. Shipping containers adapt to the industrial nature of the region. In addition, the fact that it is portable makes it easier to place new temporary uses in the space where it is placed and to leave the area undamaged (Shiell, 2019).

## 2.8 Temporary Spaces Used for Exhibition and Museum Purposes

### *Ephemeral Pavilion*



**Figure 10:** General information about Ephemeral Pavilion a) Ephemeral Pavilion day view, b) Ephemeral Pavilion night view (Ephemeral Pavilion, -)

Ephemeral Pavilion is a temporary pavilion built in 2013 to celebrate the 25th anniversary of the Catalonia International Prize. Designed by Cadaval & Solà-Morales, the pavilion is designed as a visual catalog of various stakeholders. The exhibition aims to give the award visibility and recognition. The exhibition incorporates as few installations as possible in a central location in Palau. The pavilion has a very low-cost system that is simple, portable, and repeatable. A pipe bent in a circle was used to form the upper and lower structures. In terms of visibility, a lighting system has also been added. There is a panel for each of the 25 awards, and several panels explain the process and juries of the award. These panels are formed in the form of a star. Each panel explains why the award was given (Ephemeral Pavilion).

## 2.9 Temporary Spaces Used for Performance and Performing Arts

### *Pavilion 21 MINI Opera Space*

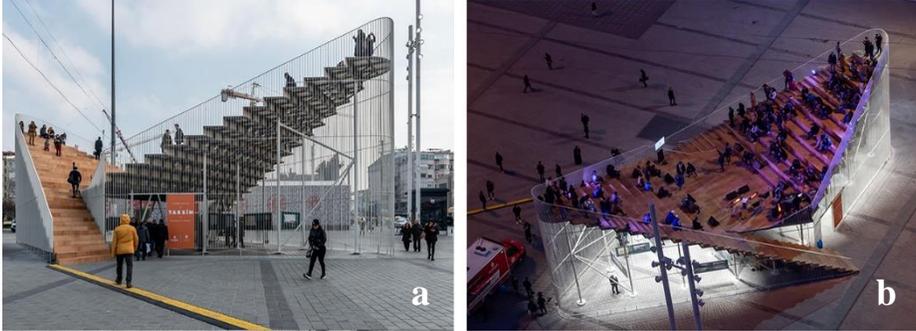


**Figure 4:** General information about Pavilion 21 MINI Opera Space a) Pavilion 21 MINI Opera Space day view, b) Pavilion 21 MINI Opera Space night view (Mala-gamba, 2010)

The Pavilion was created in 2010 as a temporary mobile space for experimental performances of the Bavarian State Opera in Munich. It has a capacity of 300 seated or 700 standing spectators. The removable structure is adaptable to different needs. The purpose of the structure is to design a lightweight structure that meets the acoustic requirements of a concert hall. The Pavilion was built by Cooper Himmelb(l)au. Acoustic consultant Arup arranged the sound of the pavilion. The sound arrangement of the structure, which was built using the pyramid shape, consists of three steps: firstly, to procure the effect of curtaining between the square and the street; secondly, to shape the geometry of the pavilion in such a way as to deflect the surface noise, and thirdly, to design the surface to reflect and absorb sound (Pavilion 21: MINI Opera Space, 2010).

## 2.10 Multi-Purpose Temporary Spaces

### *Taksim Pavilion*



**Figure 11:** General information about Taksim Pavilion a) Taksim Pavilion day view, b) Taksim Pavilion night view (IND [Inter.National.Design], 2020)

The temporary space, designed by the IND (Inter.National.Design) Istanbul branch, was built in 2020 in Istanbul's Taksim Square. Taksim Pavilion is an amphitheater consisting of two wings. The total area of the activity platform, where performances such as two stands facing each other with music, dance, and theatre in the middle can be performed, is 180 square meters. The wooden steps on both sides of the pavilion are placed on a steel structure. At the bottom of the amphitheater, there is an exhibition area. The pavilion, which is planned to be moved to different public spaces of the city, is planned to be placed in a park to be selected at the end of the process (Inter.National.Design, 2020; İtez, 2020).

## 2.11 Temporary Spaces in Festivals and Fairs

### *Vietnam Pavilion*



**Figure 12:** General information about Vietnam Pavilion a) Vietnam Pavilion outer view, b) Vietnam Pavilion interior view (Vallauri, 2015)

The Vietnam Pavilion was built for Milan Expo 2015 and exhibited for 6 months. Through the pavilion, the message was intended to be given with the slogan "Feeding the Planet, Energy for Life." The plants included in the structure help to create a living environment that positively affects the human mind. The approach of planting trees even on top of buildings is used as a proposal against reducing green spaces in Vietnam to less than one square meter per person by integrating plants into building design. Within the scope of the Vietnam Pavilion, a plant community of 46 trees is located above the building due to the environmental conditions created by the trees. The pavilion columns are covered with bamboo, a symbol of texture and natural tactile material, to restore peace in people's minds. The pavilion has been implemented as a structure that has achieved many fruitful successes with its rapid reproduction of bamboo, trees planted in pots, and reusable bamboo structure (Vietnam Pavilion at EXPO Milano, 2015).

## 2.12 Temporary Spaces Used for Other Purposes

### *The Growing Pavilion*



**Figure 13:** General information about The Growing Pavilion a) The Growing Pavilion outer view, b) The Growing Pavilion interior view (Kolnaar, 2019)

The Company of New Heroes partnered with Known.Bio as part of Holland Design Week in 2019. Known.Bio to build a bio-based pavilion to find solutions to growing climate challenges. The Groving Pavilion is made of bio-based materials such as wood, hemp, mycelium, straw grass, and cotton. The pavilion exhibits each material as raw as possible and has a different visual identity, organic texture, and color. Bio-based thinking is designed to trigger a turnaround in moving and building. Inside the pavilion, visitors are offered a storytelling experience. Known.Bio produced the mycelium wall panels. Waste from Holland, such as logs and twigs, was used to grow mycelium. Mycelium has the unique ability to be easily molded into any desired shape (Kolnaar, 2019).

## 3. CONCLUSION

From the beginning of human history until today, temporary spaces have been created and used for many purposes, especially sheltering. Depending on the changing needs and priorities, temporary space types suitable for different uses have emerged. In this study, where the concept of temporary space is examined and application examples are included, the classification made for using temporary spaces reveals that these spaces are included in many areas of human life.

When the qualities of temporary spaces are examined, they produce alternative spaces for events, create interaction between the user and the space

by providing an opportunity for experimental user intervention, are portable, allowing the uses to be delivered wherever they are needed, adaptable depending on the changing types of activities, and can be easily disassembled and installed in a short time. The usage periods of these places can be determined according to need. Some temporary spaces are designed to be short-term, repetitive, or temporary at certain times, but they eventually become permanent. Some of the temporary spaces that are short-term and repeated at certain times may become permanent. When all of this is considered, it is believed that temporary spaces are in an analytical structure at the point of creating life in the location where they are located. It is proposed that these spaces, which allow a preview of planned decisions, be made a stage of the process followed by decision-making institutions.

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# CHAPTER 7

## LOCAL TOURISTS' OPINIONS ON THE RECOGNITION OF KARS-SARIKAMIŞ ALLAHUEKBER MOUNTAINS NATIONAL PARK

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## INTORUCTION

In parallel with the increasing awareness of nature conservation in the world, legal basis and measures have been started to be developed to protect the endangered species with the diversity of flora and fauna that Turkey also has. In order to protect the natural and cultural richness of the countries, protection concepts such as absolute nature protection area, national park, nature protection areas, nature parks, sites, monuments, special environmental protection zones, species protection, reserve areas and landscape protection zones have been developed (Anonymous, 1983; Sever, 1998; Özer, 2004).

Although there are some differences in particular, the main purpose and philosophy of separating a place as a national park has not changed, that while taking the appropriate areas within the borders of the countries to the status of national parks, these places have value for the whole world as well as for their own countries and people, and that national parks are beneficial to all humanity today. He states that it is the best and most widespread protection system in the world for the protection of the natural environment (Hepcan, 1997).

'National Parks', which gained importance with the spread of environmental awareness, are among the first nature protection areas that come to mind. With the PAN Parks system, which has developed in Europe in recent years, it is aimed to minimize the tourism pressure on the national parks, to facilitate the development of sustainable tourism in and around these protected areas and to increase the welfare level of the people living in that region (Menteş, 2006).

Areas that have national and international value in terms of scientific and aesthetics and are protected because of their rare natural and cultural resource values as well as recreation and tourism values are called National Parks (Anonymous 2012a; Yücel, 2018). According to Cetinkaya (2008); By declaring an area as a national park, the natural resources in that area are protected and visitors benefit effectively (Aydoğdu and Öztürk, 2012). According to the National Park management strategy determined by IUCN in 1994, the main purpose of the system is; It is to leave many different ecosystems rich in biodiversity to future generations without disturbing them, and to open this part of nature, on which human beings depend for their life, for tourism and recreation activities without harming the ecosystem and local cultures (Bingöl 2011).

According to the National Parks Law in our country, the areas that can be used for recreation and tourism purposes within the forest regime are determined by taking them under legal protection. According to the National Parks Law No. 2873 dated 1983; National Parks have been determined to serve for tourism and recreation purposes (Gül et al., 2005; Akten and Gül, 2014).

Founded in the USA in 1948, IUCN is known as the first decisive and pioneering international organization in the determination of all protected areas in the world and the expression of protection structures with similar names. IUCN emphasizes that in order for an area to gain a conservation structure, it must meet a number of conservation objectives. According to IUCN, an area can be given a protection structure for purposes such as scientific research, protection of wild life against adverse effects, protection of genetic diversity and species, and continuation of its contributions to improving environmental conditions (Demirel, 2005).

Although Sarıkamış Allahuekber Mountains National Park is one of the most important national parks in Turkey, it is not well known. In order to determine why the national park is not known enough and does not attract visitors, it is aimed to determine the reasons and to offer suggestions for solutions by conducting surveys with tourists coming to Sarıkamış district for winter tourism.

## **1. MATERIAL AND METHOD**

### **1.1. Material**

Kars is bordered by Ağrı in the south, Iğdır in the southeast, Ardahan in the north, Erzurum in the west and Armenia in the east. The area of the province is 9,939 km<sup>2</sup>, it covers approximately 1.2% of our country's land, and it ranks 30th among 81 provinces in Turkey in terms of surface area (Anonymous, 2012b).

Sarıkamış district can be counted at the beginning of the important districts of Kars province. Sarıkamış has a great geopolitical importance in terms of its geographical feature. The district is in the Erzurum-Kars section of the Eastern Anatolia region, connected to the province of Kars. It is surrounded by Kağızman (Kars) in the east, Eleşkirt (Ağrı) in the south, Horasan (Erzurum) in the southwest, Narman (Erzurum) in the west, Şenkaya (Erzurum) in the northwest, Selim (Kars) in the north (Figure 1). Sarıkamış District has an area

of 1,972 km<sup>2</sup> and covers 19.85% of the provincial territory. It is the largest district of the province in terms of surface area. It is located between 40° 18 minutes north latitude and 42° 31 minutes east longitude. Its height above sea level is 2225 m (Anonymous, 2012b).

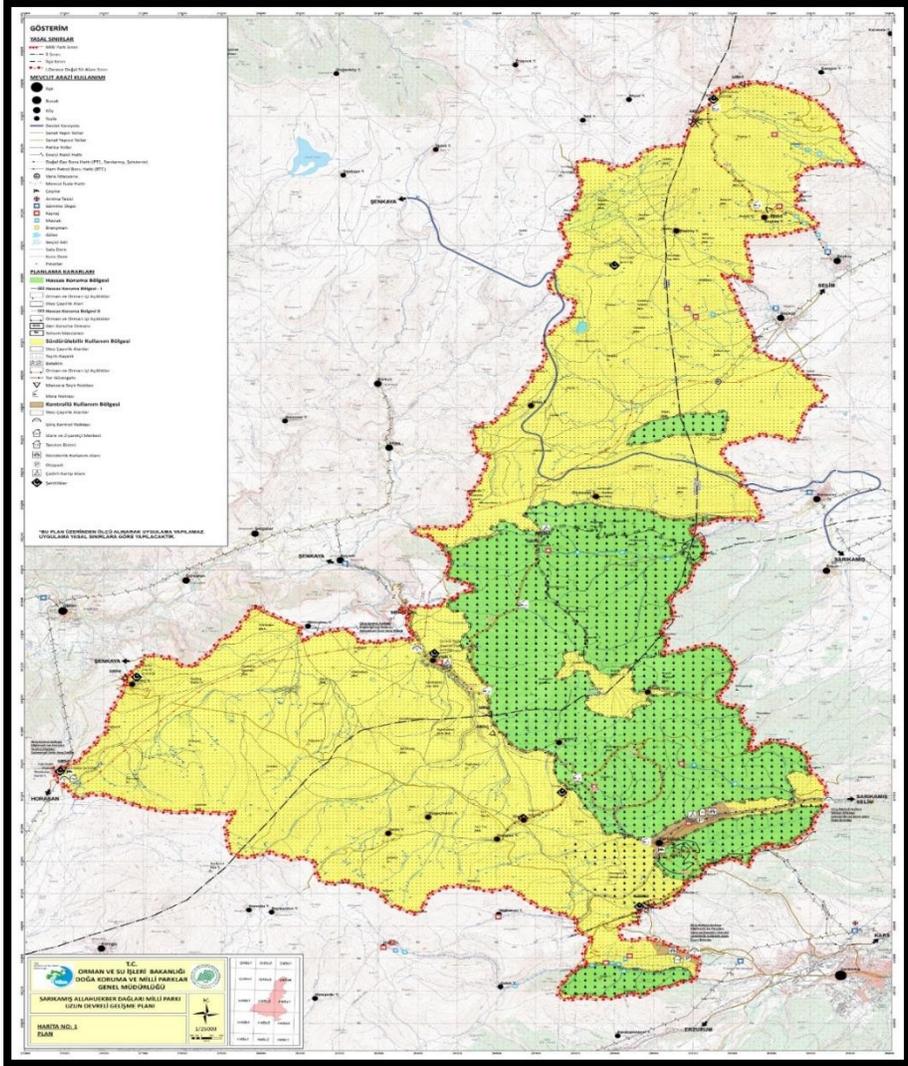


**Figure 1:** Location of Sarıkamış in Turkey and the region (Anonymous, 2020b).

Due to its geopolitical location, Sarıkamış has been seen as an important point throughout history. Among the most important reasons for this importance are the fact that it is located on the west-east extension line and is on the crossing point of historical roads, it has a more suitable geography for settlement than its surroundings, there are fertile plateaus and meadows for livestock, and there are important water resources in the region (Topaloğlu, 2008).

An area of 22,520 hectares covering Sarıkamış Forests and Allahuekber Mountains was published in the official newspaper dated 19/10/2004 and

numbered 25618 and declared as Sarıkamış Allahuekber Mountains National Park (Figure 2) (Anonymous, 2012a).



**Figure 2:** Map of Sarıkamış-Allahuekber Mountains National Park

The Historical National Park area in Sarıkamış has two resource values. The first of these is the discovery of Martyrdom monuments in the Allahuekber Mountains, where approximately 90 thousand Turkish soldiers froze to death

during the operation known as the Sarıkamış Operation in 1914-1915. The operation, which started on December 22, 1914 and ended on January 18, 1915, resulted in the death of 90 000 martyrs (this value varies in various sources). According to the information received from various sources; There are 20 martyrdoms of our soldiers who were martyred in the Sarıkamış Operation. Only 8 of these cemeteries have a Monument. The rest are in the form of areas with unclear boundaries. There are 8 martyrdoms, 4 of which are within the borders of Kars of Sarıkamış Allahuekber Mountains National Park (Tekçam Cemetery, Dikenli Tabya Cemetery, Soğanlı Martyrdom, Allahuekber Martyrdom) and 4 within Erzurum borders (Bardız Pass Martyrdom, Çakırbaba Martyrdom, Turnagöl Martyrdom, Kaynak Plateau Martyrdom) (Anonymous, 2012a).

### **1.2.Method**

After the National Park was declared (19.11.2004), surveys were conducted with the participation of domestic and foreign tourists who came to Sarıkamış to examine the changes in Sarıkamış-Allahuekber Mountains National Park.

Visitor survey study consists of 2 parts. These:

1. Questions about the demographic characteristics of the participants (7 questions)
2. Questions about Sarıkamış-Allahuekber Mountains National Park (12 questions)
3. In the continuation of the questionnaire, the satisfaction level of the local people in the Sarıkamış-Allahuekber Mountain National Park was measured and questions were asked about this. Participants were asked questions using a Five-point Likert Scale, satisfaction criteria in the field according to their degree of importance; They answered very satisfied, Satisfied, Undecided, Not Satisfied and Absolutely Not Satisfied (3 questions).

The survey was carried out in the months of November-March covering the years 2018-2019 (Figure 3).



**Figure 3:** Images from the surveys conducted in the field

According to the method developed by Özdamar (2003), at least 96 questionnaires should be conducted in cases where the population size is 41,280 with a  $\pm 10\%$  margin of error and a 90% confidence interval. In order to get more realistic results, 100 face-to-face surveys were conducted with the participants.

According to Özdamar (2003); The formula to be used to determine the sample size is as follows:

$$n = \frac{N \cdot P \cdot Q \cdot Z_{\alpha}^2}{(N - 1) \cdot d^2}$$

N: Universe unit number

n: Sample size

P: Observation rate of X in the universe

Q: Ratio where X is not observed (1-P)

Z $\alpha$ : 1.96, 2.58 and 3.28 values for  $\alpha = 0.05, 0.01, 0.001$

d= sampling error

$$n = \frac{41280 \cdot (0,5) \cdot (0,5) \cdot (1,96)^2}{(41280 - 1) \cdot (0,10)^2} = 96$$

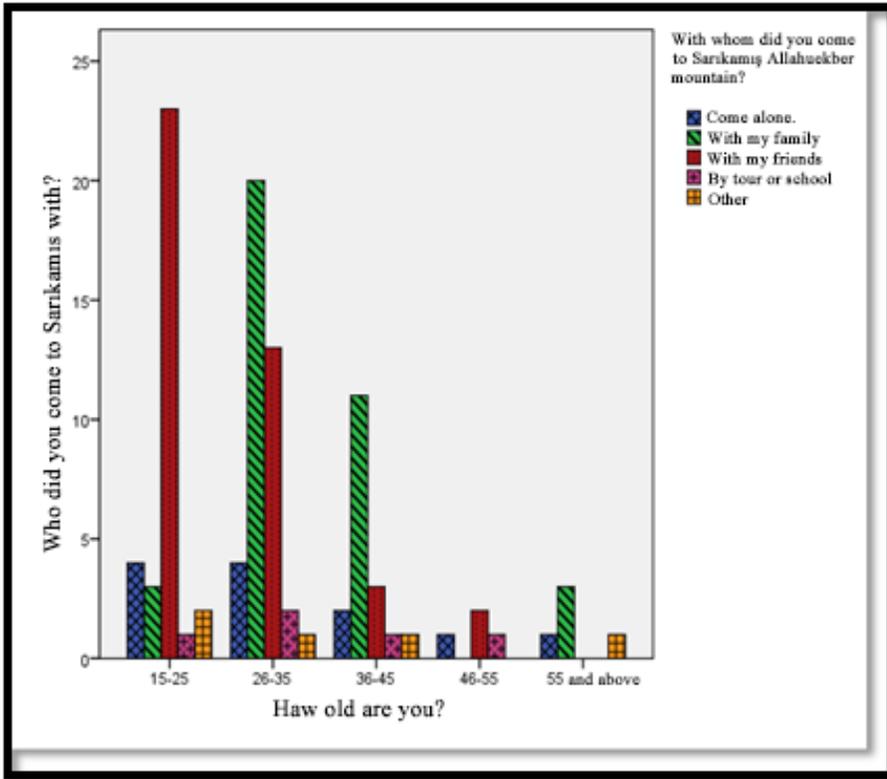
After the number of questionnaires was determined by the formula stated above, the questionnaire application was started. After the survey studies were completed, the analysis part of the results was started.

The survey results were evaluated with the SPSS 17 program. First of all, the frequencies of the answers given by the participants were determined by using frequency analysis. Then, the Chi-square test was applied to evaluate the relationship between the necessary questions and each other (eg, gender-field activities) and the results were given.

## **2. RESULTS**

First of all, studies related to the subject were examined and a questionnaire was prepared in accordance with the purpose and scope of the subject. After the ethics committee permission document for the prepared questionnaire was completed, the process of determining the number of visitor questionnaires according to the number of visitors to Sarıkamış was started. In this process, his views on the Sarıkamış-Allahuekber Mountains national park are as follows.

In the first part of the visitor questionnaire, 7 questions were asked to determine the demographic characteristics of the participants. According to this, nearly half of the visitors are in the 26-35 age group, the majority of them are university graduates and one third of them are from other provinces. When the results are examined, the majority of the participants are male (60%), between the ages of 26-35 (40%), marital status is married (51%), education level is college or university (58%), civil servant (32%), monthly income is more than 3,000 lira. more (57%) and those who come to Sarıkamış-Allahuekber Mountain National Park from other provinces (33%) (Figure 4). The results of the answers given by the participants to the questions are shown in T.

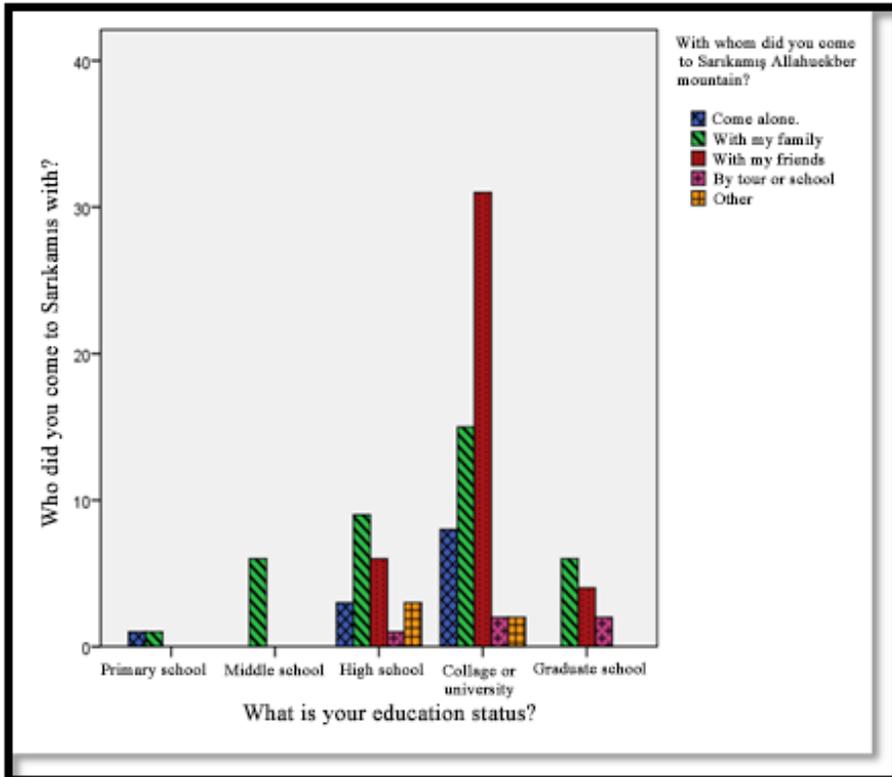


**Figure 4:** The relationship between the ages of the respondents and who they came to the national park with

In the second part of the questionnaire, 12 questions were asked to the visitors about Sarikamis-Allahuekber Mountain National Park. The answers given by the participants to the questions asked are as follows;

The relationship between the answers given by the participants to the question "Who did you come to Sarikamis-Allahuekber Mountain with?" and the education level factor were examined. While 50% of the individuals with primary education level come with their families and alone, 100% of the individuals with secondary school education come with their families, 40.9% of the individuals with high school education come with their family, 53.4% of the individuals with a college or university come with their friends, and 50% of the individuals with graduate education. He stated that he came with his family. It is seen that there is a significant difference between the education levels of

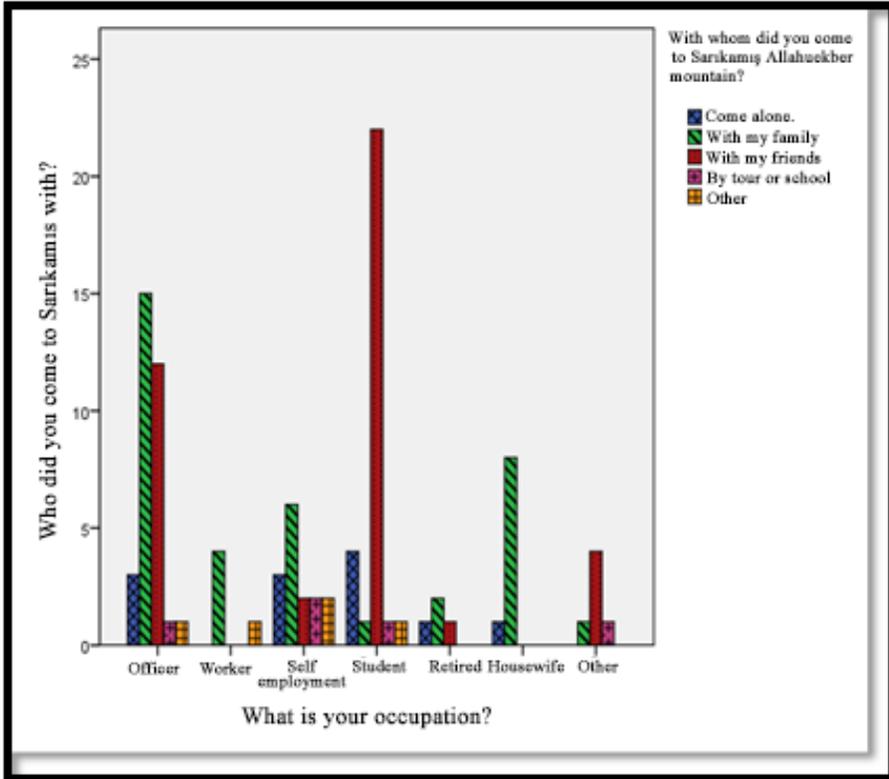
the participants and the question "Who did you come to Sarıkamış-Allahuekber Mountain with?" (p: significance level <0.05) (Figure 5).



**Figure 5:** The educational status of the respondents and the relationship with whom they came to Sarıkamış-Allahuekber Mountain

The relationship between the answers given by the individuals participating in the survey to the question "Who did you come to Sarıkamış-Allahuekber Mountain with?" and the occupational groups factor was examined. 46.9% of civil servants with their families, 80% of workers with their families, 40% of self-employed individuals with their families, 75.9% of students with their friends, 50% of retirees with their families, 88.9% of housewives with their families, other professions 66.7% of the groups stated that they came with their friends (Figure 6). There is a significant difference between the participants' question "Who did you come to Sarıkamış-

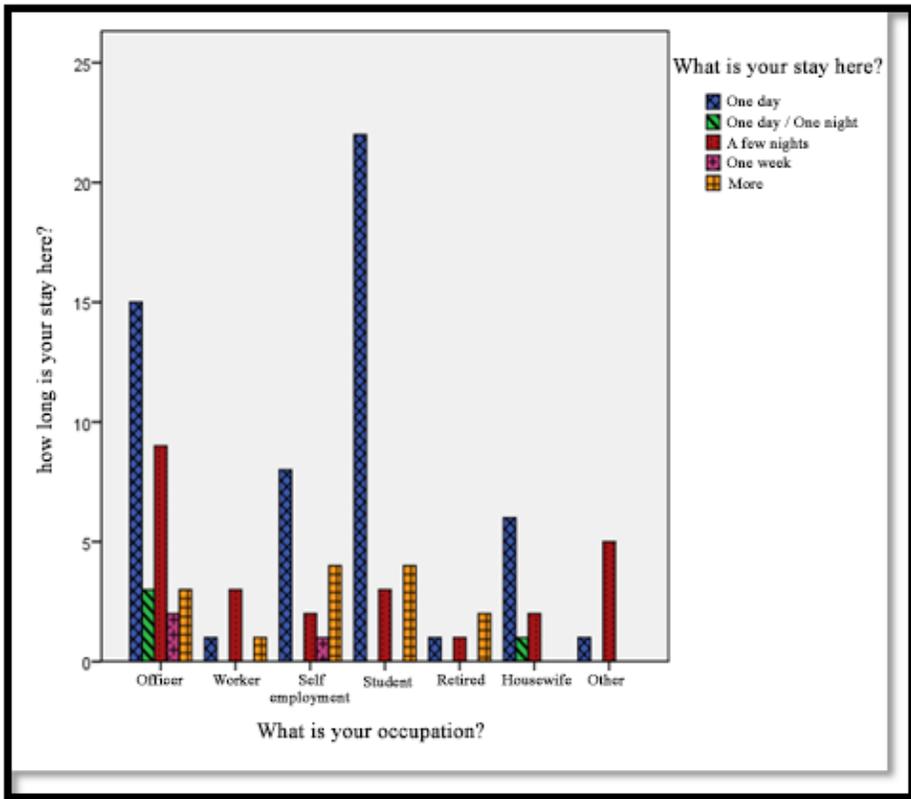
Allahuekber Mountain with?" and the occupational groups (p: significance level <0.05).



**Figure 6:** The profession of the respondents and the relationship with whom they came to Sarikamis-Allahuekber Mountain.

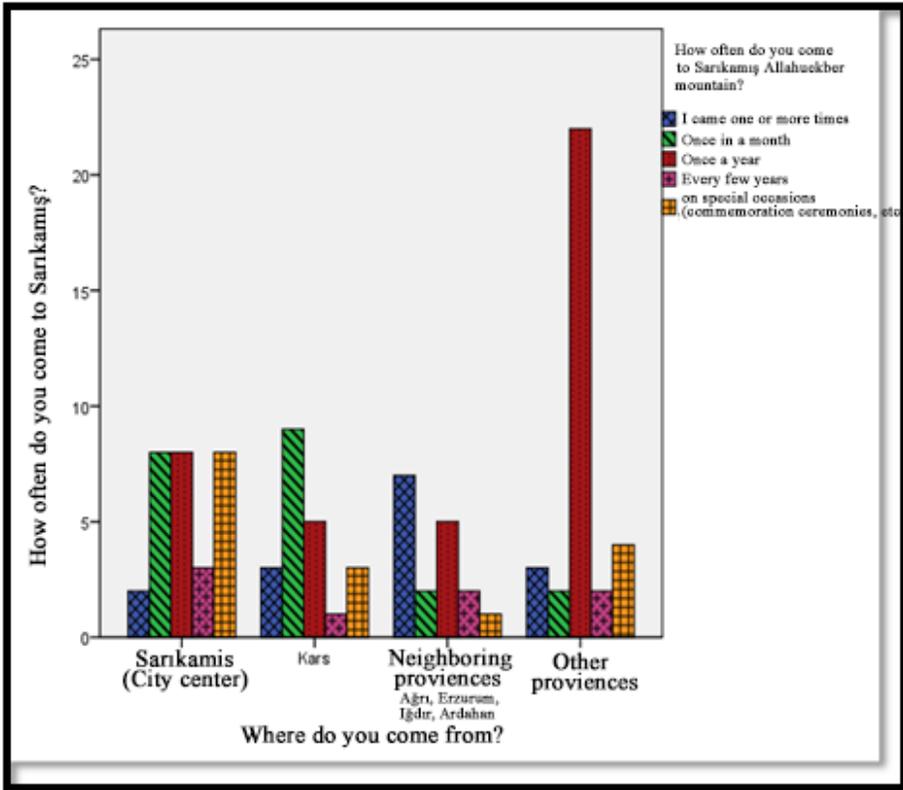
The relationship between the answers given by the individuals participating in the survey to the question "What is the duration of your stay here?" and the occupational groups factor was examined. 46.9% of civil servants one day, 60% of workers a few days, 53.3% of self-employed individuals one day, 75.9% of students one day, 50% of retirees more, 66% of individuals who are housewives .7 of them stated that they would stay for one day, and 83.3% of the other occupational groups stated that they would stay for a few days (Figure 7). As can be seen, there is a significant difference between

the participants' question "What is the duration of your stay here?" and the occupational groups (p: significance level <0.05).



**Figure 7:** The relationship between the profession of the interviewers and the length of stay in Sarıkamış-Allahuekber Mountain

The relationship between the answers given by the participants to the question "How often do you come to Sarıkamış-Allahuekber Mountain?" and where they came from was examined. 27.6% of individuals coming from Sarıkamış (centre) come once a month, once a year and on special days, 42.9% of individuals coming from Kars once a month, 41.2% of those coming from the surrounding provinces come once or several times, 66.7% of those coming from other provinces come once a year (Figure 8). As can be seen, there is a significant difference between the participants' question "How often do you come to Sarıkamış-Allahuekber Mountain" and where they come from (p: significance level <0.05).



**Figure 8:** The relationship between where the respondents come from and how often they come

All opinions of the interviewers about Sarikamis Allahuekber Mountains National Park are given in the appendix (Table 1).

**Table 1:** All Responses of Visitor Survey Participants to the Questions About Sarikamis-Allahuekber Mountains National Park

Field of Study Questions	Variables	N (frequency)
Did you know that Sarikamis-Allahuekber Mountain is a National Park?	Yes	66
	No	34
How did you come to Sarikamis-Allahuekber Mountain by being informed?	Books	10
	Brochures	3
	Internet	19
	Tourism Offices	8
	Media (TV or newspaper)	20
	Friends	28
	Other	12
	Yes	49

<b>Have you been to Sarıkamış-Allahuekber Mountain National Park before?</b>	<b>No</b>	<b>51</b>
Would you consider going to Sarıkamış-Allahuekber Mountain National Park?	Yes	87
	No	13
<b>Would you join if tours were organized to Sarıkamış-Allahuekber Mountain National Park?</b>	<b>Yes</b>	<b>66</b>
	<b>No</b>	<b>34</b>
In which season do you prefer or would you like to come to Sarıkamış-Allahuekber Mountain?	Spring	15
	Summer	24
	Autumn	5
	Winter	56
<b>With whom did you come to Sarıkamış-Allahuekber Mountain?</b>	<b>Alone</b>	<b>12</b>
	<b>With my family</b>	<b>37</b>
	<b>With my Friends</b>	<b>41</b>
	<b>By tour or school</b>	<b>5</b>
	<b>Other</b>	<b>5</b>
What is your stay here?	One day	54
	One day/One night	4
	Several days	25
	One week	3
	More	14
<b>How often do you come to Sarıkamış-Allahuekber Mountain?</b>	<b>I came once or several times</b>	<b>15</b>
	<b>Once in a month</b>	<b>21</b>
	<b>Once a year</b>	<b>40</b>
	<b>Every few years</b>	<b>8</b>
	<b>Special occasions (commemorations, etc.)</b>	<b>16</b>
What are the reasons why you do not come to Sarıkamış-Allahuekber Mountain National Park more?	Difficulty with transportation	Yes 40 No 60
	Lack of free time	Yes 74 No 26
	Not feeling safe enough	Yes 23 No 77
	Insufficient means of communication (telephone)	Yes 22 No 78
	Low number of staff	Yes 20 No 80
	Lack of organization (private tours)	Yes 27 No 73
	Lack of equipment	Yes 21 No 79
	roads are not good	Yes 19 No 81
<b>Have you ever had a problem with Sarıkamış-Allahuekber Mountain National Park?</b>	<b>I had no problems</b>	<b>74</b>
	<b>I had a problem</b>	<b>26</b>
Where do you report your problems related to Sarıkamış-Allahuekber Mountain National Park or where would you report them if you had a problem?	District Governorship	13
	Municipality	26
	National parks branch directorate (Forest management)	39
	Bimer/Cimer	22

### 3. DISCUSSION AND CONCLUSION

Protected areas and national parks in Turkey are in good condition numerically. This is an important step. However, the planning, implementation and promotion activities for the protection of these areas are not going fast enough.

Sarıkamış is one of the areas experiencing this problem in the Allahuekber Mountain National Park. The national park, which is of historical and ecological importance for our country, has not received the attention it deserves even though it was announced in 2004. One of the most important reasons for this is that the necessary investments in the national park such as financial means, tools and equipment, personnel and infrastructure are not made sufficiently. As a matter of fact, 40% of the visitors to the area said that the roads were not good. However, it can be considered that it is not promoted enough and that the interest of our people is lower than in western countries. 1/3 of the visitors have stated that they do not know that this area is a national park, and only 20% of those who know show what they learned from the media, which shows the accuracy of this.

Half of the visitors to the national park preferred the winter season. The reason for this is not for visiting the national park, but for skiing in Sarıkamış in winter. Some of the other visitors come to see the beauty of Sarıkamış. Therefore, the number of visitors coming to see the national park is quite low. Only in the winter, on the anniversary of the Sarıkamış Operation, there are quite a lot of people, and at other times there are very few. The fact that tens of thousands of people who come by train, especially with the Eastern Express, do not visit the national park while passing by, clearly shows the problem.

Some important steps must be taken for Sarıkamış Allahuekber Mountain National Park to see the value it deserves. The budget allocated for protected areas should be increased and infrastructure works should be accelerated. Likewise, the number of materials and personnel should be increased. It is necessary to complete other missing aspects in local governments. In addition to these studies, the area should be promoted well and attract the attention of both local people and visitors. Political and bureaucratic aspects should also be taken into account. It should not be forgotten that the work does not end with declaring an area a protected area, but steps should be taken knowing that it is an area of national importance.

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# CHAPTER 8

## REDUCING THE NEGATIVE EFFECTS OF CLIMATE CHANGE IN CITIES WITH LANDSCAPE ARCHITECTURE STRATEGIES WITHIN THE FRAMEWORK OF SUSTAINABILITY

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## **INTRODUCTION**

Humanity needs energy to survive since its existence. Especially after the population growth and the industrial revolution, the amount of energy needed for the realization of new inventions, urbanization, transportation and agricultural activities has increased. With the rapid urbanization after the industrial revolution, a large part of the increasing energy need is obtained by burning fossil fuels such as coal, oil and natural gas. As a result of the unconscious use of these fossil fuels, the accumulation of greenhouse gases in the atmosphere has increased. As a result, there has been a great increase in environmental pollution. This accumulation in the atmosphere increases the natural greenhouse effect and causes air pollution and climate change in the world with the contribution of urbanization.

Climate change is large-scale and long-term changes in the average temperature of the planet and weather events. The United Nations Framework Convention on Climate Change (UNFCCC) “the change that occurs as a result of natural changes observed in the climate over a long period of time and directly or indirectly human activities, and disrupts the composition of the global atmosphere” defines climate change (UNFCCC, 1992). It was a matter of uncertainty whether human activities were the cause of the climate change that emerged as a result of increasing greenhouse gas accumulations since the second half of the 19th century. In the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), published in 2014, it was determined for the first time that the cause of climate change is the activities of people with 95% certainty. In this context, the climate change experienced today is expressed as “human-induced” climate change (IPCC, 2014; 2021). In the IPCC Working Group I Report announced in August 2021, it was stated that the adverse effects of climate change will emerge more rapidly, more widely and more severely in the coming period (IPCC, 2021; UN, 2022). In the 2022 Global Risks Report prepared by the World Economic Forum (WEF), which found similar risks with the findings in the IPCC report; (1) failure in climate action, (2) extreme weather events, and (3) loss of biodiversity were rated as the top three risks. The dimensions of the risks mentioned affect the future and settlements of living things all over the world, and their consequences in environmental, economic and social areas (WEF, 2022). For this reason, it has become inevitable to take strong measures against the negative consequences

and dangers of climate change and to adapt to the consequences of climate change. When we look at the results of the urbanization in the 21st century, it is seen that the fastest urbanization has been experienced since the Industrial Revolution. As a result of this rapid urbanization, open and green areas in urban areas that grow and spread uncontrollably will be under pressure and face the risk of construction. In addition, as a result of the unsustainable design of urban open and green spaces, these are the areas where the effects of climate change will be felt the most due to the negative effects it will have on natural resources and the city.

For that purpose; cities will be the most appropriate administrative scale for planning and designing sustainable, climate change resistant open green spaces and for mitigating and adapting to the effects of climate change. Within the scope of the study, the causes of climate change in cities will be explored, the effects of climate change on cities and the approaches of landscape architects in reducing the negative effects of climate changes will be explained.

## **1. THE REFLECTION OF CLIMATE CHANGE ON CITIES**

Due to the rapid increase in the population in cities, the need for building stock in these areas has increased. In order to respond quickly to this rapid increase, open-green areas and natural areas in these areas were destroyed and irregular and unplanned constructions were created in their place. As a result, urban areas have become areas where open-green areas and natural areas are less, and where impermeable surfaces are more. As a result, heat islands have occurred in cities and these heat islands have caused adverse effects on climatic factors such as temperature and relative humidity. In addition, it is known that high-rise buildings in cities affect wind movements and transitions, and the duration of sunshine. All these changes have caused the formation of their own microclimate by changing the climate of urban areas. Changes and activities in cities not only affect the area where they are located on a regional scale, but also cause climate change by affecting the whole world. In addition to being the biggest source of greenhouse gas emissions, cities are also the areas that will be most affected by the negative effects that occur as a result of climate change. The extent of being affected by these negativities; it depends on the location of the city, the size of the city, its demographic structure, socio-

economic structure, physical infrastructure, sustainability, the characteristics of the built environment of the city and how prepared it is for disasters (Duman Yüksel, 2004). The negative effects that climate change has caused and are thought to bring in cities are given below.

- As a result of the climate change in the cities, some of the species living here disappeared because they could not adapt, while others migrated to places where they could adapt.

- As the increasing greenhouse gases disrupt the chemistry of the atmosphere, there will be decreases in air quality. In addition, due to the increase in high-rise buildings in cities, wind passages and speed have decreased. This situation affects the air quality negatively.

- Heat islands that occur in cities worsen the thermal comfort situation in these areas and negatively affect people's health.

- More than half of the cities are located in coastal areas. If the sea level rises due to climate change causing excessive rainfall, it is expected that the property and even life of the people living in the coastal cities will be damaged.

- Floods caused by excessive precipitation due to climate change cause landslides and salinization of water resources. If landslides damage the built environment and infrastructure in cities, the country's economy will be adversely affected.

- Depending on global warming, it is expected that the hydrological cycle will change, the glaciers melt, the oceans warm, the sea level rise, and the natural resources will decrease accordingly, and the epidemics will increase (Türkeş, 2003).

- Another problem caused by climate change is changes in precipitation regimes. On the one hand, changes in precipitation cause drought, on the other hand, the increase in hot weather increases the demand for water. Another important point here is that urban areas do not get much efficiency from precipitation because they have their own microclimates. Because the precipitation in the cities either evaporates quickly or cannot be stored because it goes to the sewer.

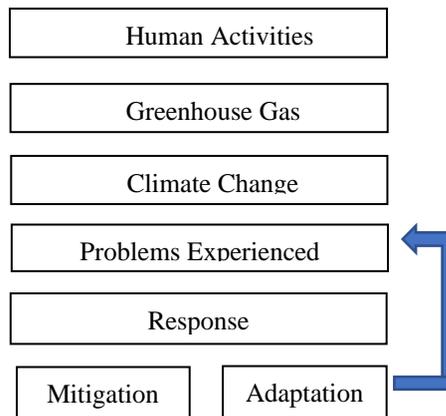
- Coastal areas are the ecosystems that will be most affected by climate change. It is thought that global climate change and warming will cause erosion of coastal ecosystems (IPCC, 2007).

- One of the most important areas that will be directly affected by climate change and temperature increase is the agriculture sector (IPCC, 2007). Increasing land and sea water temperatures and changing precipitation regimes are expected to adversely affect the agricultural ecosystem (T.C. Çevre ve Şehircilik Bakanlığı, 2011).

- In cities due to extreme weather events that occur as a result of climate change; transportation networks are flooded with flood waters, food and trade chains are disrupted, increasing temperatures and precipitation are leaving drainage infrastructures inadequate. Due to the adverse conditions of climate change, extreme temperatures and droughts occur in cities, increasing the risk of huge forest fires.

## **2. LANDSCAPE ARCHITECTURE APPROACHES IN ENSURING CLIMATE RESILIENCE IN CITIES**

Although landscape literally means landscape, it is all of the natural, semi-natural and cultural elements that an individual sees and can see when he first looks around. Landscape architecture, on the other hand, is closely related to the planning and design of the areas where people live. As it is known, landscape architecture is helping people to live in healthy and sustainable areas by helping to ensure the continuity of ecosystem services that exist in the world. Ecosystems provide numerous benefits to humans and other living things in their environments. All of these benefits, products and services that emerge as a part of the ongoing natural processes in ecosystems are defined as ecosystem services. (MEA, 2005). Urban areas, which are responsible for 75% of natural resource consumption and 80% of global greenhouse gas emissions, are directly affected by the effects of climate change. As a result of these effects, it affects people's lives negatively. From this point of view, cities, which are the biggest cause of climate change, are also the key to the solution. In this context, planning and designing climate change-resistant landscapes in urban areas can contribute to mitigating and adapting to the effects of climate change (Figure 1).



**Figure 1:** Mitigation and adaptation in combating climate change (adapted from Çetinkaya Çiftçioğlu and Alvan Bozdereli).

## 2.1. Mitigation of the effects of climate change (Mitigation)

The effects of climate change can be mitigated in two ways. The first of these is to reduce greenhouse gas emissions. The second is the creation of sink areas that will increase the carbon holding capacity of natural systems (with vegetation) causing greenhouse gases. (USAID, 2015). In this context, Landscape Architects should take an active role in their efforts to increase the carbon sequestration capacity of forests, green infrastructures, agricultural areas and other green space systems.

## 2.2. Adaptation to climate change (Adaptation)

Adjustments made in natural and social systems to reduce the negative effects of current and expected climate change are called adaptation (USGCRP, 2018). The purpose of adaptation activities is to provide short and long-term environmental, social and economic benefits. Although measures are taken to reduce the effects of climate change, there will be some changes in the climate, albeit slightly. Therefore, in addition to mitigation, adaptation is also necessary. Adaptation actions aim to combat the inevitable consequences of climate change due to the accumulation of greenhouse gases in the atmosphere and to reduce these effects (Abeygunawardena et al., 2003). Solution proposals that can be considered within the scope of Landscape architects approaches in

reducing the effects of climate change in cities and providing resilience against climate change are included.

### **2.3. The approach to ensuring the continuity of green infrastructure and ecosystem services:**

**2.3.1. The role of green infrastructures:** The most important planning tool in reducing the effects of climate change is 'green infrastructure' systems green infrastructure; it is a network of green spaces that protect ecosystem services and are interconnected by natural, semi-natural and cultural (man-made) areas (Tzoulas et al. 2007). That green network of parts and corridors; it includes natural areas such as meadows and pastures, forest areas, wetlands, stream corridors and rivers, semi-natural areas such as agricultural areas, botanical gardens and operational forests, cultural components such as vertical gardens, green roofs, children's playgrounds, cemeteries sports fields.

As a result of the unplanned expanding and construction in urban areas, there are significant problems caused by rain water with the increase of impermeable surfaces. These problems become more evident with the sudden rains caused by climate change. In order to avoid this problem, green roofs, vertical gardens, rain gardens, etc., which absorb water and also allow it to flow through, should be used in urban areas where there is a lot of construction green infrastructure applications offer a solution. Rainwater runoff normally flows over the ground surface into the sewer system. In cases where the amount of water flowing to the surface is above the capacity of the water collection systems, it may cause flooding and overflows. In order to avoid such a situation, the green infrastructure applications to be planned in the cities act like a sponge to absorb these waters. Thus, green infrastructure applications will reduce the pressure on the drainage system of the water flow in the city (Özkaplan Yörüklü, 2021).

Due to the increasing floods and overflows in cities, it has become a necessity to create holistic strategies for storm water drainage in cities. The sponge city approach accepted in the world; it is an ecological city approach that ensures the natural holding, cleaning and discharge of water. This approach can be a solution to these problems in our cities. With the sponge city approach, instead of removing rain water, it will be protected, stored and reused within its

own borders and for its own use. A properly designed and implemented sponge city reduces the frequency and severity of floods caused by impermeable surfaces, and improves water quality. With this system, rainwater collected from roofs, vertical gardens, rain gardens and impermeable surfaces can be used for irrigation of home gardens, public space gardens, open-green spaces, toilets and bathrooms. The remaining water after being used in these areas is given to the soil and gained to underground resources. In the creation of cities that are resistant to climate change, studies should be carried out in accordance with the sponge city criteria, which will serve as a model for the flood-resistant green infrastructure type in the new buildings and public spaces to be built . Figure 2 gives an example of how green infrastructures can be integrated into urban areas. In this context, the following green infrastructure practices should be implemented:

**Green roofs:** Placing a vegetation on the water insulation system placed on the top layer of structures. Reducing solar radiation, reducing the speed of precipitation water, cleaning the air in the city, providing insulation, providing people with natural living areas in urban life, etc. such as it has its benefits.

**Green buildings:** Sustainable are buildings designed with the resources of efficient, social and environmental factors in mind, where environmental health and the health of the occupants are not compromised, using renewable energy resources and using materials that minimize waste production.

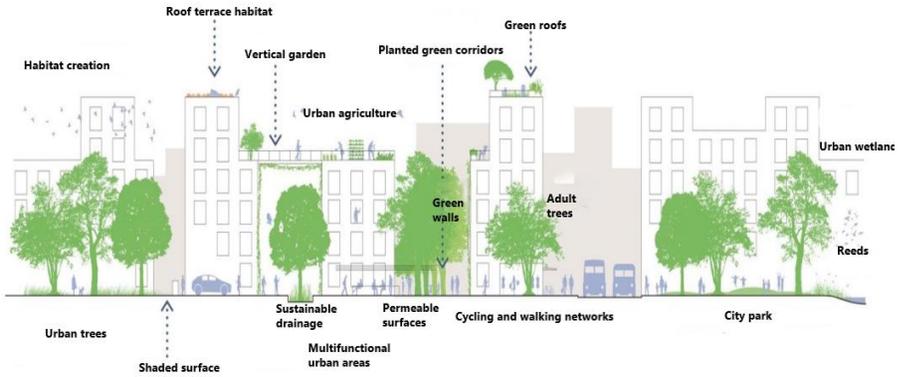
**Green walls:** It is formed by the coating of vertical structural elements such as building, wall, fence, etc. with various plants. This green infrastructure, called a green wall or vertical wall, has benefits such as providing biodiversity, reducing energy consumption in buildings, preventing floods and flooding caused by excess oil.

**Greenways:** sustainable are use of a green spaces that both meet people's recreational needs and provide protection.

**Open and green spaces:** These are public spaces that do not allow any construction from the outside and allow people to meet their recreational needs.

**Rain gardens:** These are the pit areas where the rain water is directed directly without any treatment and where domestic and foreign plant species can be grown.

**Water permeable hard surfaces:** In urban areas, gardens, sidewalks, pedestrian and vehicle roads, etc. They are surfaces that are permeable to water and air in areas.



**Figure 2:** Integration of Green Infrastructure Components into Urban Landscapes (Arup, 2019).

### 2.3.2. Role of Ecosystem Services

Regulatory ecosystem services play a major role in reducing the negative effects of sudden and unexpected weather events caused by global climate change and making cities more resistant to these adverse conditions. These services are; are the benefits derived from ecosystem processes in which ecosystems act as regulators (MEA, 2005). These benefits are;

#### ***Improving air and soil quality:***

Today, the common problem of most cities is air pollution. It is also known that this air pollution, which is high in cities, is the cause of many diseases. Trees and plants (green areas) improve air quality by reducing air pollution in the city as they remove air pollutants from the atmosphere. Trees and other plant species carry out photosynthesis and capture carbon in the atmosphere and store it in wood tissue. After the death of the tree or plants, the carbon stored in their bodies returns to the atmosphere. By increasing afforestation in cities, both the air in the city will be cleaned and the carbon that

causes greenhouse gases will be stored and returned to the atmosphere will be blocked.

***Climate regulation:***

Green areas have a great role in regulating the temperature of urban areas. Plants positively affect the climate of their environment. Trees cool the surfaces in the city by transpiration and creating shade. Especially tall plants and plants with high crown density increase the shading and transpiration functions and provide cooling of the environment.

***Providing pollination:***

Pollination is vital to the sustainability of ecosystems and living communities. Maintaining the balance of ecosystems depends on a healthy and continuous relationship between plants and pollinator organisms. In this regard, pollinator insects are a key component of global biodiversity (Potts et al., 2010). There has been a decrease in biodiversity due to the deterioration in cities and climate change. In order to reduce the effects of these adverse conditions, the greening of urban areas, the use of large, large-sized broad-leaved tree species that bloom, produce fruit at different times, the use of different types of plants and trees and the areas where they are used together have high ecological value. The creation of green areas with high ecological quality includes bird and insect species that provide pollination, which are not seen in most areas in the city. Thus, the biodiversity in natural areas, which decreases due to urbanization, increases.

***Floods prevention:***

Due to the increasing settlements in the cities, the topographic structure has been changed and impermeable surfaces have been created without considering the natural drainage. As a result, the natural movement of water causes the flow system to change, the water cycle to be interrupted, and underground and surface water resources to be not fed. This situation causes the water coming from the precipitation in the cities to be collected by the sewerage systems, the roads and streets to be covered with water, floods and sudden floods. As a result, large amounts of water that can be used are lost as wastewater. In some cities where there are precipitation water collection

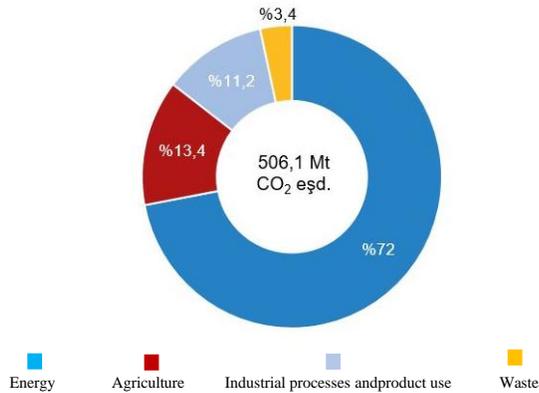
systems, it is either transmitted to water structures such as sea and river, or the collected precipitation water is transmitted to biological channels or wetlands where biological treatment processes will take place (Strom et al., 2013). The aim here is to remove the water from the city as quickly as possible and to help prevent floods by reducing the load of the treatment plant.

In areas where the natural areas are not disturbed, the water that seeps into the soil and is not used by the plants flows under the ground parallel to the surface, feeding a water structure such as a nearby stream lake, it may infiltrate deeper or reach the ground water. Thanks to the plantings to be done in the cities, the speed of the precipitation water decreases, the water is transferred to the soil and the amount of water passing to the surface flow decreases.

#### **2.4. Adopting designs that support a carbon neutral approach:**

The Landscape Architecture profession has the potential to lead design for climate change. Landscape architects are doing their part to design landscapes that will become carbon neutral by 2030, design open and green spaces, and keep the per capita global temperature gain 1.5 °C below the critical threshold as specified by the Intergovernmental Panel on Climate (Hausfather, 2018). Most of the greenhouse gases, which are the cause of climate change, contain carbon molecules 75% of carbon dioxide (CO<sub>2</sub>) emissions in greenhouse gases, which are the cause of climate change, originate from activities carried out in cities. These activities include transportation, industrialization, urbanization, deforestation, buildings and fossil fuel-based energy production and consumption for these sectors (UNEP, 2022). Given the amount of greenhouse gas emitted into the atmosphere in 2019, the highest energy-based emission appears to be present (Figure 3) The amount of greenhouse gas that is released must be reduced first under the study of reducing the emission of greenhouse gases. To achieve this, the activities that cause greenhouse gas must be limited.

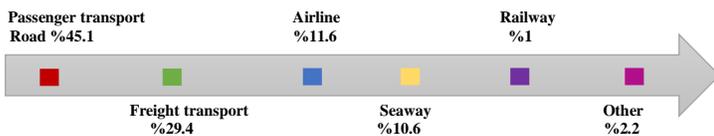
**Greenhouse gas emissions by sectors, 2019**



**Figure 3:** Distribution of greenhouse gases in the world by sectors (Anonymous, 2022)

In this context, landscaping architects are undergoing some tasks to make cities carbon-neutral. These are;

- More than 95% of the energy spent on global transportation today is derived from engines running on fossil fuels. Emissions from the fuels used for transport activities constitute approximately 20% of global greenhouse gases. Among the transport types, the road is 74.5% of global emissions, 11.6% of airlines, 10.6% of marine lines and 1% of railway lines (Figure 4). In this context, reducing greenhouse gas emissions due to transportation is an important point.



**Figure 4:** Greenhouse gas emission rates of the world's average transportation networks (Demirtürk, 2021).

- In order to reduce the fossil fuels consumed in reaching resources in cities, resources should be planned within a radius of 200 kilometers at most and the city should be developed within this radius.

- Urban transport with vehicles using fossil fuel is responsible for 74.5% of greenhouse gas emissions globally. To reduce these greenhouse gas emissions, pedestrian-oriented urban designs must be planned. In these cities, everyday needs must be within walking distance. In addition, roads that encourage bicycle use should be planned and green corridors should be constructed by tree pedestrian roads and vehicle roads.

- Large quantities of greenhouse gas emissions are released into the atmosphere during the process of reaching consumers in the food industry. To reduce this, alternative production systems such as urban agriculture, vertical agriculture, permaculture design must be developed in cities.

- In order to reduce fossil fuel consumption in transportation, the use of vehicles using alternative energy sources such as bio-fuels, bio-methane, electricity and hydrogen should be expanded (Couture et al., 2019).

- As it is known, the heat island, which is caused by harsh surfaces used in urban areas and structural density, has increased the impact of climate change in these areas. Urban heat islands in urban areas, in particular, have a negative impact on those living here. With trees and plants in these areas, shading and evaporation will increase in the summer months, so the formation of the heat islands will be balanced, reducing the energy required to cool the buildings. The use of energy in heating will be significantly reduced and will help reduce greenhouse gas emissions, as the plantings to be done will help reduce wind speeds in winter. Also, green areas are the best way to fight urban heat islands because they have a high potential to cool the climate, reduce the urban heat island impact and carbon dioxide.

- In cities, the amount of carbon-swallowing areas can be increased, reducing the amount of carbon released into the atmosphere. In this context, landscaping architects should increase their efforts to increase carbon-swallowing areas such as open-green areas, forests, wetlands, etc. in cities.

- Biophilic cities are settlements designed in harmony with nature, incorporating natural resources into the design, and containing public spaces and structures that contain biodiversity. The main purpose of biophilic planning is the green corridor, urban courtyard, green wall, green roof, green belt etc. in the city. It is the creation of new urban settlement areas by preserving such elements. Positive developments such as reduction of urban heat islands, elimination of microclimates, improvement of air quality and reduction of

greenhouse gas emissions are expected with biophilic design applications in urban areas. Due to all these benefits, biophilic design practice in cities should be included in urban design planning ( Zengin and Yamaçlı, 2022).

### **2.5. Supporting the Use of Local Materials:**

Landscape architects pay attention to using recycled and local materials for sustainability while designing. Considering the analyzes made, it is seen that 85 percent of the embodied carbon emissions in a landscape project originate from materials, and the transportation of materials, construction site work and construction each have a 5 percent share (Yörüklü, 2021). With the use of local materials, the effects of climate change in cities can be reduced and cities can be made more resistant to climate change. In this context, when local materials are used;

- If the floor materials to be used in the design are recyclable, the greenhouse gas emissions to be released into the atmosphere will be reduced by reducing the carbon footprint.
- By increasing the amount of open-green space in the project, the project cost and carbon footprint can be reduced.
- Water-permeable materials can be selected instead of impermeable materials.
- Excessive irrigation, spraying and maintenance can be reduced by using local plants specific to the region.

### **3. CONCLUSION and RECOMMENDATIONS**

The adverse conditions of climate change are experienced not only in cities but also in rural areas. The problems that have occurred or may occur due to these effects negatively affect the livelihood of people living in rural areas and accelerate their migration to cities. This will both increase the problems in the form of poverty and unemployment that already exist in the cities, as well as increase the demands for new settlements, energy and resource consumption, and infrastructure for the increasing population. In the event that all these things happen, the resilience of cities to climate change will again weaken. Considering this situation, before starting to plan in cities, the criteria to be

followed in order to create climate-resistant cities should be considered. To achieve this, what needs to be done in each city;

- Each city should create its own green infrastructure strategy and a viable plan for its realization to increase its resilience to the effects of climate change. The green infrastructure approach to be planned will save the future of the cities we live in.

- The resources that cause the most greenhouse gases in the world are primary energy fossil fuels. The only way to prevent climate change should be to reduce the share of fossil fuels in energy consumption, direct them to renewable energy sources and support energy efficiency.

- Since each city is affected by climate change at different rates, it is necessary to determine the vulnerability and risk ratios of cities and to take measures accordingly.

- The risks to be faced in the future should be determined by creating different future projections against climate change.

- In designs, natural materials should be used by reducing the density of concrete, and natural ecosystems should be protected and areas that are part of nature should be created.

- The public should be informed with the works to be carried out by the local government and the excessive use of natural resources should be prevented.

- It is necessary to analyze the vulnerabilities and current disaster risks of cities, especially those related to climate change, in a good way.

- In particular, affectability and fragility analysis and risk analysis in urban and regional areas are required.

- Landscape Architects should intensify their resilient landscape planning and design studies as a climate-compatible design in their urban scale designs.

- In order to ensure the continuation of a safe life, the design and planning of the durability of the critical infrastructure systems in the cities should be done.

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# CHAPTER 9

## THERAPEUTIC RECREATION IN URBAN LIFE

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## INTRODUCTION

On the basis of the need for recreation lies the positive effects that recreation provides to the individual and society. Individuals who use their spare time correctly are affected positively in physical, cognitive, emotional, social and psychological terms (Yazici et al., 2017; Ankaya et al., 2018; Yazici and Ünsal, 2019; Yuca and Aşur, 2021). When the benefits of recreation are determined according to the needs of the individual, the benefit obtained becomes more palpable (Aşur et al., 2020; Yazici and Aşur, 2021; sağlam Etilan and Aşur, 2021). For this reason, the right recreation programs, which are made considering the deficiencies of the individual and the needs of the society, play an important role in eliminating the negative aspects and social problems in the individual (Gülğün et al., 2014; Yazici and A. Sağlamer, 2019; Pirlı and Yazici, 2022).

The concept of leisure time can be defined therapeutically and medically. In this view, the use of leisure for the purposes of therapy, social benefit and control is expressed. The importance of this view is that it allows to establish a link between the leisure time attitude and physical and psychological health (Wang, 2008).

In the therapeutic view, it was aimed that people generally assume unhealthy regarding the dimensions of the concept of leisure, and that this search for health could be eliminated with leisure time (Wu, 2010). Leisure is characterized as therapeutic and provides health benefits because it can reduce the risks of primary and secondary aging, facilitate coping with stress, and prevent the negative effects of diseases and disorders (Caldwell, 2005).



**Figure 1:** The therapeutic recreation (Url 1)

This study aims to conceptually consider the therapeutic recreation practices, which have a special application area within the scope of health recreation, of recreational activities aiming at individual and social well-being.

## 1. RECREATION

Recreation is a systematically planned intervention directed towards breaking the chain of dependency within the compulsory duties and responsibilities of the individual's life. Recreation provides individuals with positive opportunities for power and control in their lives, which help to meet their needs such as energy, excitement and enthusiasm and add value to their lives (Kraus, 1998).

Recreation refers to the realization of many active or passive leisure activities to renew physically and spiritually (O'Sullivan, 2006). Recreation functions to revitalize and renew the individual and creates opportunities for individuals to solve their problems and have a good time. It is possible to define therapeutic recreation as a type of functional service that transforms leisure time activities into a habit and affects life satisfaction, rather than a physical development or structuring (Rothwell and Piaat, 2006).

## 2-THERAPEUTIC RECREATION AND HISTORY AND DEVELOPMENT OF THERAPEUTIC RECREATION

Therapeutic recreation is an application area that has a unique definition and approach patterns included in different recreational activities. This area is a recreational activity focused on improving and improving health status, functional capacities and quality of life of people with special needs through experiential activities or assistive interventions (Carter et al., 2003).



**Figure 2:** The therapeutic recreation in kids (Url 2)

Therapeutic recreation plays an active role in the treatment of individuals with physical and emotional disorders that come with years in the life of the individual (American Therapeutic Recreation Association, 2013). In other words, it can be a factor that helps individuals to adapt to life again with the emergence of various disorders that occur with the life span from birth to old age. Therapeutic recreation enables an individual to develop new skills and social functionality in daily life, as well as to develop existing interests and skills (WHOQOL, 1998; Dustin, 2000).

Therapeutic recreation is provided by experts who have hands-on training within the academic and therapeutic service field. Activities to be organized according to individuals' special positions, interests and needs, capacities and programs to respond to these are targeted. In this context, it is at the forefront that the individual recovers and renews himself in the face of negative situations such as illness and life obstacles, or creates a stability or balance against the problems that threaten his health and protects his health; At the same time, self-discovery and self-realization can be perceived as promoting health through leisure time.



**Figure 3:** Therapeutic Recreation (Url 3)

In addition, it can be perceived as a set of activities that reduce and prevent health problems. As a result, therapeutic recreation is not only a way of covering health-oriented definitions or curing diseases, but also provides the physical, cognitive, social and emotional development of the individual and the full and independent participation of the individual in his/her life. In this

context, therapeutic recreation adds meaning and purpose to people's lives. (WHOQOL, 1998; Dustin, 2000).

### **2.1. History and Development of Therapeutic Recreation**

Therapeutic recreation first emerged as a result of the work of American medical experts and found the opportunity of medical practice in Europe with the leadership of the Americans at the end of the 1700s and the beginning of the 1800s. The two important names who started these practices in Europe are the French Phillipe Pinel (1745-1826) and the English William Tuke (1732-1822) are known as the two names of the human treatment movement. The ideas and programs of these two pioneers, who worked completely independently of each other, were the same. Moreover, they both influenced the innovative names of that time, the British Psychiatrist Samuel Hitch and the founder of the American Psychiatric Clinic Benjamin Rush, and led to the emergence of therapeutic recreation (O'Morrow and Reynolds, 1985).

Another name who played a role in the development of therapeutic recreation is Florence Nightingale, a nurse who worked in a British hospital during the Crimean War between 1854-1856. In 1855, Nightingale established a cafeteria in the hospital that gave the opportunity to music, theater, various game activities and reading books in order to distract the soldiers from their worries and problems, and devoted a large part of his time to the development of recreation programs. Nightingale's idea of the therapeutic nature of recreational activities led to the importance and progress of therapeutic recreation in the United States during the First and Second World War (Austin and Crawford, 2001).

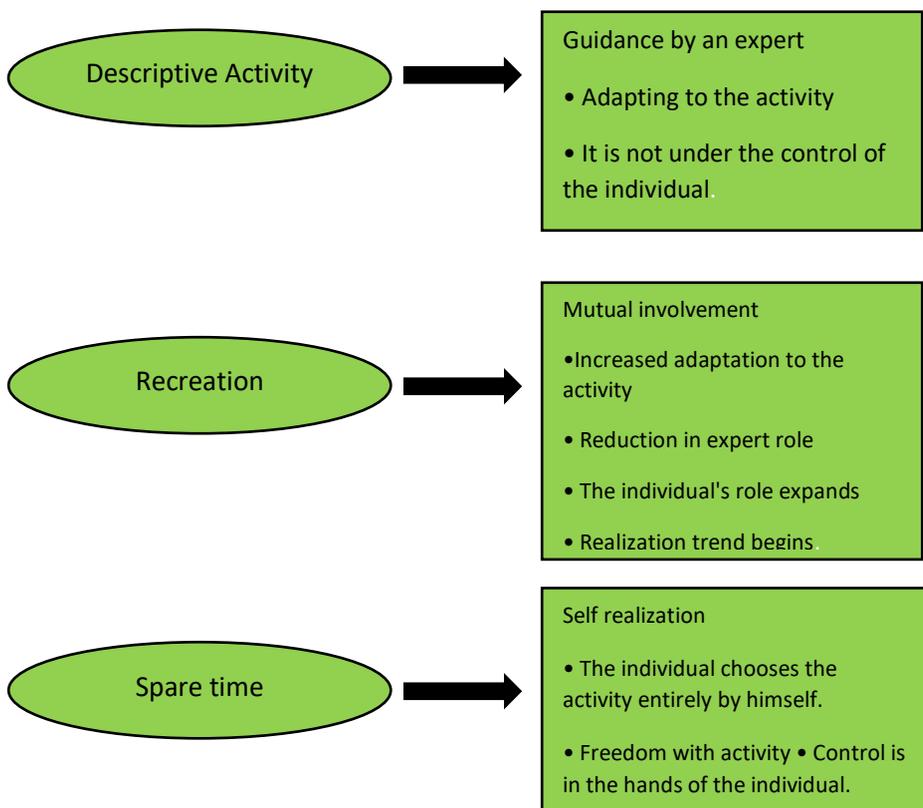
In Turkey, during the Ottoman period, Sultan II. The kulliyes, the foundations of which were laid by Bayezid in 1484, were completed and put into service in as little as four years. There is a consensus that the architect of the site is Architect Hayrettin. For centuries, medical students were trained in this complex, the patients were healed and the poor were fed. Its mosque became an important place of worship, candles illuminating Edirne were poured in its candle house and guests were hosted in its tabhanes.

Darüşşifa was one of the most important health centers of the period. Over time, the hospital started to serve the mentally ill, and the patients were treated with the sound of water, music, fragrances and various occupations, in

addition to the medical knowledge and medicines of the period (Robertson and Long, 2008). After the 1850s, it became a neglected institution where only mental patients were cared for.

The programs created there provided leisure-oriented community education to people with special needs. Influenced by this formation, recreational activities were used in the camps organized for children and veterans. When World War II ended, therapeutic recreation took an important path towards becoming a specialty and profession (Dieser et al, 2004).

### 3. CONTINUITY OF THERAPEUTIC RECREATION: THE HEALTH PROTECTION / HEALTH PROMOTION MODEL



**Figure 4:** Continuity of therapeutic recreation: the health protection / health promotion model (Austin ve Crawford, 2001)

### 3.1.Descriptive Activity/ Pre-Activity

When individuals are confronted with illness or special circumstances, withdrawal from their usual life activities, withdrawal and loss of control over their lives usually occur. For individuals with this condition, activity is a necessary prerequisite for restoring their health. Individuals need to be energetic and active in order to overcome feelings such as depression and helplessness and to establish control over their situations in order not to be disconnected from life and to be busy. The activity that can affect the individual's ability, skill and interest is important (Austin and Crawford, 2001).



**Figure 5:** Therapeutic Recreation (Url 3)

### 3.2. Recreation

It includes all activities that produce recreational results. Individuals can repair and recover themselves through recreation. It helps them regain their balance and search for power, as a means of adapting to life and sustaining it (Austin and Crawford, 2001).

### 3.3.Spare time

Leisure means self-actualization and being able to withstand difficulties through the experience of leisure. The multidimensional nature of the leisure experience includes a series of positive experiences against stress and displeasure. In the studies on this subject (Kelly et al., 1987), it is stated that

the leisure experience is a short-term experience and is a preparatory factor for the transition to long and permanent experiences.

In addition, it is stated that when individuals participate in this experience regularly, it will cause them to have fun, pleasure, enjoyment, freedom, naturalness, adventure, positive feedback, positive mood states and many positive experiences (Lee et al., 1984).

#### **4. USERS OF THERAPEUTIC RECREATION**

Therapeutic recreation includes individuals who are ill, disabled or under adverse conditions, who also face various problems in adolescence and old age, try to overcome them and try to adapt to normal life (Austin and Crawford, 2001).

Today, the World Health Organization (WHO) has supported the view that therapeutic recreation should be used to ensure efficiency and power of healthy individuals rather than helping the sick or disabled (WHO, 2001).

The basic understanding in individual empowerment is the processing of positive elements in a person's life, such as aspirations, value of existence, hopes, and interests. In addition, it is also used to reduce, remove and improve symptoms that are considered difficult for individuals such as fear of death, permanent illness, and addiction (Carruthers & Hood, 2007).

As a result, there are possible activities identified for each behavioral problem in therapeutic recreation. These activities are suitable for dependent, semi-dependent or independent individuals, and they are also applied to elderly people as well as patients who are continuous, chronic, recovering or in recovery period (Trowbridge, 1980).

The users of therapeutic recreation constitute a wide spectrum. In this context, it is possible to rank users as physically/mentally ill individuals, dependent individuals, pediatric (children, adolescents, young individuals), individuals in need of help, individuals trying to overcome their experiences as a result of extraordinary events, and the elderly. The physical/mental/physical patients user group includes patients with mental illnesses such as autism, down syndrome, alzheimer's and dementia, cancer, AIDS, acute or chronic diseases, and patients with physical disabilities as a result of accident or illness or from birth. Adolescent and young individuals, on the other hand, include individuals who try to cope with various syndromes such as failure, isolation from peer

groups, self-confidence problems, anorexia, bulimia, individual identity, and children who experience hyperactivity and attention deficit during adolescence and youth. The addicts group includes alcohol, drug, tobacco and eating addictions, but also includes internet and social media use addictions, which are frequently encountered today. Individuals in need of help consist of individuals who need the help of various institutions or individuals, such as the homeless and the poor.

Those who try to cope with life, on the other hand, include immigrants experiencing war, natural disasters, victims of violence, prisoners, early mothers and then individuals who have problems in adapting to life. It is possible to examine the elderly in three groups. In the first group, there are elderly people who are bedridden due to various diseases and need the care of other people. The fact that individuals who live a large part of their life in a healthy way and without needing anyone's need become bedridden due to any disease in old age requires the individual to face this situation and overcome it first. In addition, it is possible to be involved in various therapeutic activities in order to be healthy again during the period of being bedridden.

Secondly, there are the elderly who experience chronic or acute diseases in old age. These individuals, on the other hand, participate in activities in order to learn to accept these diseases and to pass the old age more smoothly and comfortably. Finally, it includes individuals who do not have any disease but have age-based emotional and psycho/social adjustment problems or have passed into a new life stage such as retirement.



**Figure 5:** The importance of Therapeutic Recreation (Url 4)

Therapeutic recreation includes the evaluations of the interests, needs and skills of individuals with special needs described above. Taking into account individual characteristics, it helps them to follow their development and reach the desired result. Therapeutic recreation contributes to the acquisition of both a purposeful intervention and a leisure time habit in a special evaluation for such individuals.

The aim is to provide the individual's leisure time participation as a result of leisure opportunities and experiences, to create a bond with the individual and to ensure its continuity. With the participation of leisure time, positive features such as positive emotions, competence, making choices and choices, and being free can be seen in the individual.

## **5- THEREPATIC RECREATION PROPOSAL IN THE CONTEXT OF THE CITY**

With this study, the importance of recreational activities and touristic trips realized within the scope of therapeutic recreation in public institutions and private institutions in cities was to reveal. In addition, it is to evaluate the elements that institutions consider while performing activities and finally to determine the role of landscape architecture in the realization of therapeutic recreation activities.

- The previously mentioned information can be summarized. The objectives of cities therapeutic recreation are as follows:
- Reducing depression and anxiety
- Increasing their self-confidence by adapting to society,
- reveal your talents,
- To get away from problems and monotony,
- Ensuring that destructive, wrong and bad behaviors are reduced by increasing positive emotions,
- To reveal the ability to take responsibility and lead,
- To increase the quality of life,
- Enriching the lives of people with disabilities,
- To ensure their physical, mental, sensory and social development,
- To give a sense of success through activities,
- Raise awareness,

- It is to create an environment for those who have difficulty in expressing their feelings and thoughts verbally, through movement and cultural activities (Başaran, 2016; Başarangil and Öztürk 2017).

As a result, therapeutic recreation, which has a special place in recreation, is carried out for special individuals such as the elderly, disabled, dependent, sick, and people in need of care, and thanks to therapeutic recreation activities, these special individuals both participate in recreational activities and receive treatment. It reveals the importance of the landscape architecture profession in various activities such as sports activities, artistic activities, activities such as theater, drama and dance, touristic trips, game and entertainment activities, social activities, outdoor activities among the therapeutic recreation activities. It is important to increase the concept and practices of therapeutic recreation and to emphasize its importance in urban life.

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# CHAPTER 10

## SUSTAINABLE ECOLOGICAL APPROACHES IN CITIES

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## **INTRODUCTION**

Cities have been struggling with the negativities caused by the unplanned and rapid urbanization that have occurred in the process since the day people settled down. In addition to these problems, cities are the most important problem of the 21st century, climate change caused by global warming. Climate change is a global environmental problem that negatively affects the sustainability of nature and that these negative effects are becoming more evident and felt. The effect of industrialization and the increase in greenhouse gas emissions as a result of activities carried out to meet the needs of population density are seen as the main cause of climate change in cities. However, the main cause of climate change in cities is the destruction of urban natural ecosystems and faulty land uses (Aksoy and Arslan, 2022). As a matter of fact, cities have grown unevenly due to urban sprawl as a result of the increasing migration from rural to urban to work in production centers with the development of industry. As a result, deforestation has increased in urban areas and natural resources such as fertile agricultural lands and wetlands have been damaged. In addition, the increasing carbon footprint due to transportation, commercial uses, increases in fossil fuel consumption, inaccuracies in land use, pollution caused by greenhouse gases into the atmosphere, causing climate change on a global scale, the gradual decrease of green areas in urban areas and the deterioration of natural areas are increasing day by day. It weakens the relationship between man and nature by making it difficult. This causes increasing ecological problems in cities (Korkut et al., 2017). The solution of these ecological problems is produced by scientists specializing in different fields. These solutions are not the return of the people living in the cities to the countryside or the narrowing of the borders of the cities. Instead, it has been proposed to protect the remaining areas in nature by making more rational use, and to plan ecological cities that can enable people to continue their lives in a healthy, peaceful and safe living environment. According to these emerging views; Cities spreading over large areas and the idea of urban planning that will continue in this direction need to be changed completely. In order to achieve this, the idea of planning and designing self-produced, self-sufficient, climate change-resistant open green spaces, making efforts to reduce the effects of climate change and adaptation, and creating cities "environmentally friendly" around which further spread is prevented has emerged. In this context,

ecological approaches in which the city, nature and production can be considered integrated in the design and planning of open and green spaces in urban areas and that will support sustainable design in these areas have started to gain importance. In this context, ecological planning methods, ecological approaches, the importance of ecological design in cities and ecological design models will be explained in this study.

## **1. ECOLOGICAL PLANNING METHOD**

After the concept of sustainability in urban areas gained importance, the necessity of environmentally sensitive ecological planning has emerged in the planning of urban areas. Therefore, ecological approaches in landscape designs to be made in urban areas have started to gain importance day by day around the world. In his study in “Balaban (2013); Today, with the effects of climate change being seen more and more, many countries have turned to climate-compatible and sustainable urban development projects and stated that they have started to work on "Ecological Approaches in Urban Landscape Design" their projects in this direction (Yedekçi Arslan, 2014).

The efforts to meet the needs of people while protecting limited natural resources and sensitive ecosystems form the basis of ecological planning. Ecological planning can be defined as an approach that aims to settle in harmony with nature, which defends the balance of using natural resources by preserving it, and for this purpose, solutions are produced for micro-scale plans under the guidance of an ecological-based (Özügül, 2004). In addition to the balance of nature protection and use, ecological planning includes environmental impact assessment studies, improvement studies and planning of open and green areas. In addition, within the scope of ecological planning, studies such as reducing the use of resources (reduce), reusing the structures (reuse) and recycling the used artificial products (Önder and Öztürk Kurtaslan, 2009).

Ecological planning methods can take two forms. The first of these is the method of planning residential areas. In this method, the emphasis is on improving the current situation and related improvement options. The second planning method is the planning method in areas where there is no settlement yet. Atabay and Özügül (2000), the stages of the second planning method;

1. Analysis of the current situation (natural resource inventories, thresholds and probabilities, calculations of suitability and carrying capacity, sensitive ecosystems are determined),

2. Priorities are determined (protection priorities and sensitivities related to the studied area).

3. Risk analyzes are made by making future forecasts.

4. Evaluation is done.

5. He stated that it is in the form of spatial planning and adopting a participatory understanding at every stage.

The ecological planning process developed by Steiner consists of 11 stages. This process;

1. Defining the problem,

2. Determining the aims and objectives in planning,

3. Identification of natural resources on a regional scale,

4. Determination of natural resources at local scale,

5. Evaluation studies,

6. Determining the options for the planning area,

7. Creation of ecological plan,

8. Ensuring public participation and social education,

9. Creation of spatial designs,

10. Implementation of plans and designs,

11. Feedback and management (Buchwald, 1974).

The most important point in ecological planning is to determine the ecological effects of space uses within the same space during the planning processes. The use combinations in landscape plans should be ecologically appropriate and should be made in accordance with the principles of sustainability, that is, the land uses should be designed in such a way that they do not harm each other or cause the least damage (Buchwald, 1974).

## **2. ECOLOGICAL APPROACHES**

Today, the use of land in urban areas is increasing, which increases the decrease in landscape types and fragmentation in natural areas. Landscape planners and landscape ecologists have agreed on the need to create an ecological framework for a sustainable landscape. The basic principle for this

framework is to create connections that will bring together the natural areas that are divided into parts in landscapes (Çulcuoğlu, 1997).

Open and green space systems, which are one of the subjects of ecological planning, are the links that unite the increasingly fragmented natural areas in the landscape. Open and green spaces are very important in creating more livable environments in cities. Since open and green areas play an important role in the formation and development of the urban macro form in these areas, they should be planned and managed in a systematic way.

In the construction of open green space systems in urban areas; factors such as the morphology of the city, the climate of the city, the topographic structure of the city, the type of urbanization in the region, the existing and planned open green space uses, the areas of influence of the green areas, the structure and development of the population (Demir et al, 2015) are very effective. These systems, which are known as "Green Belt", "Green Wedge", "Green Road", "Green Mesh", "Green Heart", constitute ecological approaches at the urban scale.

The functions of the open and green space systems to be created are listed as follows. ;

- Being a physical balance element by creating buffer zones between industrial areas and residential areas,
- Reducing air pollution and noise pollution,
- Creating a microclimatic effect,
- Creating living spaces in the city for flora and fauna,
- Meeting the spiritual and physical needs of the people,
- Ensuring the protection of natural resources and ecosystems,
- Reducing greenhouse gas emissions,
- Facilitating pedestrian and vehicle circulation,
- Offering a recreation area,
- Reducing the risk of flood and overflow,
- Carbon capture and storage.

## **2.1. Green belt**

It is defined as the continuity of open spaces surrounding residential areas. In the green belt, open spaces are connected to each other and stretch

from urban areas to rural areas. According to another definition; It is a piece of land located around or in the immediate vicinity of a city whose development is desired to be restricted. The most important ecological function of the green belt is to protect natural areas and create natural habitats for plants and animals (Çulcuoğlu, 1997).

In order for an area to be included in the green belt;

- Plants that are the last of their generation,
- Its features in terms of topographic structure,
- Lake or water source,
- Ecosystem feature,
- Wildlife feature,
- A site of historical importance,
- Buildings with historical value,
- It must have agricultural resources. The areas covered by the green belt

are protected by law, and activities such as picking fruit, hunting, fishing and cycling are prohibited (Çulcuoğlu, 1997).

### **Principles of green belt planning**

The main principles of green belt planning;

**1. Natural systems determine the shape and boundaries of the green belt:** Wetlands, meadows, hills and urban forests are the natural elements that determine the outer ring of the green belt (Ahern, 1995).

**2. Ecological/holistic planning approach:** Landscape elements in the green belt should be designed not alone, but together with other landscape elements as a whole and continuity, so that they can be perceived in the immediate environment.

**3. Establishing the continuity of open-green space from the city to the countryside:** First, the boundaries should be determined, then the green belt should be associated with the rural and urban environment by placing the uses. Since the green belt is a transition zone from urban to rural areas, it should reflect the human-nature relationship (Ahern, 1995).

**4. Must be sustainable:** Ecological sustainability is one of the main principles of the green belt. In addition, this ecological sustainability is integrated with social and economic sustainability. The most important element that will ensure the continuity of the green belt is the continuous support of the

people. In order to achieve this, meetings should be held with local governments and community organizations, where trainings are given to raise environmental awareness to the society (Önder and Öztürk Kurtaslan, 2009).

**5. Provide environmentally friendly access:** Since the aim is to protect nature, the transportation to the green belt areas and the transportation system within the green belt should be re-planned in an environmentally friendly manner. In the re-planning of transportation, attention should be paid to adapting to the terrain. There are radial and circular pedestrian and bicycle paths within the green belt (Ahern, 1995).

**6. It should be multidisciplinary:** When the green belt is designed, a fragmented settlement pattern will be created, including uses in the environment, recreation, housing, transportation, agriculture and parks in nature. Accordingly, the green belt should be defined with a synthesis that includes the perceptions and priorities of different disciplines and reaches the whole (Çulcuoglu, 1997).

**7. Protection zones should be determined:** Areas determined as protection areas should be taken under protection. Natural resources and the use of space should be handled by considering the protection-use balance (Çulcuoglu, 1997).

There are Green Belt projects that have been made in the world considering the planning principles and are still under construction. For example, in 2015, the Green Belt Project was prepared for the Hürriyet and Cumhuriyet neighborhoods as part of the Kartal Green Belt Project. Within the scope of the study, first of all, the existing structural infrastructure of Hürriyet and Cumhuriyet Neighborhoods was examined. Then, the problems in the study areas were determined and solutions were suggested for the problems. The most suitable topography has been determined to make a continuous green belt (Urban Strategy). The project area and the buildings around it were divided into different character zones according to their height, characteristics, building functions, neighborhood relations, investments planned to be made in the region and similar qualities and an area analysis was made. Different building typologies have been proposed for each of the project regions. U-shaped construction was proposed as an alternative in order to create a larger green area, integrating the fragmented and functional green areas in the region. In order to examine the climatic conditions of the area, 30 years of average climate

data were obtained from Kartal Meteorology Station (Urban Strategy). Mass settlements were constructed according to the data obtained. Following this, a green belt project was designed for the player, according to many researches and studies (Figure 1, Figure 2).



**Figure 1:** Kartal green belt project plan view (Kentsel Strateji)



**Figure 2:** Perspective view of Kartal green belt project (Kentsel Strateji)

Green belts created by considering planning principles offer many benefits. These;

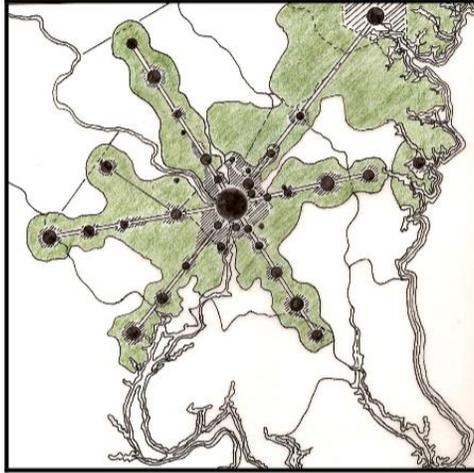
- Protects rural areas around urban areas.
- It enables people in the city to be intertwined with nature.
- Protects the natural areas in the city.
- It allows people to play and sport activities.
- It protects hydrological (water presence).
- Adds an aesthetic appearance.
- In areas where green belt is applied, the need for passive recreation such as watching the scenery, getting fresh air and sunbathing is eliminated.
- Since it reduces the wind speed, it ensures the regular distribution of snowfalls on the spaces (Ergiz, 1996).
- Green belts prevent noise pollution caused by vehicle traffic and industry.
- Prevents dust pests.
- Evergreen species used in green belts absorb harmful gases through interceptions that continue throughout the year (Ergiz, 1996).
- It hides unwanted images.
- It directs the urban development.
- It prevents erosion.
- Affects the urban climate positively.
- It reduces air pollution.
- It ensures the continuity of the protection of natural and culturally important areas.
- Allows scientific studies.
- Contributing to agricultural production.

## **2.2. Green wedge**

The idea of green wedge is a system opposite to the concept of green belt. In the green wedge system, the green areas should be formed towards the center of the residential area and radially distributed around the area from there. Green texture can be created in the presence of linear natural areas in the form of streams and valleys extending into the city.

It continues by narrowing towards the urban focus in rural areas. This system is a planning method in which the transportation rate is better than the green belt (Öztürk, 2004; Yeşil, 2006). Examples of this approach can be seen

in cities such as Washington, Copenhagen, and London. In the city of Washington, a corridor system was created by using valley and park roads. Thanks to this corridor, many Americans meet their recreational needs in this area (Figure 3) (Öztan, 1991).



**Figure 3:** Washington City radial corridor plan (Gökalp, 2006).

Green wedges are effective in limiting the development of the city. If there are no linear landscape elements such as valleys and rivers in the city, it is difficult to implement the green wedge system. In this system, which has better transportation facilities, it is very difficult to protect the green wedges openly and continuously. Helping to shape urban growth as it progresses, the green wedge system has the ability to bring open spaces closer to the entire population, mostly in larger cities. However, as long as they do not create opportunities for natural radial landscape planning and as it is a green belt, it is not a suitable planning system in practice because it is a planning that is difficult to protect.

### 2.3. Green Way

In the 19th century, Olmsted and Vaux's concept of parkways led to the formation of the "greenway" concept (Turner, 1998). Green Way; They are

linear corridors that connect natural corridors in the form of valleys or ridges along river lines, scenic roads converted for recreational use along the railway, canals or parks, cultural objects or historical settlements to each other and settlement areas (Arslan et al., 2004). According to another definition, green roads; they are open spaces that connect nature reserves, parks, historical sites and cultural elements (Flink and Searns, 1993). Forest areas, wildlife areas, ponds, orchards, scrub, bushes, agricultural areas, pastures, agricultural areas, parks, open-air museums, botanical gardens, flower gardens and fairgrounds in the city are included in the green road. Activities such as trekking, long walks, horseback riding, cycling, hunting, camping can be carried out along the green road route. Negative effects such as habitat fragmentation, noise pollution and air pollution can be reduced by green roads. Where there are green roads, they create positive effects on people's mental health by offering scenic beauty, green scenery and comfortable space.

Little (1995) defines greenways in 5 classes. These:

- **Urban riverside greenways:** Covers urban waterfronts, which were generally not given much attention before and are included in the improvement program.

- **Recreational greenways:** Canal, pathway, abandoned/unused railways, etc., which stand out with their natural features along a long canal. It covers different types of areas that continue along shaped corridors.

- **Ecologically interesting natural corridors:** These include natural corridors that generally continue along river and creek ridges, allowing scientific research, migration of wildlife and prevention of change in biodiversity, nature studies, hiking activities.

- **Scenic roads and historic roads:** Includes roads/areas that allow for pedestrian activities (seeing points of interest and walking) often created along a highway.

- **Comprehensive green road systems:** These are systems based on natural land forms in the form of valleys and ridges. In this system, new options are offered by bringing different open spaces together and associating them with green roads with various uses at urban or regional scale and green road systems associated with open spaces (Arslan, 1996).

#### **Functions of greenways;**

The functions of the green roads are as follows;

- It acts as a buffer between conflicting land uses.
- Contributes to the conservation and development of biological species diversity.
- They ensure the protection and re-creation of natural habitats.
- They create connections between living spaces.
- They are effective in protecting water resources including watersheds, wetlands and stream corridors.
- Developing recreational opportunities based on natural resources in linear corridors in the landscape in rural and urban areas (Çulcuoğlu, 1997).
- Ensuring that historical and cultural resources that have formed a strong association with the landscape are preserved and associated with each other,
- It provides control of urban development.
- The most important ecological function of green roads is to ensure the existence and integrity of the ecosystem by providing a habitat for plants and animals.
- They promote tourism.
- Green roads increase the value of the lands around them.
- They are comfort corridors that provide access to the green belt and green wedges (Turner, 1998).

#### **2.4. Green network (green formal / green web)**

II of the 20th century the most convenient approach for the unification of open spaces in the half of the year was the green formal system. The green formal model includes completely grid-formed cities. It is based on the idea of giving form to the city in all kinds of patterns with green stripes. In this system, open spaces can be divided into walking tracks, bridges, valleys, aqueducts, etc. with each other they are designed in connection with other "green roads" (Turner, 1998; Öztürk, 2004). The green mesh system formed by the green roads should consist of areas where individuals can move freely, be away from negative effects such as noise and air pollution and have fun. As long as the traffic flow is safe, streets can also take their place in the green mesh system (Turner, 1998). The green formal city is a system formed by the merging of all open spaces in the city. Therefore, it is a difficult system to implement when the entire city is taken into account. Due to the difficulty of its implementation,

its examples are very rare. The green formal system was implemented in Telford City in England. In this example, which was applied, the idea of "forest city" was adopted as a principle; a landscaping framework has been created that allows recreational activities in most of the open areas, is positive in terms of aesthetics and has the functions of protecting natural areas. In the green formal system surrounded by rural areas, wildlife and biological species diversity were supported (Box et al., 2001). Figure 4 shows the graphic representation of the green formal system proposed by Lynch (1981).



**Figure 4.** Green network system (Lynch 1981)

### 2.5. Green heart

The green heart system is a system that connects urban areas on a regional scale (Kühn 2003; Öztürk, 2004). When the green heart is considered on the scale of the city, the idea of creating a large open space in the center of the city will occur. An example of the green heart system is Central Park designed by F. Law Olmsted in the New York metropolitan area (Kühn 2003). In addition, the green heart system is a multi-centre planning approach (Randstadt Model) that connects the Dutch cities of The Hague, Rotterdam and Utrecht (Öztürk, 2004).

## 3. CONCLUSION and RECOMMENDATIONS

Due to reasons such as uncontrolled population growth, migration from rural to urban and rapid industrialization; cities has turned into areas where environmental pollution, energy consumption and resource use are experienced

the most. Climate change, which has started to show its effects more recently, negatively affects the structure, productivity, composition and geographical distribution of most ecosystems, especially in cities. This situation has revealed the necessity of various applications to be made with ecology-oriented approaches in urban areas. Urban development planned on an ecological basis aims to improve the quality of life and protect the environment for present and future generations. Therefore, it is important to implement ecological approaches in urban planning studies.

So, what should be considered in the planning made by considering ecological approaches?

- If ecological-based planning is to be carried out in an area with an existing urban settlement, the problem of the area is determined, the situation is rehabilitated, and the ways of recycling are investigated.

- The aim of ecologically based planning is to ensure sustainability. Therefore, first of all, the functions of existing ecosystems should be determined. Then, their relations and continuity with each other should be ensured, and priority uses should be determined.

- Landscape plans determine the natural potential of the place and evaluate its suitability for land use. In addition, the effects of external influences and socio-economic and cultural characteristics on natural factors are examined (Mansuroğlu et al. 2012). In this context; The topography of the land should be analyzed in advance and the infrastructure and superstructure problems arising from the land should be reduced. The geological structure, soil capability and fertile soils in the construction areas should be evaluated by moving them to green areas. In addition, the vegetation in the area should be developed and used in planning, and plant species specific to the area should be investigated. Climatic parameters such as sunshine duration, wind directions, and temperature should be used in ecological planning, urban design, architecture in an efficient and energy-saving way (Atıl et al., 2005).

- Landscape architecture is a profession that is against the degradation of ecosystems. In this respect, when green and green are considered as the art of science, landscape architects and other professional groups should work together while designing open green spaces. When not working together; it is impossible for correct, ecological, future-oriented and sustainable planning studies to emerge (Gökalp and Yazgan, 2013).

- Attention should be paid to the protection of ecological, cultural, historical and natural landscapes.
- Concrete appearance should be avoided as much as possible in urban area planning, and the amount of open and green areas should be increased.

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# CHAPTER 11

## KEPEZ WITH ITS CHANGING AND DEVELOPING CITY STRUCTURE: ÇANAKKALE

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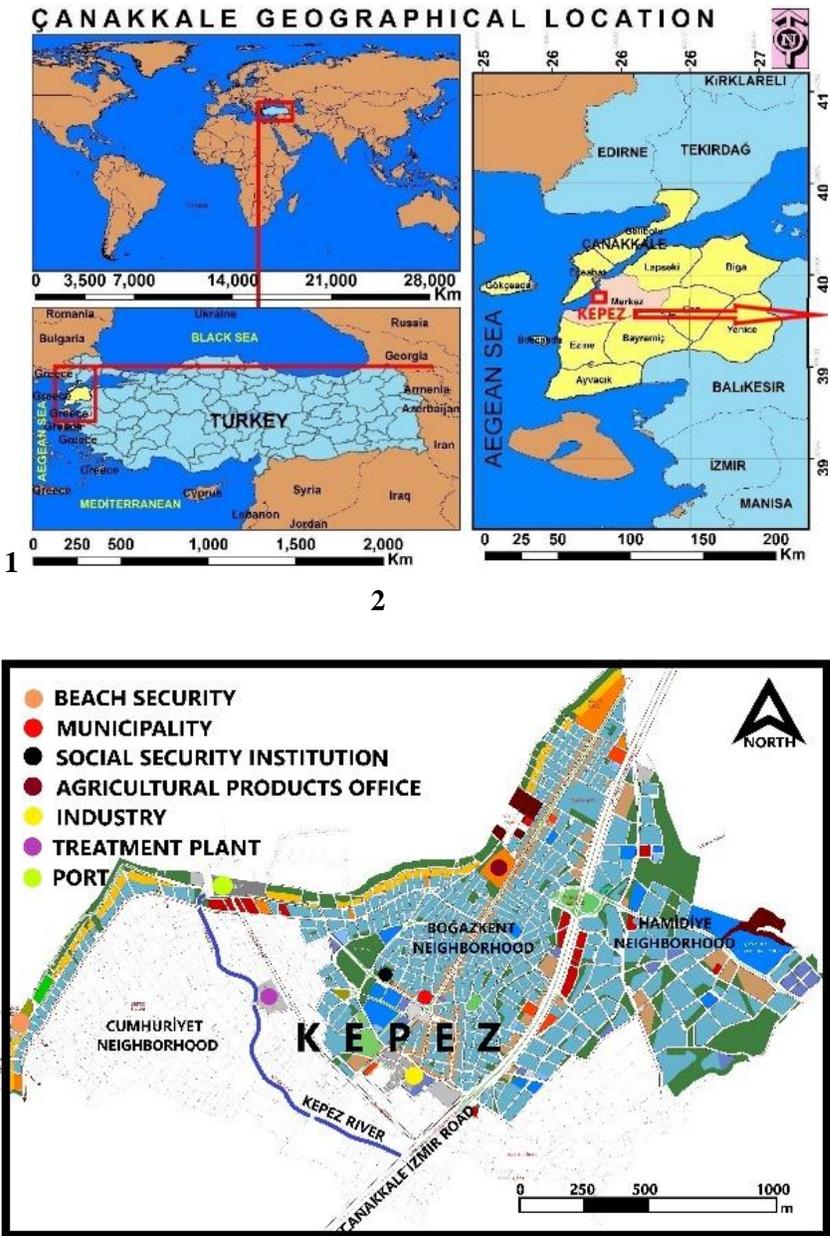
## INTRODUCTION

Open and green spaces have an important share and importance in the urban fabric (Olad Ghaffari and Monavari (2013). The absence of an academic study for Kepez Town, which has witnessed significant urban development in recent years within the scope of social open and green areas, makes this study important. For an urban area, it is indispensable for open and green areas to have sufficient quantity and quality in social, economic and physical terms (Günaydın and Altunkasa, 2022). In particular, these variables, which are the determinants of sustainable urban life quality, have an important place in the perception of urban residents (Lin, 2022). In the definition of quality urban life (prosperity / prosperity) in terms of urban residents, emphasis is placed on the quantity, quality and accessibility variables of open and green spaces that dominate the urban texture. Within the scope of the definition of the term quantity; The area covered by open and green areas, a sufficient amount of landscape reinforcement elements and accessibility distances stand out. Within the scope of quality, it is possible to evaluate the reinforcements that are more in the concept within the scope of quality. In the accessibility criterion, the distance of the users to the open and green area is taken into consideration. Within the scope of all these variables, the social open and green areas (children's playground, park, botanical park, zoo, promenade, recreation) of the Spatial Plans Construction Regulation are determined as 10 m<sup>2</sup> per person in urban settlements (URL 2). This situation has been determined as approximately 20 m<sup>2</sup> per person based on the city of Kepez, the 2021 census (town population for 2021: 34,350) and the amount of open and green space obtained from the Municipality of Kepez in line with the current planning (658,059 m<sup>2</sup> of active and passive open and green space for the year 2022) (TUIK, 2021). According to the park and garden potential made in the recent period from this indicator, the distance traveled by the town in positive urban development is remarkable. The fact that the amount of green space per person in the study was determined as approximately 20 m<sup>2</sup> resulted in approximately 2 times the legal standard. This indicates that the city has made significant strides in rational planning. The fact that the city, which has set out with the slogan of free kepez, follows people-first strategies in terms of political approaches emphasizes social, economic and ecological landscape planning for the city (Kelkit, 2002; 2003). The fact that the number of studies that reveal the

change and development of the town in terms of landscape design and planning and focused on the contributions it provides to the residents of the city is insufficient reveals the importance of this study due to its concept. Therefore, the hypothesis of the study is "Does Kepez have a healthy urban structure with its urban social open and green areas?" The fact that the size of the existing open and green space is above the above-mentioned standard when compared to the central population of the city confirms the hypothesis. In the study, two ways of accessing the data were adopted, first of all, the visuals of the parks and gardens made in the recent period within the scope of the town were reached and comments were made. In the second stage, a survey was applied to 100 random participants in the parks and satisfaction-based perceptions were reached. The data were evaluated by regression analysis in SPSS 15.0 program; perception parameters and criteria were associated. According to the results, suggestions were included for the physical and social development of the region.

### **1-MATERIAL AND METHOD**

The study was carried out in Kepez Town of Çanakkale province. For this, the necessary map of the Kepez urban area has been reached (URL 1). The localization map of the working area (Figure1/a) was obtained within the scope of ArcGIS 10.3 software. Kepez Town is located at the intersection of the Meridian 40° 5'51.02"North Latitude and 26°23'39.78"East Meridian according to its position in the world geography.



**Figure 1:** Study area geolocation map, (The second map is obtained by modifying URL 1.)

The study was carried out in two stages. In the first stage, the parks planned within the scope of 3 neighborhoods in Kepez Town and built recently

were photographed depending on the observation and examination and also evaluated within the scope of the facilities. Study 2. During the phase, a survey was conducted by randomly coming face to face with 100 individuals from the park users. Linear regression was applied in SPSS 15.0 software to the applied survey data. In the survey application, functionality, aesthetic, structural facilities, herbal facilities, lighting, boundary elements, continuity, usability, quality, ecological criteria were evaluated. For this, Likert's (1932-1933) scale of 5 stages (1: Very important, 2: Important, 3: Less important, 4: Insignificant, 5: Very insignificant) was used. According to the importance level indexed data provided within the scope of this scale, the expectations of the users were determined as percentages. For example, if the importance level is close to 1 and 1, an expectation rate of 100% can be mentioned. Expectation rate or satisfaction is the "dependent variable" in regression analysis; The evaluated criteria were also considered as "independent variables". The results of the analysis can be accessed from the findings section. However, the sample in which the survey application was provided (100 participants were determined for the study and the following formula of Kalıpsız, (1981) was used.) According to this formula, the number of 73 detected was increased to 100 samples to increase reliability or to keep the margin of error to a minimum (Eq.1).

$$n = \frac{Z^2 NPQ}{ND^2 + Z^2 PQ} = \frac{(1.96)^2 \times 34,350 \times 0.95 \times 0.05}{34,350 \times (0.05)^2 + (1.96)^2 \times 0.95 \times 0.05} = 73$$

(Eq. 1)

Formula symbols/unknowns:

"n = Sample size (73),

Z=Trust coefficient (1.96),

P = The probability that the property to be measured exists in mass (95%),

N = Main mass/universe size (Çanakkale Kepez Town 2021 census/34,350),

D = 5% margin of error of the study" (Kalıpsız, 1981). In the calculation, 95% confidence interval and the population of Kepez Town for 2021 (34,350/TUIK, 2021) were used. Users are visitors to the park between the ages of 20-50. Finally, demographic data for users were tried to be explained with graphs.

## 2- RESULTS

Kepez Town consists of 3 neighborhoods: Cumhuriyet, Boğazkent and Hamidiye. Cumhuriyet and Boğazkent Neighborhoods are relatively old historically; Hamidiye Neighborhood, on the other hand, stands out with its planned urban development in recent years. It is noteworthy that the congested houses and related landscaping areas in Cumhuriyet and Boğazkent Neighborhoods are not of sufficient number and quality. Hamidiye Neighborhood is a relatively more planned and developing settlement. Within the scope of the study area, in the first stage, which was carried out depending on the observation, examination and evaluation, the park and garden structures within the borders of Kepez Town were tried to be photographed and interpreted. The photographic visuals and comments obtained at this stage of the study are mentioned below. The area, which is located in the western direction of Boğazkent Neighborhood and named as Tea Garden, is a structure that is open to children's playground, sitting, recreation and social activities for various purposes and forms an integrity with walking paths (Figure 2).



**Figure 2a;2b:** Kepez Town Public Garden, located in the west direction of Boğazkent Neighborhood

An important dimension that makes the Public Garden stand out is that it has a structural formation that allows for different social activities. This structure, in addition to being the place where local products related to

production are exhibited and traded, also stands out with its openness to activities such as kermes on the axis of cooperation (Figure 3).



**Figure 3a; 3b.** Boğazkent Neighborhood, a different view from the Public Garden

The People's Municipality, which is located in the southern part of the town, differs with its facilities such as music recital/feast, exhibition, presentation and signing day depending on its design and planning. This original structure, which stands out with its structural and vegetative landscape design, attracts attention with its being a model building that brings a difference to the town (Figure 4).



**Figure 4a; 4b:** Cumhuriyet Neighborhood, People's Municipality social area

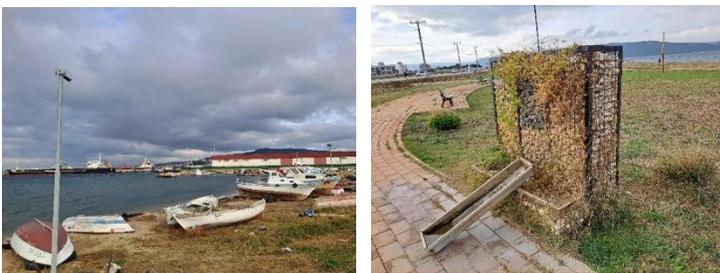
Kepez Park is located in the southern direction of the resort and is also located in the North of Kepez Public Beach. It has been observed that it is insufficient in the scope of herbal and structural reinforcements. The walking paths have a structure that attracts attention with its predominantly olive plant.

It is also prominent that the park, which includes a basketball court and a children's playground, is weak in terms of maintenance and repair. The current situation in the grass area facility with neglected and insufficient garbage cans cannot adequately meet expectations. In terms of lighting elements and security, camera equipment was also not found to be sufficient (Figure 5).



**Figure 5a; 5b:** Kepez Park, located in the southern view of Cumhuriyet Neighborhood

In Figure 6/2, the image describing the current situation of the fountain structure on the Gabion basket base taken from Kepez Park and supported by ornamental stones points to the inadequacy of maintenance and repair. It is also noteworthy that the camera equipment in Figure 6/a is not included in a common design and planning throughout the park.



**Figure 6a; 6b:** Cumhuriyet Neighborhood, a different view from Kepez Park

Omer Yanar Park is among the recently built parks in Kepez Town. In the park concept, the town service building is also included. The park, which attracts attention with its seating groups, walking paths and pergolas, attracts attention with its lack of relatively herbal facilities (Figure 7).



**Figure 7a; 7b:** A view from Hamidiye Neighborhood Ömer Yanar Park

In the second stage, statistical analysis was applied to the data determined as a result of the survey applied by focusing on user perceptions within the scope of functionality, aesthetic, structural facilities, herbal facilities, lighting, boundary elements, continuity, usability, quality, ecological criteria and the results obtained were mentioned below. The Adjusted R2 value should be taken into account because the study focused on multiple regression. This value is calculated as 0.726. This means that independent variables (functionality, aesthetic, structural facilities, herbal facilities, lighting, boundary elements, continuity, usability, quality, ecological criteria) can explain about 73% of the change in the dependent variable (expectation or satisfaction rate). This value is above average and satisfactory. Meanwhile, the Durbin Watson statistic was calculated at 2,139. The fact that this value is approximately 2 is an indication of the assumption that there is no serial correlation or that they are not interconnected over time (Table 1).

**Table 1:** Regression analysis "model summary" applied to survey data

Model Summary <sup>b</sup>										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.868 <sup>a</sup>	.754	.726	3.00923	.754	27.266	10	89	.000	2.139

a. Predictors: (Constant), Ecological, Functionality, Structural\_facilities, Quality, Boundary\_element, Lighting, Aesthetics, Herbal\_facilities, Continuity, Usability

b. Dependent Variable: Expectation\_percentage

According to the Anova test, since the significant level was P=0.000, it was seen that there was a significant interaction between user expectation or

satisfaction and evaluation criteria. This made statistical analysis important for the study (Table 2).

**Table 2:** Linear regression analysis "Anova test"

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2469.066	10	246.907	27.266	.000 <sup>a</sup>
	Residual	805.934	89	9.055		
	Total	3275.000	99			

- a. Predictors: (Constant), Ecological, Fuctionality, Structural\_facilities, Quality, Boundary\_element, Lighting, Aesthetics, Herbal\_facilities, Continuity, Usability
- b. Dependent Variable: Expectation\_percentage

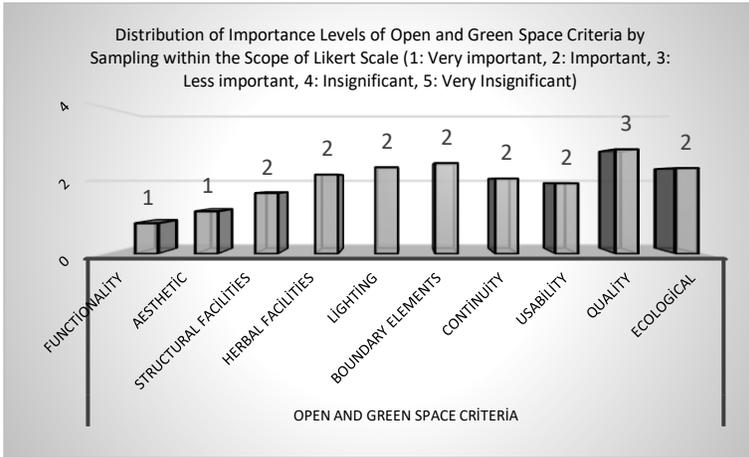
The coefficient and significance values of the regression model are given in Table 3. The coefficient of the fixed term was calculated as 123.603, and the p value was observed as 0.000. In this case, the fixed term makes sense. The regression model coefficients of the independent variables were calculated negatively. However, the significance of the T test result was calculated as less than 0.01. Therefore, 1% was found to be significant in terms of significance. However, as can be seen, an inversely proportional relationship between the independent variables and the satisfaction rate can be mentioned. Because the regression model coefficients were negative. Collinearity statistics (VIF values) are below 3, which means that there is no relationship between the independent variables and that all variables are required for the model.

**Table 3:** Linear regression analysis "coefficients"

Coefficients <sup>a</sup>										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	123.603	3.393		36.430	.000	116.861	130.344		
	Fuctionality	-1.320	.273	-.275	-4.833	.000	-1.863	-.777	.856	1.168
	Aesthetics	-1.054	.259	-.233	-4.072	.000	-1.569	-.540	.844	1.185
	Structural_facilities	-1.148	.175	-.354	-6.548	.000	-1.496	-.799	.945	1.059
	Herbal_facilities	-.807	.133	-.342	-6.078	.000	-1.071	-.543	.875	1.142
	Lighting	-.710	.249	-.169	-2.845	.006	-1.205	-.214	.786	1.273
	Boundary_element	-.982	.123	-.433	-7.965	.000	-1.227	-.737	.936	1.069
	Continuity	-.876	.244	-.203	-3.597	.001	-1.360	-.392	.865	1.156
	Usability	-1.355	.218	-.371	-6.231	.000	-1.788	-.923	.778	1.286
	Quality	-.901	.217	-.242	-4.160	.000	-1.332	-.471	.817	1.224
	Ecological	-1.037	.159	-.353	-6.540	.000	-1.352	-.722	.949	1.054

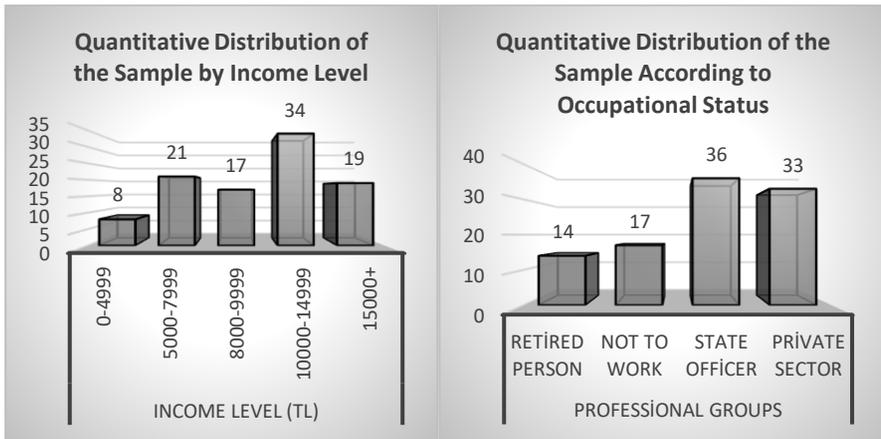
a. Dependent Variable: Expectation\_percentage

According to the data obtained from the survey, which is the second stage of the study, when the importance levels of the variables evaluated by the users are examined, it is observed that functionality and aesthetics are evaluated as 1st degree, that is, very important. Structural and vegetative elements, lighting, boundary elements, usefulness and continuity variables were considered as 2nd degree important (Figure 8).



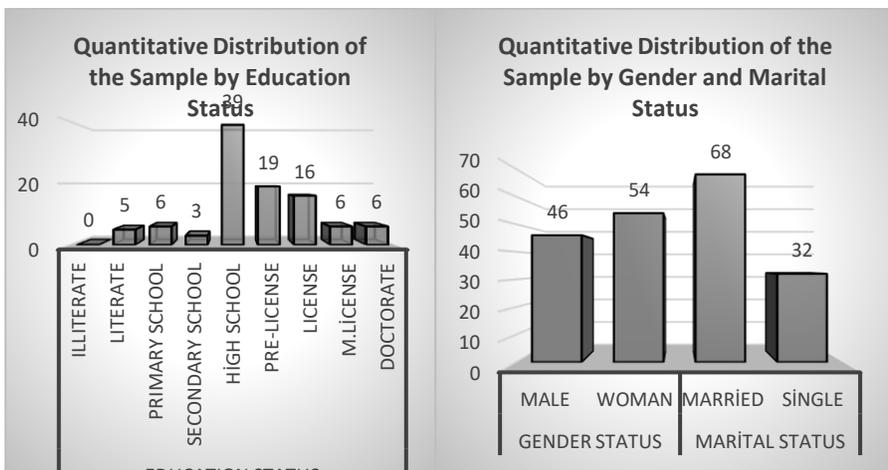
**Figure 8:** Results of the evaluation of open and green areas according to the Likert scale

According to Figure 10/a, in the income level distribution of the open and green area users surveyed, the weighted number consisted of individuals with an income level between 10,000-14,999 TL with 34 users. According to Figure 10/b, when the occupational groups of the users are taken into consideration, it is observed that the individuals in the role of government employees are the most in the sample, and the individuals in the user role following this are private sector employees.



**Figure 10a; 10b:** Occupational groups belonging to the surveyed sampling and income levels

In the sample potential where the survey application was carried out, it was observed that the education status was High School-weighted. This was followed by associate degree and undergraduate users (Figure 11/a). According to Figure 11/b, 68% of the users surveyed were married and 32% were single. Apart from this, when the gender status of the users is examined from the same graph, it is seen that 46% male and 54% female users stand out.



**Figure 11a; 11b:** Educational, gender and marital status of the surveyed sample

### 3. CONCLUSIONS AND DISCUSSION

The contribution of open and green spaces to the urban texture in the identity of parks and gardens cannot be denied. Parks and gardens are indispensable for the residents of the city as well as the physical structure of the city in the focus of quality of life. In this study, which aims to evaluate some parks and gardens within the borders of Çanakkale, Kepez Town from the point of view of city residents, Kepez Park, Public Garden, People's Municipality and Ömer Yanar Park were evaluated based on observation and user satisfaction. The statistical analysis and literature-based results of the data obtained by the survey applied to the users are mentioned below. Liao and Li (2022), The study, which aims to increase the total efficiency of urban green areas with innovative approaches and to include its environmental effects, has attracted attention with its proximity to this study in the dimension of developing open and green areas. Nahar, et al. (2022) investigated the impact of environmental issues on environmental quality in terms of sustainability in their study in Dhaka, Bangladesh. The aspect of the study that coincides with this study is that it focuses on the perceptions and attitudes of the users within the scope of open and green space. However, it also coincides with the determination of the demographic characteristics of the users and their environmental awareness. This study focused on 100 survey participants, while Nahar et al.'s (2022) study focused on the perceptions of 400 participants. According to the results obtained from the survey, in the Nahar et al. (2022) study, it was also stated that the participants exhibited a sensitive attitude to the prevention of pollution by emphasizing the importance of pollution in environmental sustainability. In both studies, which touch on the importance of the role of citizens in environmental sustainability, it is foreseen that the findings will make a positive contribution to the decision-making processes in urban environmental developments. Jorge-Ortiz, Braulio-Gonzalo, Bovea and Rua (2022), Mesa Garcia (2021), Martinez Vitor (2019), Martinez, Toro and Leon (2019), Braulio-Gonzalo, Bovea and Rua (2015) focus on general approaches to the evaluation of environmental sustainability in Latin America. As a result, a 5-stage methodology has been introduced. It was emphasized that it would be possible to optimize different urban areas by comparing them with the strategy that became evident in the form of correction in sustainability programs, grouping indicators, defining metrics, scoring and graphing. It has been noted

that there is a similar aspect to this study in terms of the optimization of urban areas. Hosseini et al. (2022), unlike this study, has revealed a specific determination by investigating the development of different regions of the city of Tehran within the scope of air pollution. Accordingly, it was concluded that the northern region of the city of Tehran is the most developed, while the Southern document is the least developed. Olad Ghaffari and Monavari (2013), In the study conducted in Tabriz, Iran, it is pointed out that the ratio of the area allocated for landscaping has decreased in favor of the construction sector due to the intensity of construction activities and this situation continues to increase. In this study, it was emphasized that the areas reserved for structural settlements and landscaping within the scope of Boğazkent and Cumhuriyet Neighborhood of Kepez Town were disproportionately developed against the landscape.

In line with the findings of the study, the recommendations developed for open and green areas are given below.

- It is extremely important to take plan decisions for the future in order to increase the ratio of open and green space in the urban texture (Alkan, 2020).
- In the taking of plan decisions, it is necessary to exhibit multifaceted approaches with the participation of stakeholders such as city residents, local and administrative administrations, Non-Governmental Organizations (Nop, Thornton and Tranter, 2022).
- Open and green spaces should have sufficient concepts in terms of quantity and quality. For this, specific and original evaluations should be taken into consideration in the studies to be carried out. In other words, within the scope of the "analytical hierarchical process" based on user perceptions, evaluations should focus on sustainable open and green space design and planning (Saaty, 1994).
- Maintenance and repair activities of the reinforcements in parks and gardens should be carried out within the program. Expired or obsolete reinforcements should be replaced with substitute products.
- In line with the planning, landscape building elements that are determined as insufficient or incomplete should be supplied.
- In particular, in order to prevent negative social incidents such as vandalism and child abuse, maximum attention should be paid to the security element in the planning of open and green areas.

- In order for recreational activities in open and green areas to be sustainable after dark, it should be more sensitive to include the adequacy and quality of lighting elements in the design and planning concept (Alkan, 2022).

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# CHAPTER 12

## RECYCLING PARKS IN CREATING ENVIRONMENTAL AWARENESS: AN EXAMPLE RECYCLING PARK DESIGN IN KULU DISTRICT OF KONYA PROVINCE

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## INTRODUCTION

Problems such as rapid population growth, urbanization, environmental pollution, decrease in natural resources and global warming are seen worldwide. In order to combat such problems, countries become members of social organizations and warn their citizens by issuing legislation, regulations, laws, etc. In order to fully understand the problems and take measures, we must first get to know the environment we live in.

Environment: Living things are connected by biological ties and are affected by certain activities (Guney, 2013; Dogru, 2020) is the system that can renew itself, albeit limited (Demir & Yalcin, 2014; Aktas, 2021). Most of the problems are caused by environmental pollution.

Environmental pollution: It is a set of ecological damages that disrupt the balance of nature by humans (TURCEK, 2007; Yirik, 2020). According to another definition, the waste materials that are produced as a result of meeting the needs and wishes of people are air, water, negatively affecting natural elements such as soil is called environmental pollution (Karaman, 2006; Bas, 2020).

The first meeting held on behalf of the environment in the world is the “United Nations Conference on the Human Environment (UNCHE)” held in Stockholm, Sweden on 5-16 June 1972 (Bartu, 2020).

In Turkey, the environment was first mentioned in the “Third Five-Year Development Plan” planned for the years 1973-1977. In 1983, “Environmental Law” was published (Yirik, 2020).

Environmental conferences, meetings, published regulations, development plans and the like have also included the harm caused by waste to the environment. According to the data of the website “The World Counts”, 2,12 billion tons of waste is generated every year in the world. These wastes are large enough to circumnavigate the world 24 times (Anonymus<sup>3</sup>, 2022). This increase in wastes due to the increase in production has removed the problem of waste from being an agenda item. Solutions for waste causing serious problems have been produced, methods of struggle have been researched, and waste management plans have begun to be published.

Recycling activities, which have made a great contribution to the protection of natural resources and the development of the country’s economy, started in the world after World War II. In return for the deposit, the public was

asked to collect wastes such as glass, metal and paper. In our country, it started after the Environmental Law was published. Regulations on the collection and management of wastes have been published, packaging waste collection-separation facilities and recycling facilities have been established.

The Ministry of Environment, Urbanization and Climate Change published the “Zero Waste Regulation” in 2019. With the publication of this regulation; municipalities, public institutions and organizations, organized industrial zones, airports, shopping malls, educational institutions and dormitories, hotels, etc. organizations have to establish and implement the zero waste management system (Official Gazette-Zero Waste Regulation, 2019).

According to the general principles of the regulation, it is essential to ensure the participation of the public in the implementation of the zero waste management system, to raise awareness and awareness for its effective implementation, and to encourage and support environmentally friendly attitudes, behaviors and activities (Official Gazette-Zero Waste Regulation, 2019).

The landscape architecture profession is also doing its part in this regard. Landscape architecture, whose priority is the protection of nature, aims to beautify the existing rather than a new formation. Urban, rural, agricultural, forest, industry, etc. It makes forward-looking plans in landscape studies of areas, carries out maintenance-repair works to eliminate the destruction of nature, designs where all living things can live together in order to maintain the ecological balance, and works with other professional groups in solving environmental problems. It realizes recycling park designs, where natural resources are used effectively, recyclable waste materials are evaluated, and which sets an example for sustainable park designs. The subject of this study is recycling park designs.

**Recycling park:** In which animate and inanimate materials are used by the designer in accordance with landscape design elements, principles and criteria, where inanimate materials are produced from recyclable materials (glass, plastic, wood, etc.), low-budget parks designed to create environmental awareness.

Recycling parks; people get to know the environment, creating environmental awareness and drawing attention to environmental awareness, meeting recreational needs, evaluation of an inactive area, it has emerged for

reasons such as meeting the need for a children's playground. Examples of recycling parks are mostly low-income in the world, seen in developing countries. In our country, after the Zero Waste Regulation was published, it started to be designed to draw attention to waste.

In this study, which is one of the recycling activities, an exemplary recycling park design was made by using recyclable waste materials. In this context; sustainability and sustainable development, the concept of waste, waste management, Zero Waste Regulation, reuse, recycling and recovery, information obtained from resource researches on issues such as recycling in the world and in Turkey is included.

In order to help the design and to better understand the study, information was given about the definition of recycling park, landscape design elements, principles, criteria and processes, and examples of recycling parks in the world and in Turkey were presented.

As the study area, Ummu Gulsum Park with a size of 970 m<sup>2</sup> located on 83 islands and 11 parcels in Kemaliye Neighborhood of Kulu district of Konya province was selected. A recycling park was designed in Kemaliye Neighborhood in order to have no children's playgrounds and to re-evaluate the idle park.

Qualitative data collection method was used in the study. The zoning plan and technical data of the working area were obtained from Kulu Municipality. By searching the literature and internet resources about the field, the district where the study area is located; geographical location, climatic data, vegetation and population data were obtained.

In the light of the data obtained, the recycling park design process has been started. Design process; environmental analysis, program development chart, function diagram, circulation pafta, concept pafta, preliminary project, application pafta, plantation project, section-appearance pafta, detail pafta and 3D visualization pafta were completed in 11 stages and 5 stages were presented.

In the conclusion section of the research, the benefits of the study to the environment are mentioned.

With this study, it was aimed to create a whole by investigating the recycling park projects implemented in the world and in Turkey. This project was chosen in order to act more consciously for the citizens living in Kulu district, which has fairly arid soils, limited natural resources, constantly

developing, growing and migrating, since there is no example in the province of Konya.

The aim of the study is to create a resource for academic studies on waste and recycling and to set an example for recycling parks that are not widespread enough.

## **1. RESOURCE RESEARCH**

**Sustainability:** The preservation of any being in nature without undergoing changes is called sustainability (Bozlagan, 2002; Dogan, 2020). If a product is sustainable, it must be reusable, reproducible and recyclable (Cakar, 2020).

**Sustainable development:** It is the conscious use of the natural resources necessary for human life so that the next generations do not feel their deficiency (Bhat, 2017; Bartu, 2020).

**Sustainability;** environmental sustainability, economic sustainability, social sustainability etc. includes concepts (Hart, 1999; Birsen, 2020). In environmental sustainability; it is essential to ensure the use of self-renewable resources in nature, to reduce the use of non-renewable resources, and to obtain raw materials from renewable natural resources while creating products (Guner, 2020; Birsen, 2020). In economic sustainability; it is important to ensure the continuity of industrial and agricultural services. In social sustainability; it is desired to provide services such as health and education to all people equally and to ensure justice (Dogan, 2020). In this respect, sustainability is used in waste management.

**Waste:** Products that have met the needs of products used by people, have completed their life or have lost their value for the owner are called waste (Kılınc, 2014; Dogan, 2020).

Wastes are generally divided into solid, liquid, gas and packaging wastes (Aktas, 2021). According to Ozkaya (2020), wastes are divided into 8 groups. These; domestic waste, industrial waste, electronic waste, hazardous waste, construction waste, medical waste, agricultural waste, and universal waste (Vaughn, 2009; Ozkaya, 2020). In the Waste Management Regulation, these groups are classified into 20 groups by giving details (Waste Management Regulation, 2015; Gungordu, 2021).

**Waste management:** The process of controlling the processes from waste generation to disposal (such as waste separation, reuse, recycling, recovery) and creating reports is called waste management (Kekec, 2020).

The main purpose of waste management is; to minimize the waste generation, to ensure that it is separated on site, to ensure that the wastes are regularly transported to zero waste facilities and subjected to the necessary processes. With waste management, contributing to the country's economy, preventing the unconscious consumption of natural resources and meeting the need for raw materials are among its other objectives (Eskin, 2020).

Waste management in the world was first discussed as an environmental problem with the title of "Development Excluding Environment" at the United Nations Conference on Human Environment (Stockholm Conference) held in Sweden-Stockholm on 5-16 June 1972 (Keles & Hamamcı, 2002; Kırım, 2020).

The concept of waste was first included in the "Fourth Five-Year Development Plan" planned for 1979-1983 in Turkey. In the plan; water, sea, air, soil, noise pollution, waste gases, industrial wastes and irregular urbanization are mentioned (Tekin, 2020).

The first law published on waste management is the "Environmental Law" dated 1983 and numbered 2872. The purpose of this law; to comply with the environmental standards of other European countries in the EU membership process (National Waste Management and Action Plan 2023, 2018; Ozkaya, 2020).

21 years after the publication of the Environmental Law, legislation on waste began to be published. The latest regulation published is the Zero Waste Regulation published by the Ministry of Environment, Urbanization and Climate Change in the Official Gazette on 12.07.2019 with the number 30829. The purpose of this Regulation is: "To determine the general principles and principles regarding the establishment, dissemination, development, monitoring, financing, recording and certification of the zero waste management system aiming to protect the environment and human health and all resources in waste management processes in line with the principles of sustainable development with the effective management of raw materials and natural resources" (Official Gazette-Zero Waste Regulation, 2019).

According to the 5th and 6th articles of the general principles of the regulation, it is essential to ensure the participation of the public in the

implementation of the zero waste management system, to raise awareness and awareness for its effective implementation, and to encourage and support environmentally friendly attitudes, behaviors and activities (Official Gazette-Zero Waste Regulation, 2019).

According to the regulation, the establishment, implementation and follow-up of the zero waste management system has been given to the ministry, provincial directorates, civil administrative supervisors and local administrations (Official Gazette-Zero Waste Regulation, 2019).

Among the duties defined by the regulation to the ministry is to prepare/have prepared the “Zero Waste Management Action Plan” (Official Gazette-Zero Waste Regulation, 2019). Before the publication of the Zero Waste Regulation, the Ministry of Environment, Urbanization and Climate Change published the “National Waste Management and Action Plan 2023” covering the years 2016-2023 in 2016.

The “Zero Waste Project” was officially launched in 2017. It was first implemented in the Ministry of Environment, Urbanization and Climate Change building and later in the Presidential Complex (Erdur, 2019; Gul, 2020).

An applicable waste management hierarchy is; it consists of Prevention-Minimization-Reuse-Recycling-Recovery-Disposal consists of transactions (Akınc, 2014; Ozkaya, 2020).

**Reuse:** It is the reuse of waste or unused products as a result of collection and cleaning. For example, the reuse of intact glass bottles by disinfecting them (Dogan, 2020).

**Recovery:** It is the process of collecting recyclable wastes and making them available as raw materials as a result of some processes in the facilities (Cakar, 2020).

**Recycling:** It is called the process of collecting wastes such as paper-cardboard, glass, plastic, metal, wood, etc., restoring them by passing through a number of physical and chemical processes in packaging waste collection-sorting facilities and recycling facilities or obtaining new products (Dur, 2019; Kırım, 2020).

The recyclability of a product depends on regaining its properties as a raw material (Villalba, 2002; Birsen, 2020). Recyclable waste; paper, plastic, glass, rubber, iron, copper, steel, electronic waste, etc. (Cakar, 2020). In terms

of recycling, the waste type with the most products is solid waste (Atalay, 2021).

**Solid waste:** It is a waste group that does not contain enough liquid to flow, occurs frequently in areas such as homes, workplaces, hospitals, and must be collected and disposed of (MEB, 2011; Eskin, 2020). In itself; domestic, industrial, hazardous, private, medical, agricultural and garden wastes, construction waste and rubble wastes (Gunduzalp & Guven, 2016; Aktas, 2021).

**E-waste:** E-waste, which is a type of solid waste, is unused or end-of-life electrical goods due to the development of technology and product diversity (Kekec, 2020). E-waste is also called Waste Electrical and Electronic Equipment (WEEE). An WEEE contains more than 40 raw materials. Cobalt, barium, beryllium, chromium, arsenic (Erdogan, 2014; Onge, 2020), poses a danger due to the presence of substances such as lead, mercury, polycarbonated biphenyl and diphenyl (Araujo and friends, 2012; Birsen, 2020).

According to Ozkaya (2020), the disposal methods of solid waste are regular storage, irregular (wild) storage, composting, pyrolysis, gasification, incineration and waste-derived fuel.

The European Environment Agency (EPA) lists solid citation disposal methods in order of importance as reducing the amount of waste, recycling and composting, incineration and storage (Tokgoz, 1992; Tandogan, 2018). Among the waste disposal methods, the highest cost is incineration, the lowest cost is reuse and recycling (Bayram, 2017; Tandogan, 2018).

Recycling in the world began to be effective after World War II. In order to protect the resources decreasing due to the effect of the war, the public was asked to collect wastes such as metal and paper (Kırım, 2020).

In countries that have implemented recycling, %60-65 of waste can be recycled again (New Targets for Waste in the EU, 2019; Ozkaya, 2020). In 2010, 0.2 billion tons of waste was recycled in 900 facilities around the world and approximately 130 trillion kWh of electrical energy was produced (Yetim, 2014; Dogan, 2020).

On 1 November 1991, the “Foundation for Environmental Protection and Packaging Waste Assessment (CEVKO)” was established in Turkey with the participation of 14 large companies, CEVKO’s aim is; to ensure that packaging wastes such as paper, glass and plastic that are recycled are collected

and recycled. CEVKO has recycled 7 million tons of packaging waste since its establishment until 2018 and has provided a gain of 35 million TL to the country's economy. When we look at the data of 2018, it is seen that 3,6 billion TL profit was achieved by recycling 650 thousand 750 tons of packaging waste (Atalay, 2021).

Recycling processes are carried out in packaging waste collection-separation facilities and recycling facilities licensed by the ministry. While there were 15 collection-separation facilities and 13 recycling facilities in 2003, 527 collection-separation facilities and 665 recycling facilities were reached in 2017 (Packaging and Packaging Waste Statistics, Packaging Bulletin, 2019; Ozkaya, 2020). A total of 33 million tons of waste was recovered in these facilities (Ministry of Environment, Urbanization and Climate Change, 2018; Dogan, 2020).

## **2. RECYCLING PARK DEFINITION, LANDSCAPE DESIGN ITEMS, PRINCIPLES, CRITERIA AND PROCESSES**

Recycling park: In which animate and inanimate materials are used by the designer in accordance with landscape design elements, principles and criteria, where inanimate materials are produced from recyclable materials (glass, plastic, wood, etc.), low-budget parks designed to create environmental awareness.

Recycling parks do not have unique landscape design elements, principles and criteria. While designing the recycling park, the design should be made according to the elements, principles and criteria used in all landscape designs. Since an exemplary recycling park will be designed in the study, it is useful to give information about landscape design, its elements, principles and criteria.

Landscape design: It is the designs made by landscape architects in open and green spaces, using living and non-living materials (Topaloglu, 2021).

Design; It consists of elements such as point, line, shape, direction, measure, spacing, texture, movement, light-shadow and color (Cinar & Cinar, 2018; Topaloglu, 2021). The designer creates his design by using one or more of these elements in line with the design principles (Topaloglu, 2021).

Landscape design principles; it consists of repetition, balance, ratio, hierarchy, transformation, continuity, diversity, to direct, opposition, emphasis, order creation and unity (Koylu & Yılmaz, 2021; Topaloglu, 2021).

There are landscape design criteria established for park designs. Although it varies for each park, landscape design criteria; accessibility, suitability for all age groups, reinforcement elements, areas compatible with disabled individuals, year-round usability, climate suitability, security, allowing night use, vegetation, space use (sports fields, children's playgrounds, etc.), area size, value added to urban aesthetics, harmony with the environment (Karadeniz, 2019).

Senol (2019) in his thesis titled "*A Proposed Model For Sultanbeyli Pond Park In Accordance With Sustainable Landscape Design Criteria*" aims to define sustainable landscape design criteria; microclimatic data are taken into consideration, reducing energy consumption, creating recycling systems, correct use of land, protection of natural resources and evaluation of vegetation cover (Atıl and friends, 2005; Senol, 2019). In addition, sustainability in landscape projects; water recovery, renewable energy use, use of natural resources and materials, selection of natural and area-adapted plant species and creation of permaculture areas (Yasar & Duzgunes, 2013; Senol, 2019).

While designing recycling parks, the design should be made by considering the criteria listed below, except for the landscape design criteria listed by Karadeniz (2019) and Senol (2019). These;

- The inanimate materials used (flooring, seating-lighting units, children's play elements, etc.) should be produced from recyclable materials (glass, plastic, metal, etc.) and should be of a remarkable quality.
- In the park design, profit should not be pursued and it should be aimed to contribute to the country's economy.
- It should be aimed to create the park with a low budget.
- Design should be made by keeping environmental awareness and the aim of creating environmental awareness in the foreground.
- The park design should allow the environmental education lesson to be taught in the park.
- It should allow children to develop their imagination.

- Landscape elements should be selected considering the participation of citizens in the implementation phase of the park.

Each design is created by going through certain processes. There are also processes that make up landscape design. Seckin and friends according to (2011), landscape design processes; field research and analysis, development of the concept design, drawing the application Project, application and post-application services (Seckin and friends, 2011; Topaloglu, 2021).

Topaloğlu (2021) describes landscape design processes; survey and analysis, needs program, function diagram and stain plan, preliminary design, final design, irrigation project and other technical documents and application (Topaloglu, 2021).

According to the information given above, the landscape design processes of the recycling park;

- Survey (field research-data collection) and analyzes (information analysis),
- Needs program,
- Function diagram and stain plan (concept and design philosophy),
- Development of concept design (selection of park design system),
- Planning phase (preliminary design and drawing of other application projects),
- It consists of application and post-implementation services.

### **3. EXAMPLES OF RECYCLING PARK IN THE WORLD AND IN TURKEY**

#### **3.1. Ghost Train Park (Russian Lima)**

It is a park designed from recycled materials in 2010 (including the support columns of electric train tracks) in order to make use of the public space abandoned as a result of the stopping of the electric train line, which was started in Lima, the capital of Peru in 1986, and to raise environmental awareness (Tandogan, 2018). The park design was commissioned by the Spanish Agency for International Development Cooperation (AECID) to the Spanish design firm Basurama, and architecture students and street artists participated in the implementation phase (Urban, 2020).



**Figure 1:** Train Park (Russian Lima) (Johnson, 2010; Urban, 2020)

From recycling materials; vehicle tires, old ropes and car parts are used. Of these materials; swings, slides, ziplines, climbing elements are made. Covering the support columns with fluorescent colored bands and the use of plants and grass added an integral feature to the park (Urban, 2020).

### 3.2. Skinners Adventure Playground

It is an adventure playground designed for children living in housing estates in South Melbourne. When it was first built, only children in public housing were allowed to use it, but over time it was opened to the whole public. It is suitable for use by children between the ages of 5-12 (Tandogan, 2018).



**Figure 2:** Skinners Adventure Playground (Anonymous, 2018)

From recycling materials; containers, wooden pallets, wooden timber, car tires, tractor tires, etc. were used. Shipping containers in the area are designed as a closed learning area (Tandogan, 2018). In the playground; there are haunted houses, climbing elements, double-storey tree houses, basketball court, slides, skateboards, trampoline, sandbags, shop windows, passenger cars,

wooden ships, stage, etc. (Anonymous, 2018). In addition, the need for shade is met with developed plants and the park creates integrity.

### 3.3. Recycled Park

It is a recycling park built on a 140 m<sup>2</sup> wide water surface of the Rijnhaven Port of the city of Rotterdam on the sea coast of the Netherlands. Three plastic collection traps have been set up on the New Maas River by the Recycled Island Foundation. The park was built using plastic waste collected from the Baltic Sea coast and in the river. The construction of the park; the Recycling Island Fund, the Municipality of Rotterdam, the architectural firm WIHM and HEBO Maritime Services participated. The collection of plastics and the construction of the park took 1.5 years. It was opened in July 2018 (Congar, 2018).



**Figure 3:** Recycled Park (Congar, 2018)

The park was designed to collect and recycle the plastics thrown into the water, to create new living spaces, to create environmental awareness and awareness, and to initiate similar projects. Inside the park, there are plastic piers, benches, and hexagon-shaped plastic flower pots. Grass and flowers were planted in pots filled with soil. It has also become a natural habitat for fish, ducks, shellfish and algae living in the river (Congar, 2018).

### 3.4. Prof. Dr. Fuat Sezgin Recycling Park

It is a recycling park created from waste in the garden of Mehmet Akif Ersoy Primary School located in the Ceyhan district of Adana (Ozer, 2020). The project, carried out by the Ceyhan Municipality within the scope of the “Zero Waste Project”, started to be built in 2019 and was put into operation in January 2020.



**Figure 4:** Prof. Dr. Fuat Sezgin Recycling Park (Ceyhan District Directorate of National Education, 2019 and Ozer, 2020)

The park was built in the school garden in order to raise environmental awareness in children and to draw attention to the importance of recycling (Ozer, 2020). From recycling materials; car tires, tractor tires, wood timber, rubber flooring, garbage drums, etc. used. The concrete garden floor is covered with rubber flooring, swings, seating units, clock, basketball hoop, flower pots, animal figures, seesaw, recycling bins etc. has been made. A different look was achieved by planting seasonal flowers in pots made of car tires.

### 3.5. MIP Mersin International Port Management Inc. Recycling Park

It is a recycling park established on 3 acres of land in Zeytinli Street in the Merkez Neighborhood of Mezitli district of Mersin. The park project was carried out jointly by MIP Mersin International Port Management Inc. and Mezitli Municipality. Opened in May 2019 (Anonymous, 2019a).



**Figure 5:** MIP Mersin International Port Management Inc. Recycling Park (Anonymous, 2019a and Anonymous, 2019b)

In the construction of the park, the wastes collected from the port of Mersin were used. Earthmoving soil was used for the leveling of the site, oil

barrel, tree root, wood lumber, plastics, car tires, bags, etc. are other recycling materials used. A seating unit from the root of olive tree, bench from oil barrel, trash can, swing from car tire, seesaw, sports element, seating unit, ornamental pool from garbage bags, wooden fence, and entrance door were made (Anonymous, 2019a). Animal figures, kennel, pots from tree logs and plants are also included.

### 3.6. Recycling Street (Van-İpekyolu)

It is a recycling street built on an alley on Cumhuriyet Street in Van' s Ipekyolu district. The street built by Ipekyolu Municipality within the scope of the “Zero Waste Project” was put into operation in 2017 (Soyalp & Altınal, 2017).



**Figure 6:** Recycling Street (Van-Ipekyolu) (Bozturk, 2017)

From recycling materials; drums, plastic bottles, caps, car tires, tree stump, plastic fruit and vegetable basket, glass, iron etc. used. Landscape arrangement, on the street, which has the feature of a pocket park with its seating units; flower pots made of plastic bottles, paintings from pet bottle caps, sitting units from barrels, kennel, bookshelf, animal figures from car tires and seating units made of plastic fruit and vegetable baskets is located (Soyalp & Altınal, 2017).

## 4. MATERIAL AND METHOD

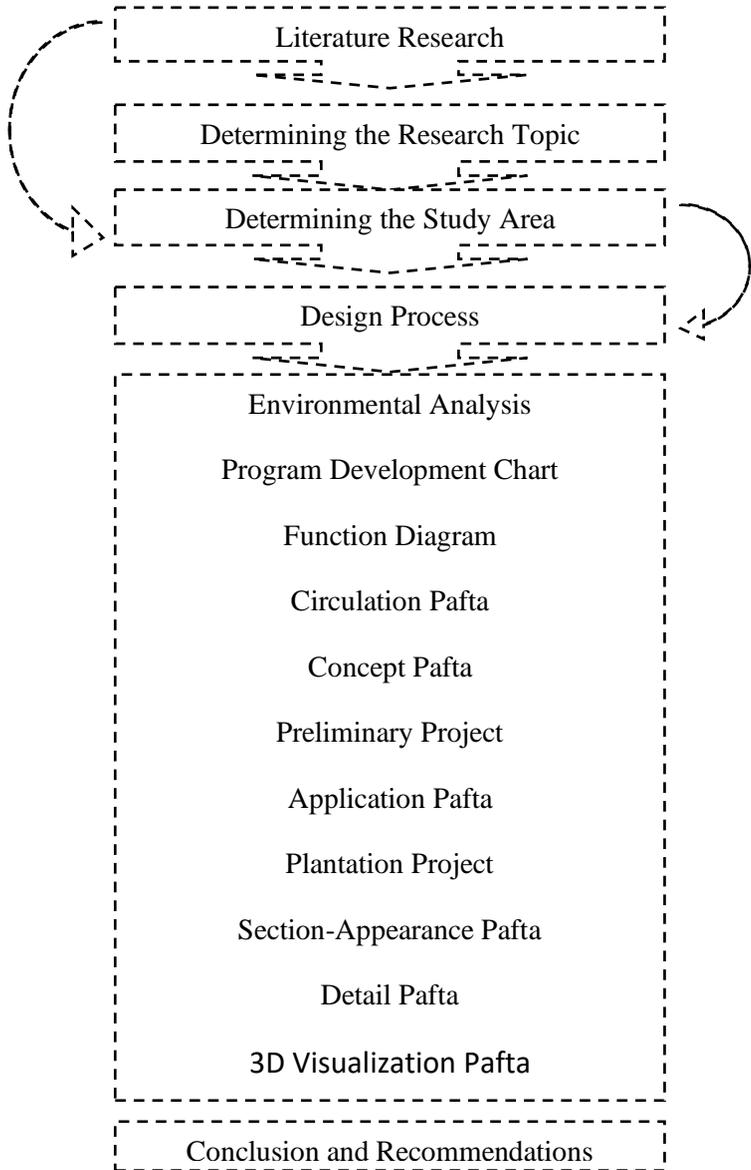
As the study area, in Kemaliye Neighborhood of Kulu district of Konya province, Ummu Gulsum Park with a size of 970 m<sup>2</sup> on island 83 and parcel 11 was selected. A recycling park was designed for the purpose of not having a playground in Kemaliye Neighborhood and reevaluating the idle park. Since

Mehmet Akif Ersoy Secondary School is around 60-70 m from the park, it is thought that students will be able to use the park during their lunch breaks and free time.



**Figure 7:** Location of the Study Area in Konya Province and Kulu District (General Directorate of Land Registry and Cadastre, 2021)

All kinds of books on the subject in the study, research, thesis, article etc. used as supplementary material. As the main material, the satellite image of the area where the recycling park is designed, It consists of the zoning plan and technical data obtained from Kulu Municipality. In park design, examples of urban furniture made from waste materials and AutoCAD 2020, Adobe Photoshop CS6, SketchUp 2021 computer programs were used.



**Figure 8:** Working Method Flow Chart (Karakoc, 2020 and Acar, 2020)

The working method was applied according to the flow chart given in Figure.8. In revealing the flow diagram in Figure.8, Karakoc’s (2020) “*Design Principles Of Healing Gardens For The Elderly: A Design In The Example Of*

*Konya-Selcuklu District*” and Acar’s (2020) “*A Fragrance Garden Design In The Example Of Meram District, Konya*” thesis studies named were used.

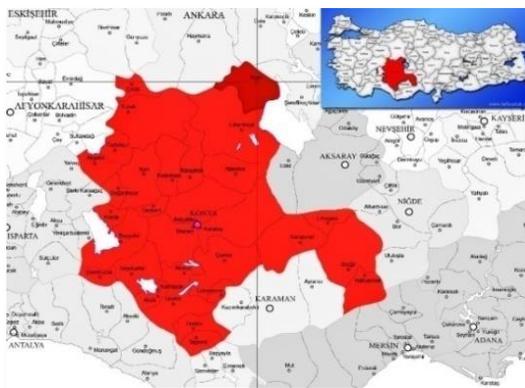
## 5. DESIGN OF AN EXEMPLARY RECYCLING PARK IN KULU DISTRICT

### 5.1. General Information About the Study Area

#### 5.1.1. Geolocation

The town of Kulu, where the study area is located, is connected to the province of Konya. Geographically, it is between 39°5’ north latitude and 33°4’ east longitude. Its distance from Konya city center is 148 km. Its surface area is 2,056,39 km<sup>2</sup>. The average elevation of the district is 1,010 m. It is surrounded by Ankara-Bala in the north, Konya-Cihanbeyli in the South, Ankara-Haymana in the west, Ankara-Sereflikochisar in the east (Mevlana Development Agency, 2014).

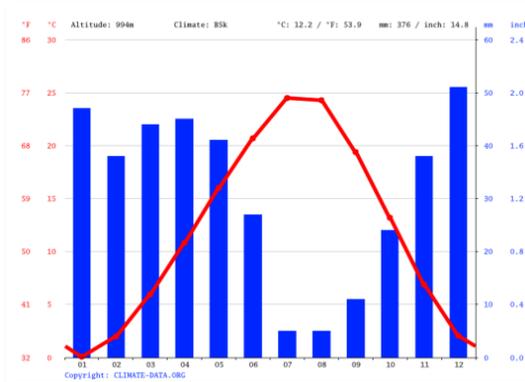
Kulu district has a wide, flat and slightly rough terrain. Karacadag is located in the west of the district. There are no strong streams running through the district, and there are streams that get stronger with precipitation in winter and dry up in summer. In the district; there are Salt Lake, Kucuk Lake (Acıgöl), Duden Lake and Kozanlı Lake (Gokgol) (Mevlana Development Agency, 2014).



**Figure 9:** Geographical Location of Konya Province and Kulu District (Gungor & Oguzhanoglu, 2019)

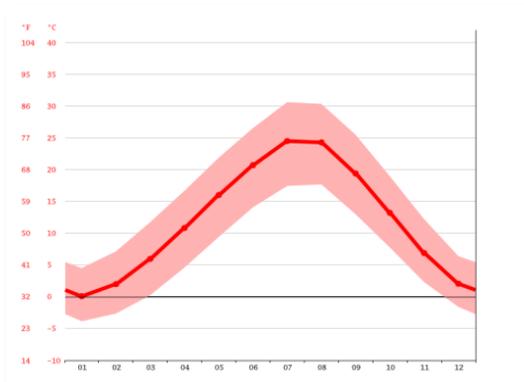
### 5.1.2. Climatic Data and Vegetation

In Kulu district, where the study area is located, the winter season is cold and rainy, and the summer season is hot and dry. According to Climate-Data.Org data, steppe climate is seen in Kulu district. The annual average temperature is 12.2 °C. Although the annual precipitation is low, it averages 376 mm (Climate-Data.Org, 2021).



**Figure 10:** Annual Precipitation Graph for Kulu District (Climate-Data.Org, 2021)

According to the annual precipitation graph of Kulu district, the driest month of the year is July, with a precipitation of 5 mm. The rainiest month is december, with 51 mm of precipitation (Climate-Data.Org, 2021).



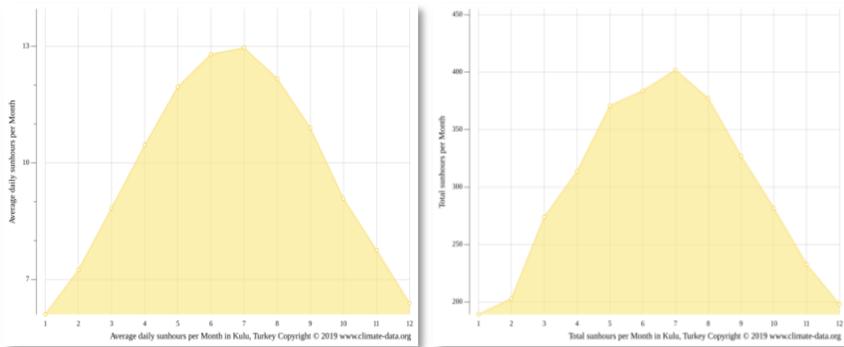
**Figure 11:** Kulu District Annual Temperature Graph (Climate-Data.Org, 2021)

According to the annual temperature graph of the district, the hottest month is july with a temperature of 24.5 °C, and the coldest month is january with a temperature of 0.1 °C (Climate-Data.Org, 2021).

**Table 1:** Kulu District Climate Data (Climate-Data.Org, 2021)

	Ocak	Şubat	Mart	Nisan	Mayıs	Haziran	Temmuz	Ağustos	Eylül	Ekim	Kasım	Aralık
Ort. Sıcaklık (° C)	0.1	2	6	10.8	16	20.7	24.5	24.3	19.4	13.2	6.9	2.1
Min. Sıcaklık (° C)	-3.9	-2.6	0.2	4.6	9.4	14.1	17.4	17.7	13	7.7	2.3	-1.6
Maks. Sıcaklık (° C)	4.5	7.1	11.7	16.7	21.9	26.5	30.6	30.3	25.5	18.9	12.2	6.4
Yağış / Yağış (mm)	47	38	44	45	41	27	5	5	11	24	38	51
Nem(%)	74%	67%	58%	52%	48%	39%	32%	33%	39%	52%	64%	72%
Yağmurlu günler (g.)	6	6	7	7	7	4	1	1	2	3	4	6
Güneşli saatler (s)	6.1	7.2	8.8	10.5	12.0	12.8	13.0	12.2	10.9	9.1	7.8	6.4

According to Table.1, the difference in precipitation between july and august, the driest months, and december, which is the wettest month, is 46 mm. The temperature difference between july, the hottest month, and january, the coldest month, is 24.4 °C. The lowest humidity is seen in july with %32.13 and the highest in january with %73.89. The number of rainy days is seen in july with a minimum of 1.33 days and in may with a maximum of 8.97 days. Kulu district is located in the northern hemisphere. The temperature of summer in the district begins at the beginning of june, ends at the end of september (Climate-Data.Org, 2021).



**Figure 12:** Kulu District Average Sunlight Hours and Sunny Total Hours Graphs (Climate-Data.Org, 2021)

According to the average sunshine hours and sunny total hours graphs of the district, the most sunny hours per day is seen in july with 12.96 hours, and july is sunny for a total of 401,8 hours. The minimum sunny hour per day is seen in january with 6.39 hours, and in total january is 198,02 hours sunny. Kulu district has 3,552,62 hours of sunshine throughout the year. It receives an average of 116,65 hours of sunlight per month (Climate-Data.Org, 2021).

In Kulu district, steppe vegetation prevails. Since a large part of the land of the district is flat, it is suitable for agriculture. In the fields by farmers; wheat, barley, beet, cumin, lentils, anise and black seed are grown (Gungor & Oguzhanoglu, 2019).

### **5.1.3.Population Data**

According to the Wikipedia Free Encyclopedia (2021), the total area of Kulu district is 2,234 km<sup>2</sup>, with 23 people per km<sup>2</sup>. The district consists of 46 neighborhoods. The population of Kulu district in 2019 is 50,825. In 2020, the total population increased by %1.31 to 51,493 (Wikipedia Free Encyclopedia, 2021).

## **5.2.Recycling Park Design Process**

An exemplary recycling park will be designed in Konya province Kulu district. The design process of the recycling park; environmental analysis, program development chart, function diagram, circulation pafta, concept pafta, preliminary project, application pafta, plantation project, section-appearance pafta, detail pafta and 3D visualization pafta. From the design processes; environmental analysis, preliminary project, plantation project, section-appearance pafta and 3D visualization pafta will be presented.

### **5.2.1.Environmental Analysis**

As the study area, Ummu Gulsum Park with a size of 970 m<sup>2</sup> located on 83 islands and 11 parcels in Kemaliye Neighborhood of Kulu district of Konya province was selected.



**Figure 13:** Ummu Gulsum Park in Kulu District of Konya Province

On-site observations were made by obtaining the zoning plan and technical data of the park from Kulu Municipality. The park, which is idle, is surrounded by a concrete wall. The park floor consists of locked cobblestone. In the park; there is a basketball court made of concrete floor and a fountain.



**Figure 14:** Ummu Gulsum Park Basketball Court and Fountain

In the park, hard ground and green areas are separated from each other by a parquet border. In green areas; there are “*Cedrus*” trees and “*Pyracantha coccinea*” bush brought into tree form.



**Figure 15:** Ummu Gulsum Park Hard Ground, Green Fields, “*Cedrus*” trees and “*Pyracantha coccinea*” bush

In researches on recycling parks, it has been seen that low-cost design approach is adopted while creating the design. Therefore, the design was carried out according to the current state of the study area. In the zoning plan obtained from Kulu Municipality, only the park border and basketball court are visible. With the help of Kulu Municipality, measurements (purchases) of hard floors and green areas in the park were made. Existing trees were placed by looking at the photographs taken from the area and the aerial photography. Using AutoCAD 2020 and Adobe Photoshop CS6 computer programs, the layout plan of the workspace was prepared.

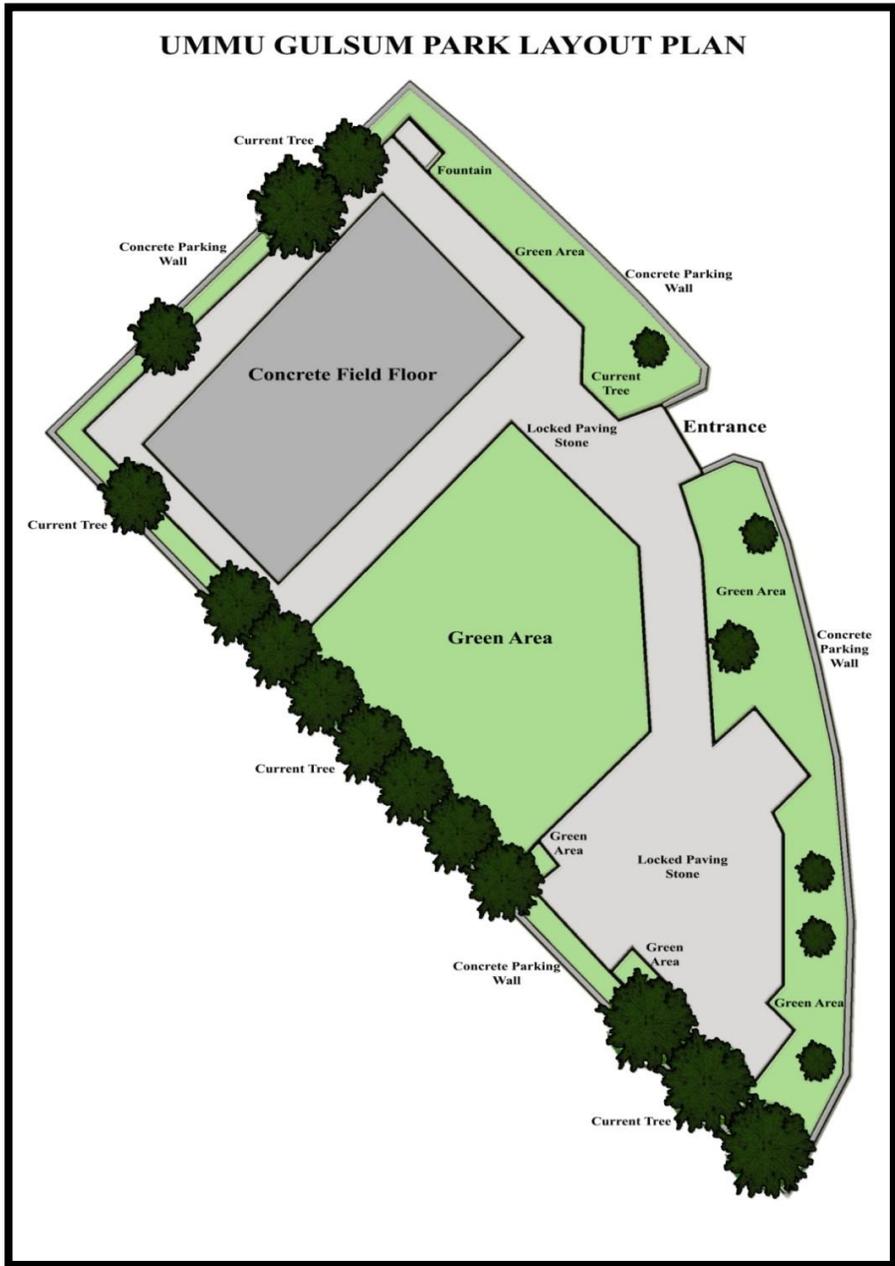


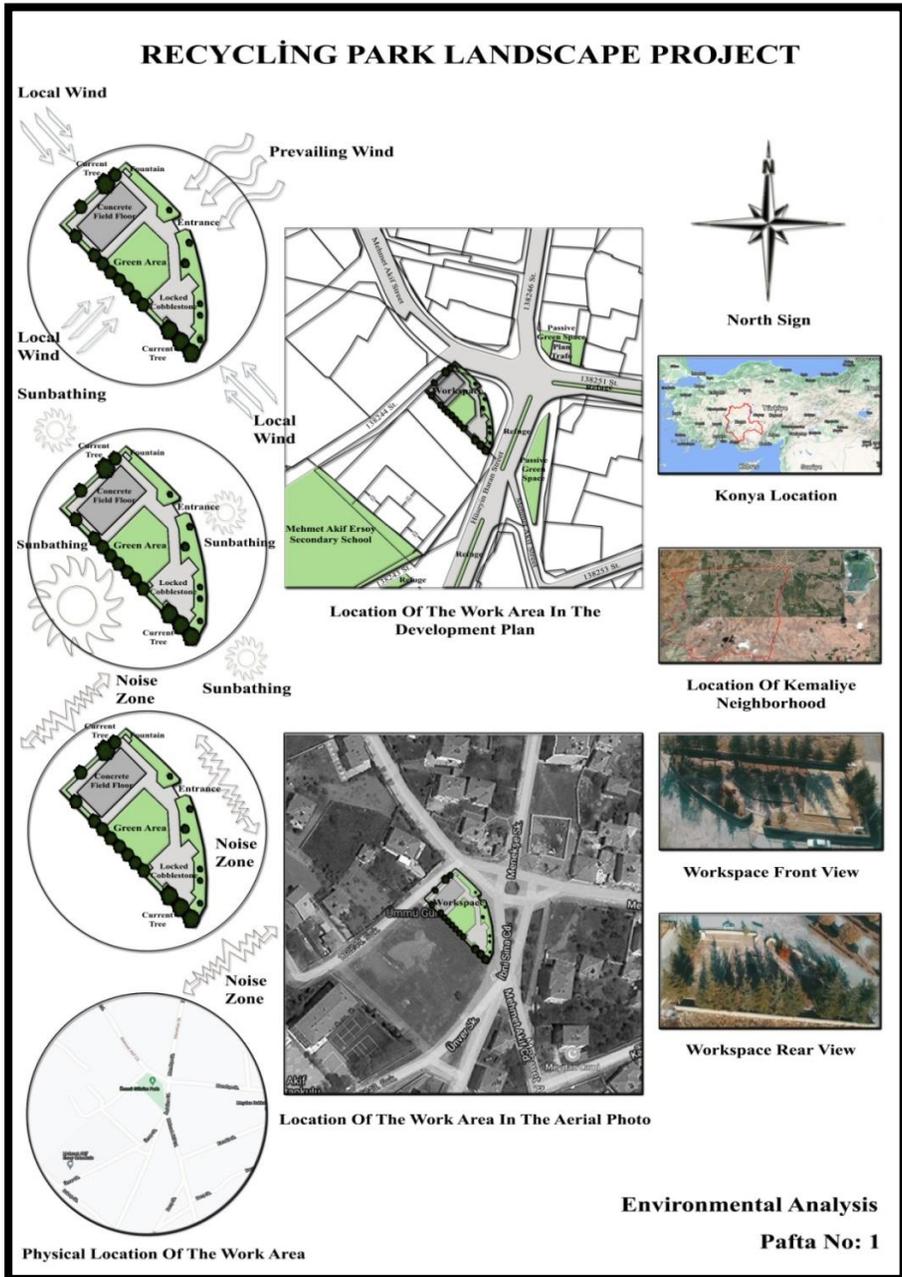
Figure 16: Ummu Gulsum Park Layout Plan

In researches related to the study area; It was observed that the dominant wind direction was north-west and the dominant sun was south-east.

Transportation to the park can be done by vehicles or on foot is easily provided. The driveway passes through the front and side facades of the park. Although there was no heavy traffic flow, it was observed that more vehicles passed through the front line. The rear facade faces an empty lot.

Although there are passive green areas in the immediate vicinity of the park, there is Mehmet Akif Ersoy Secondary School 60-70 m ahead and Kemaliye Health Center 200-300 m ahead.

The map prepared as a result of the environmental analysis is given in Figure.17.



**Figure 17:** Recycling Park Environmental Analysis (General Directorate of Land Registry and Cadastre, 2021)

### 5.2.2.Preliminary Project

Considering the work done up to this stage, a recycling park was designed on the layout plan of the study area. In this study, which was carried out on a scale of 1/100; hard floors, green areas, promenades, materials used in flooring, number of reinforcement elements, etc. decided.

Some of the decisions taken in the preliminary project are as follows;

- It was decided to use the concrete wall that forms the boundaries of the study area in the design. During the implementation phase, maintenance and repair operations will be carried out. The iron railings on the wall will be cut during the application phase.
- The park entrance gate with a bad appearance will be removed. A parking gate similar to the entrance gate in the example A1 shown in Figure.18, made of recyclable waste materials, is designed.



**Figure 18:** Recycling Park Entrance Gate

- The existing fountain in the park will be used and maintenance and repair operations will be carried out during the application phase.
- The toilets that those who come to the park may need are located in the area next to the fountain. Toilet building; it is sized to include 1 male, 1 female and 1 disabled toilet.



**Figure 19:** Recycling Park Fountain and Toilet Building

- 2 separate children’s playgrounds have been designed so that children of different age groups can use the recycling park. The concrete field floor was covered with rubber flooring, and playground equipment (made of recyclable waste materials) that can be used by children in the 6-12 age group was placed. Washed (fine) sand was laid on the green area on the side of the field floor, and playground equipment (made of recyclable waste materials) that could be used by children in the 3-6 age group was placed.



**Figure 20:** Recycling Park Children’s Playgrounds

- It was decided to use the promenades made using locked cobblestone in the design. Benches similar to the seating elements in the A2 example, shown in Figure. 21, have been designed in the appropriate

places of the park and it has been allowed to use the recycling park in adults.

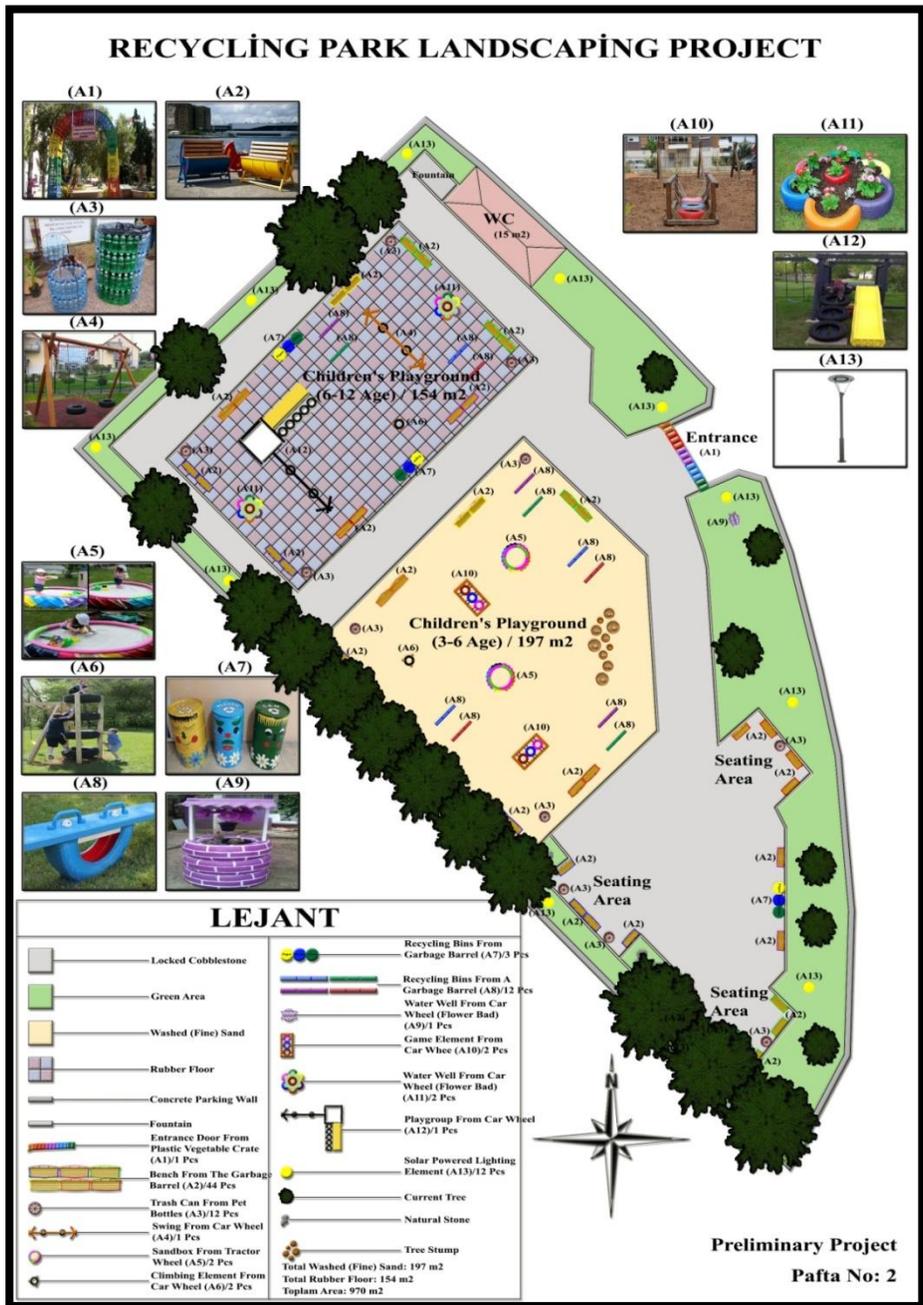


**Figure 21:** Recycling Park Seating Areas

- Solar-powered lighting elements were used in order to comply with the recycling park design and ensure sustainability.

The preliminary project was completed by giving sample pictures of urban furniture and playground equipment made from recyclable waste materials used in the design.

The preliminary project prepared on the site plan is given in Figure. 22.



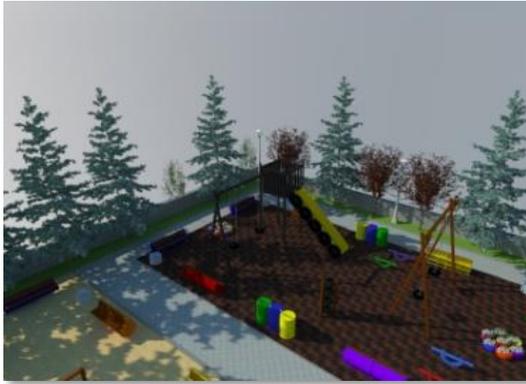
**Figure 22:** Recycling Park Preliminary Project (Aksakal, 2018, Anonymous, 2016, Anonymous, 2020a, Anonymous, 2020b, Anonymous, 2022a, Anonymous, 2022b, Anonymous, 2022c, Anonymous, 2019c, Dogan, 2019, Golobokova, 2016, Ozbek, 2021)

### 5.2.3.Plantation Project

It is a planting project made on the preliminary project. In addition to the display of the existing plants in the study area, the types, numbers, locations of the plants to be planted in the field, and the characteristics of the plants such as height and diameter were also decided.

Some of the decisions taken in the plantation project are as follows;

- In the study area, there are “*Cedrus*” trees and a “*Pyracantha coccinea*” bush that has been formed into a tree. In order to create a difference in form and color, “*Malus floribunda*” and “*Prunus cerasifera*” trees will be planted between the “*Cedrus*” trees.



**Figure 23:** Recycling Park “*Malus floribunda*” and “*Prunus cerasifera*” Trees

- In order to appeal to the voice and smell sense organs, which are among the 5 sense organs of man, “*Lavandula officinalis*” and “*Tilia tomentosa*” trees will be planted on the right and left sides of the park entrance gate.



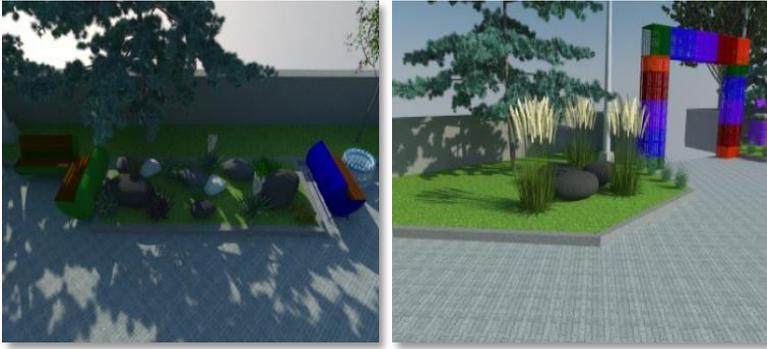
**Figure 24:** Recycling Park Groundcover “*Lavandula officinalis*” and “*Tilia tomentosa*” Trees

- In order to create a difference in form and color in front of the “*Tilia*” trees, “*Morus alba Pendula*” trees will be planted where children can eat their fruits.



**Figure 25:** Recycling Park “*Morus alba Pendula*” Trees

- In the site plan, natural stones, shrubs and ground cover plants were placed at the end points that were separated as green areas, and the image of a rock garden was tried to be given. In some areas, “*Cortaderia selloana Pumila*” was planted to give the feeling of being by the water.



**Figure 26:** Recycling Park Rock Gardens

- ‘*Dianthus sp.*’ will be planted in water wells and flower pots made from car wheels. Grass will be planted in the remaining green areas.



**Figure 27:** Recycling Park Seasonal Flowers

The plantation project was completed by showing 2 section-appearance lines, A-A’ and B-B’ on the plantation project.

The plantation project prepared on the preliminary project is given in Figure.28.

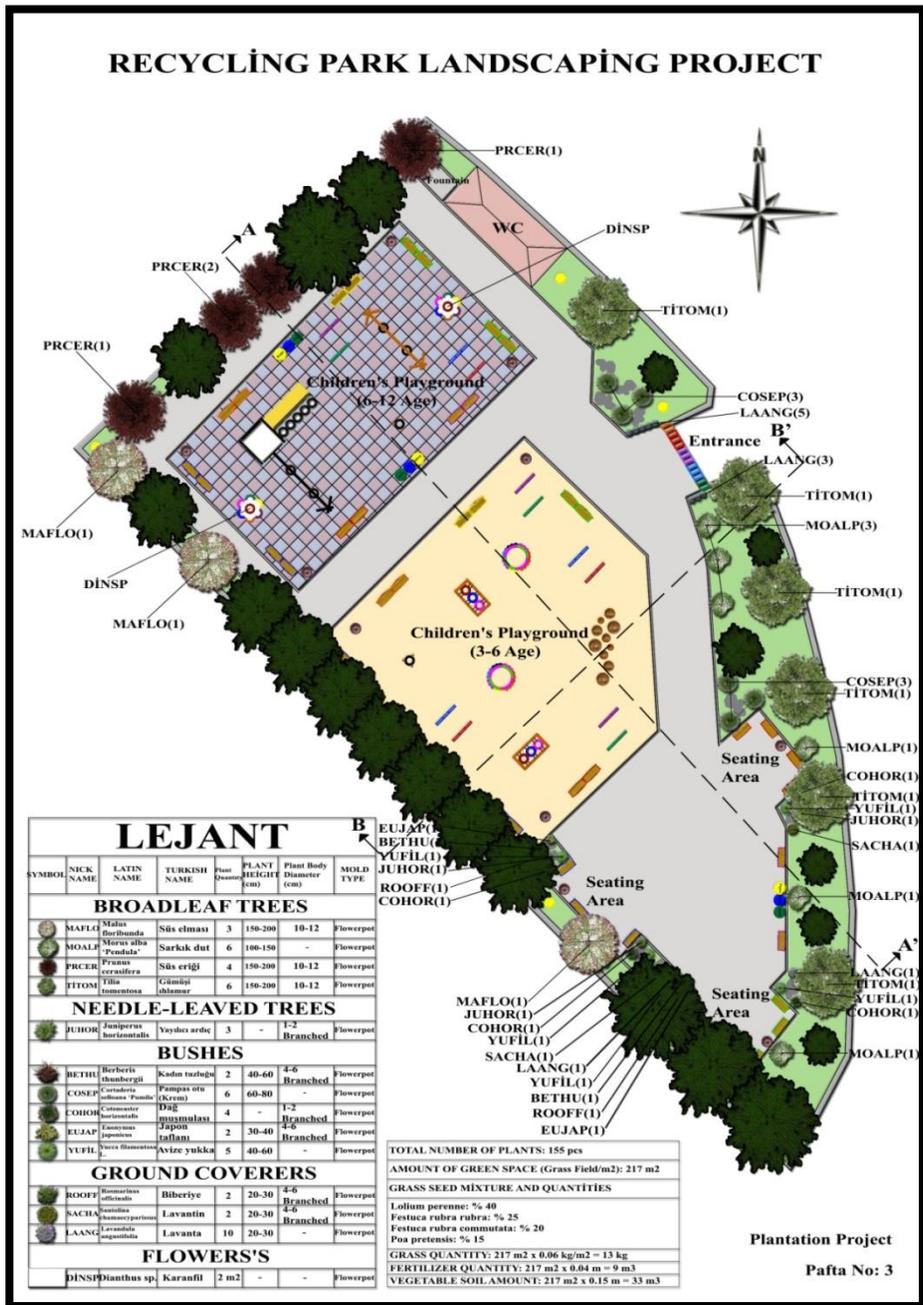


Figure 28: Recycling Plantation Project

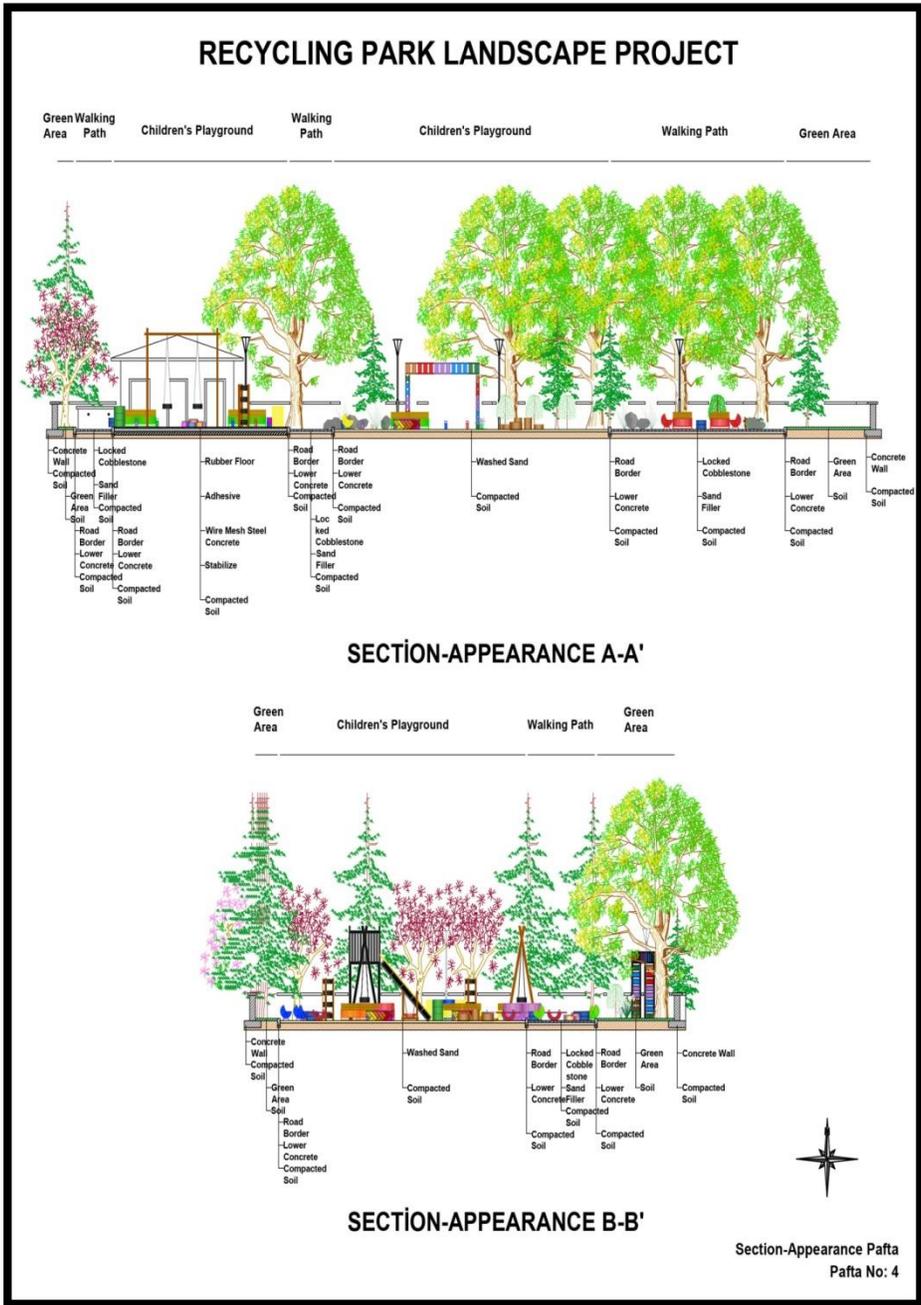
#### **5.2.4. Section-Appearance Pafta**

Sections-appearance were taken in accordance with the A-A' and B-B' section-appearance lines shown on the plantation Project. In the direction indicated by the arrows, the appearance of the reinforcements, plants, etc. that fall within the field of view is drawn.

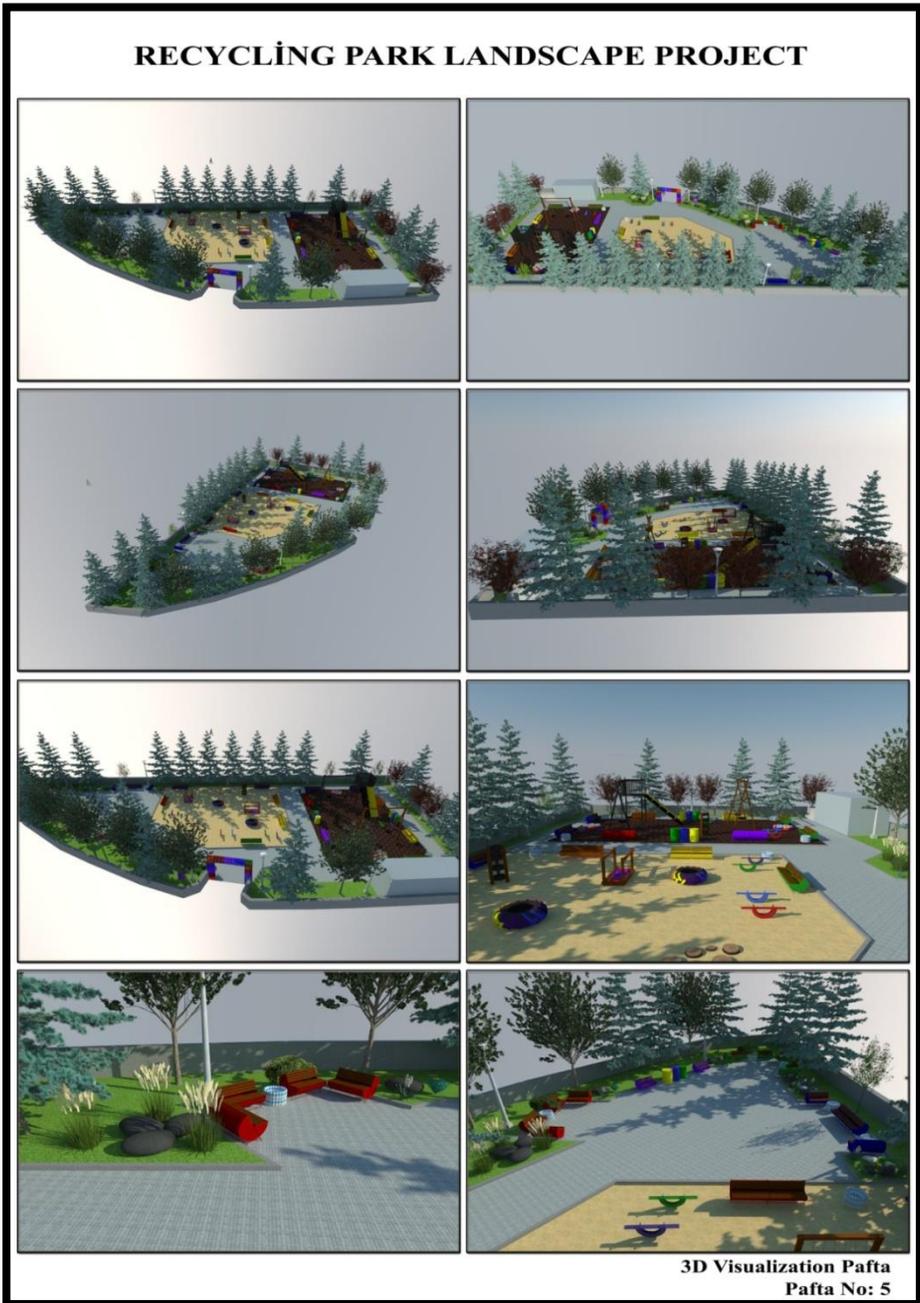
Section-appearance pafta is given in Figure.29.

#### **5.2.5. Visualization Pafta**

The final stage of the recycling park design process is the 3D visualization pafta. The landscape project of the recycling park was transformed into 3D by using SketchUp 2021 computer program.



**Figure 29:** Recycling Park Section-Appearance Pafta



**Figure 30:** Recycling Park 3D Visualization Pafta

## 6. CONCLUSION

The website “The World Counts” calculates the amount of waste produced in the world every year. A visit to the website in may 2021 showed that the amount of waste produced was 752,123,984 tons. In the visit made in may 2022, it was seen that the amount of waste was 804,565,082 tons (Anonymous, 2022d). According to the data of may 2021, it is calculated that there is an increase of 52,441,098 tons in the amount of waste produced until may 2022. This increase in waste production is thought to be due to the population increase and production surplus experienced every year.

The fight against waste around the world began in the 1970s. Recycling activities are older and date back to after World War II. In our country, waste is mentioned in the “Fourth Five-Year Development Plan”. Although recycling activities have started since the publication of the Environment Law, the studies carried out with the “Zero Waste Regulation” published by the Ministry of Environment, Urbanization and Climate Change in 2019 have gained momentum.

In this study, which is one of the recycling activities, an exemplary recycling park design was made by using recyclable waste materials. Ummu Gulsum Park, located in Kemaliye Neighborhood of Kulu district of Konya province, was chosen as the working area.

Recycling park design process were completed in 11 stages. From the design processes; 5 stages of environmental analysis, preliminary Project, plantation project, section-appearance pafta and 3D visualization pafta are presented.

The park was designed by considering the common denominators in the recycling park examples. In the design made on the layout plan of the study area;

- Children’s playgrounds are designed to appeal to different age groups where children can meet their play needs.
- Seating units are placed in the playgrounds where families can relax while their children play.
- In order for adults to use the park, sitting areas have been created independently of the children’s playgrounds.
- The existing fountain in the area has been preserved due to the need of park users. A toilet building was placed next to the fountain.

- All materials used in the park are produced from recyclable waste materials.
- In order for the recycling park to attract attention, care was taken to ensure that the materials used were in vivid colors.
- In order to encourage the separate collection of waste, recycling bins have been placed in certain parts of the park.
- Solar-powered lighting elements were used in order to comply with the recycling park design and ensure sustainability.
- Existing plants in the study area have been preserved. Different plant species have been used to provide form, shape and color differences.
- Plant species such as “*Tilia*” and “*Lavandula*” were used to appeal to people’s senses of sound and smell.
- Small rock gardens were created in order to provide a natural view in the park.

With the recycling park design;

- Children’s playground needs in Kemaliye Neighborhood will be met.
- The idle Ummu Gulsum Park will be reactivated.
- Since it is close to Mehmet Akif Ersoy Secondary School, an area will be provided for students to use during their lunch breaks and after school.
- The subject of recycling, which is included in the course syllabus, can be handled by seeing it in the park.
- The amount of green space needed by the region will be increased.
- It will set an example in the evaluation of waste materials.
- It will draw attention to the importance of recycling.
- It will contribute to the formation of and environmental awareness in people.

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# CHAPTER 13

## GREEN ROOFS AND WALLS FOR BIODIVERSITY CONSERVATION IN URBAN AREAS

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## INTRODUCTION

Increasing urbanization due to rapid population growth in cities is a major threat to biodiversity. The increase in built-up areas within the city tends to reduce species richness depends on the gradual decrease and fragmentation of open spaces and green spaces. In dense settlements, areas of biodiversity and habitat are more fragmented and isolated. Urbanization is predicted become widespread over the next few decades and pose an intense threat to biodiversity (McKinney, 2009). With the unplanned increase of urbanization, green spaces with small areas have occurred (Fuller and Gaston, 2009).

Improving the richness of urban biodiversity means improving urban connectivity, especially by creating micro-habitats between larger green spaces. Unfortunately, there are very few opportunities in cities to create these new habitats (Lucas et al., 2022). Green corridors are crucial to ensure the connection between fragmented and isolated green spaces and for the continuity of biodiversity (Madre et al., 2013). Green corridors are known as a useful solution to maintain and increase biodiversity in urban landscapes (Vergnes et al., 2013). Priority should be given to ever-present green corridors so that interspecies interaction can continue smoothly (Beninde et al., 2015). In order to ensure continuation of sustainability, a solution proposal should be developed and planned in areas where unconnected habitat elements are formed and in places where it is difficult to find opportunities at ground level (Saura et al., 2014). For this reason, walls and roofs appear as interesting usable areas.

Accordingly, green roofs and green walls have become an important element for the sustainability of wildlife corridors (Haaland, 2015). Primary research on green walls was based on botanical aspects (Chiquet et al. 2012; Manso and Gomes, 2015). However, since the 1980s, it has become clear that green walls contribute to the ecological development of cities and biodiversity. From the end of the 19th century, the Garden City movement included the integration of greening into urban planning. Berlin is an important example of the establishment of approximately 245,584 m<sup>2</sup> of green facade between 1983 and 1997 (Manso and Gomes, 2015). In this respect, research on the support of urban biodiversity of green roofs and walls in various parts of the world has been examined in detail.

## 1. GREEN WALL AND GREEN ROOF CONCEPT

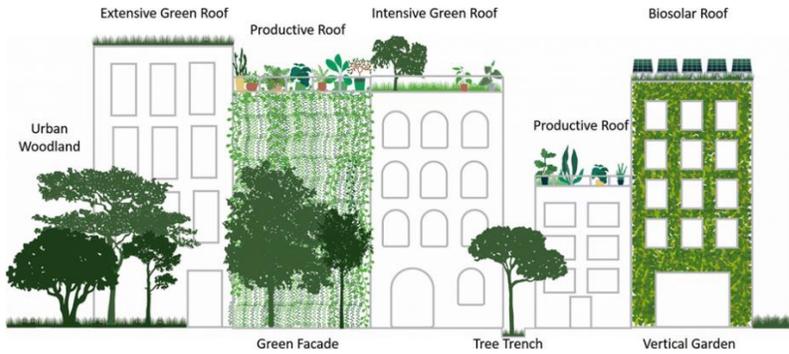
Green walls, represent systems that climb the outer walls of buildings (Lausen et al., 2020) and ensure the green of a vertical surface with plants (Fernandez et al., 2018). In another definition, green walls; it can be defined as vegetation formed on top of vertically delimited structural areas. It is created by planting the roofs and walls of urban buildings or by covering the structure completely with plants (MEB, 2016).

The concept of green roof; firstly, with the technical advances in green roof technology in the first half of the 20th century, the need for sun, air and light by all living things came to the agenda and gave birth to the discourse of green roof (Dunnett and Kingsbury 2004; Rowe et al., 2012). Green roofs (roofs with a vegetative surface and substrate) provide a variety of ecosystem and other services in urban areas, including extending the life of roof membranes, increased sound insulation, reducing rainwater flow, improved air quality, reducing energy (Getter and Rowe 2006; Cantor, 2008). It reduces the urban heat island effect, creating habitat for urban wildlife habitats (Getter and Rowe 2006; Oberndorfer et al., 2007; Dvorack and Volder, 2010). The ecological value of green roofs especially for people and biodiversity has been documented (Cantor 2008; Jungels et al. 2013; Baris, et al., 2012).

In terms of biodiversity, green roofs provide effective and important diversity not only for animals but also for the biodiversity of plants (Figure 1) (Sihau, 2009).

In 1930, the architect Harry proposed that 'people could pass through the gardens on the roofs, and that the roofs would cover the cities like a green paradise'. Le Corbusier, who is an important representative of the concept of green roof, explained that the green roof is one of the 5 elements in modern architecture and has made studies on this subject (Werthmann, 2007, Külekçi, 2017). The first examples of green roofs that allow livable spaces were given in 1927 in Stuttgart, Frankfurt and the Rockefeller center in the United States. Green roofs represent new habitats in urban spaces and contribute to the goals of reconciliation ecology by increasing the availability of habitats for various organisms (Francis and Lorimer, 2011).

Among the benefits of green roofs, it is a priority to retain rainwater, increase building energy efficiency, create cool micro-environments and at the same time provide habitat for many living species (Williams et al, 2014).



**Figure 1:** Types of green walls and green roofs (Calheiros and Stafanakis, 2021)

In recent years, many cities have been developing green roof policies that include biodiversity targets with green walls and roofs. For example; Basel requires that green rooftops be built with native plant soils and that earthen mounds be provided for invertebrate habitat. Toronto has published a guide to best practices for promoting biodiversity on green rooftops. The United Kingdom, on the other hand, has mandated that new major development proposals in London include green roofs to increase biodiversity (Williams et al, 2014).

## **2. EXAMINATION OF GREEN ROOF AND GREEN WALL EXAMPLES IN THE WORLD IN THE CONTEXT OF BIODIVERSITY**

### **2.1. *Basel and Zurich, Switzerland***

A study focusing on the biodiversity potential of green roofs in Basel, Switzerland, focused on the concept of green roofs in new buildings with flat roofs as part of the city's biodiversity strategy and examined the biodiversity impact of green roofs. The design criteria for the creation of these habitats include: it envisages changing the thickness of the substrate and using natural soils from nearby regions.

Research on green roofs in Zurich, Switzerland, has shown that natural soils can benefit biodiversity through their suitability for locally and regionally

endangered species. In research and planning, creating space on green roofs for urban wildlife is crucial. In addition, unlike natural habitats, green roofs are designed to have different surface depths and drainage regimes, since green roof systems do not have deep soil layers and cannot absorb groundwater from plants during extremely dry periods. Thus, it has been stated in the studies that it will allow for the colonization of more different flora and fauna by creating a micro-habitat mosaic on and under the soil surface. In addition, studies have been conducted on the contribution of green roof habitats to the protection of local habitat for rare and threatened species. In these studies, invertebrate and bird communities living on various types of green roofs in various countries were examined.

As a result of the studies, it was emphasized that natural use should be at the forefront of green roofs and it was proved by examinations that the use of close to natural and native species in plant design contributed to the creation of natural habitats (Brenneisen, 2006).

In another study conducted in Switzerland, observations and examinations were made on the breeding of birds on green roofs and the survival of these fledgeling. As a result of observations, it was noted that nests were built on green roofs, calving continued, and some of them survived. In the study, it was emphasized that green areas should be developed with increasing urbanization and living spaces should be created for living things (Bauman, 2006).

## ***2.2. Michigan, USA***

In the study conducted by Coffman and Davis (2005) in Michigan, USA; The insect and bird fauna on the green roof of the Ford Motor Company factory was observed and examined for a year (Figure 2). In the study, similarities and differences between green roofs and urban landscapes were observed. In the study, 29 insect species, 7 spider species and 2 bird species were identified. From winged insects; flies, grasshoppers, insects, wasps, leaf funnels and plant insects are studied. In addition to these species, several species of birds and several species of spiders have also been observed. As a result of research and investigations, the assumption that eco roofs create habitat for the species examined has come to a positive conclusion. It was emphasized that more work

needs to be done to better understand the community structure of invertebrate species and birds, as well as the ecosystem.



**Figure 2:** Ford Motor Company factory, Michigan (URL-1)

### 2.3. New York, USA

A study conducted in New York, which is home to about 730 buildings with green roofs, found that many migratory bird species feed and rest on green rooftops as they pass (Figure 3). New York and Eastern Ontario are part of the Atlantic transit route, one of the largest routes used by about 130 species of neotropical birds during the migration season. The study was found 37 different bird species on 10 green rooftops in New York City. 70% of them were found on green roofs only.



**Figure 3:** New York City's largest roof garden, The Javits Center green roof (a, URL-3; b, URL-4)

One possible reason for this is that green roofs have 6 times more insect populations in terms of insect diversity compared to traditional roofs and provide a food source for birds. Among the birds were flycatchers, magnolia

warblers, peregrine falcon, sandpiper, and even hummingbirds. The study concluded that a properly designed green roof could help support a variety of insects and birds, and even aid conservation efforts by serving rare and endangered species affected by habitat loss. (URL-2)

#### **2.4. Hamburg, Germany**

In Hamburg, which is the leader among European countries when it comes to green roofs, it is aimed to cover at least 70% of all suitable roofs with vegetation by the end of 2024. The green roof policy in Hamburg was started in 2015 when the Hamburg Ministry for Urban Development and Environment allocated €3 million to encourage the construction of green roofs in both new and renovated buildings in Hamburg (URL-5).

Since the year the Green Roof Strategy was implemented, approximately 44 hectares of green roofing have been implemented in the metropolitan area, bringing a total of 168 hectares (in addition to the existing ones). Of this, 40% is built on residential premises, 35% on industry and businesses, and 25% on other surfaces. Green roofs have been installed the most of in new buildings (75%) (URL-6). Many studies in the city have been highlighted how green roofs can provide additional habitats for animals and plants. For example; The green roof of Hamburg's Ministry for Environment and Energy in the Wilhelmsburg district is home to trout and herring gulls, as well as other species such as oystercatchers and wagtails (Figure 4) (URL-7).



**Figure 4:** Green roof of Hamburg's Ministry for Environment and Energy (a, URL-8; b, URL-9)

### **3. CONCLUSIONS**

The loss of biodiversity in urban areas has reached alarming proportions in recent years due to increasing urbanization. Cities cover about 3 percent of the Earth's surface and are the fastest-expanding habitats on the planet. This expansion of urban habitats has led to species loss at all levels, from arthropods to mammals and is considered the leading cause of species extinction.

More importantly, this increase in urban areas leads to the fragmentation of natural habitats and the same increase in built areas. This has increased the importance of efforts to promote and restore biodiversity in urban areas. At this point, it is an important point to ensure connectivity between the green infrastructure approach and the green areas that are stuck in small pieces in cities (Guidi, 2022). In the absence of suitable space at ground level in creating an uninterrupted network of green spaces, green roofs and corridors are new ecosystems that are becoming increasingly common as vertical connections. Few studies suggest that green roofs can help achieve the goal of protecting urban biodiversity. In addition, in the studies examined, it was found that green roofs and walls contribute greatly to both biodiversity and ecosystem by ensuring the continuity of green infrastructure. They also offer recreational space for humans and play an important role in climate change adaptation measures involving stormwater management.

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# CHAPTER 14

## EXAMINATION OF ORDU PROVINCE ALTINORDU DISTRICT COASTLINE IN THE CONTEXT OF THERAPEUTIC LANDSCAPE CONCEPT

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## INTRODUCTION

The city is defined as a settlement unit consisting of small neighbourhoods that allow social development, meet the needs of the society, such as housing, development, working, resting, recreation and few people are engaged in agricultural activities. It has more population than rural areas. (Keleş, 1998). In addition to being areas where anthropogenic activities are concentrated, cities are ecosystems that contain natural structures and systems, and include the mutual interaction of cultural and natural resources. The most important factor in ensuring the ecosystem functions of cities in a healthy and balanced way is urban open and green spaces (Cüce and Ortaçşme, 2020). For this reason, urban open and green spaces are a balancing element that integrates the uses of land in the city (Gül and Küçük, 2001).

Urban open and green spaces are areas that have a very diverse and important function, such as responding to the needs of all user groups living in the city, providing opportunities for active and/or passive recreational activities, enabling people to socialize and to increase their interest in the environment, supporting the formation of urban consciousness and memory by raising awareness with scientific research and training, providing benefits by responding to ecological problems and protecting flora and fauna (Karakaya and Cengiz, 2019). Therefore, Urban open and green spaces are organic systems that support the ecological and social structure of the city, developing within the framework of minimizing the negative effects on the natural environment by using the resources by protecting them (Cüce and Ortaçşme, 2020). In the most basic sense, they are areas that enable people to meet with nature and strengthen the relationship between people and nature (Karakaya and Cengiz, 2019).

People; For centuries, they have been benefiting from the healing effect of nature for their physical, psychological and spiritual health, for purposes such as obtaining food, being treated (Uslu and Shakouri, 2012). However, the increase in structural and environmental problems as a result of the irregular development of urbanization causes the natural areas to lose their quantity and quality, and thus the relationship between man and nature is interrupted. For this reason, tension is inevitable for people living in these cities, where structural and environmental problems are intensely felt, and the value of natural areas is increasing day by day. Therefore, people prefer to spend their

time in natural and close to nature areas in order to get away from the gray texture of the cities (Gül and Küçük, 2001; Uslu and Shakouri, 2012; Keçecioglu, 2014; Arslan and Ekren, 2017; Cüce and Ortaçesme, 2020).

Moments such as being in natural and close to nature areas, feeling the sunlight, watching the trees and flowers, listening to the water and bird sounds have a relaxing effect on people. For this reason, it can be said that doing active or passive activities and/or watching nature from a window, a balcony, a bench in the garden, and even knowing the existence of such areas and being able to be reached whenever desired have positive effects on human health (Özgüner, 2004; Akın, 2006; Keçecioglu, 2014; Sakıcı and Var, 2014).

In this context, urban open and green spaces; While meeting the active or passive recreational needs of people, they also appear as areas that contribute to their recovery by leaving positive effects on their physical, psychological and spiritual health. Thus, determining that areas designed in a natural and close to nature have positive effects on human health brings a healthy design approach to the agenda and provides the emergence of healing / therapy gardens (Gül and Küçük, 2001; Arslan and Ekren, 2017; Pouya and Demir, 2018; Cüce and Ortaçesme, 2020).

‘Healing’ with quite a wide content; It refers to a process that starts with the recognition of physical symptoms, improvement of these symptoms and improvement of health status, and continues with relaxation, reduction of stress, self-improvement and general feeling of well-being, both physically and psychologically and spiritually. For this reason, In order to call a garden a healing garden it is important it should have therapeutic health effects on its users. (Akın, 2006; Uslu and Shakouri, 2012; Keçecioglu, 2014; Sakıcı and Var, 2014).

Healing and therapy gardens; These are areas that contribute to children and adults with different physical or mental development, patients in hospitals or elderly people to regain their health, acquire new skills and develop socially through horticultural activities. On a higher scale, these areas are considered as therapeutic landscape areas and are very important for people living in cities under intense pressure. For this reason, it is thought that healing and therapy gardens should be designed on a therapeutic landscape scale, along with areas such as nursing homes, nursing homes, hospitals, health care centers, children's dormitories, as well as urban open and green spaces (Arslan and Ekren, 2017).

However, these areas; In order to create the desired effect on people's health, provide access and comfortable circulation, and at the same time be sustainable, it should be arranged in a way that meets the needs of all users with different professional disciplines (physiotherapists, psychologists, physicians, landscape architects, architects and engineers) within the framework of design criteria (Arslan and Ekren, 2017; Cüce and Ortaçşme, 2020).

In this study, which aims to determine the therapeutic potential of the coastline of Altınordu District of Ordu province, which was chosen as the research area, 43 criteria were determined in the context of seven term are important in therapeutic landscape designs. And the analysis of these criteria was carried out with doing an observation, examination and evaluation at the study area.

## **1-MATERIAL AND METHOD**

The research was carried out in Altınordu district of Ordu Province. Ordu is located on the Black Sea coast, between 40° 41' north latitude and 37° 38' east longitude. Its adjacent provinces are Samsun to the northwest, Tokat to the southwest, Sivas to the south, and Giresun to the east. Its surface area is approximately 5,952 km<sup>2</sup> and it has 107 km<sup>2</sup> coastline. As a study area, Altınordu district which is the central settlement of Ordu Province located between 40° 57' 6" north latitude and 37° 53' 53" east longitude and It has 303,6 km<sup>2</sup> surface area. According to 2021 Turkish Statistical Institute population data, the population of Ordu Province is 760,872 and the population of Altınordu is 229,214 (TUIK, 2022) (Figure 1).

The material of the research consists of coastline landscape covering Teleferik İstasyonu-Rıhtım, Tayfun Gürsoy Park and Akyazı Park located in Altınordu District of Ordu Province in the Eastern Black Sea Region (Figure 2).

The method of the research is based on the analysis of 43 criteria created for the therapeutic landscape approach with on-site observation, examination and evaluation (Table 1). According to this; If the open and green areas in the research area have therapeutic landscape characteristics in terms of the criterias examined, (+1) point, if they do not, (-1) points, was evaluated. According to the results, comparisons were made between the fields and suggestions were made to improve the current situation.



**Figure 1:** Study area geolocation map



**Figure 2:** Coastline of Altınordu District of Ordu Province

**Table 1:** Therapeutic Landscape Criterias

<b>ENVIRONMENTAL FEATURES</b>
Is the area protected and safe from stimuli that may create a negative or ambiguous situation?
Does the field's visibility allow parents and companions to observe?
<b>ACCESSIBILITY</b>
Are entrances and exits to the area accessible to all users?
Are the entrances to the area from the pedestrian crossings planned in accordance with the surrounding uses?
Are there ramps to facilitate access for all users at the entrances and exits to the area?
Are the widths of walkways and ramps suitable for wheelchair users?
Are there hydraulic elevators at these points so that elderly and disabled individuals can go up and down the stairs or overcome the existing level differences?
Are there enough spaces reserved for the vehicles of persons with disabilities in the parking lots in the area?
Are uses such as sinks, fountains, toilets accessible for children, the elderly, disabled individuals and all other users?
<b>STRUCTURAL DESIGN</b>
Is the structural design of the space balanced, plain and perceptible?
Are both passive and active recreations included in the planning of the area?
Are features or points of interest in the area turned into focal points?
Are there signs to inform at important points such as road junctions and to promote a structure, a function or a plant species?
Are circular and curved lines included in the design of walkways?
Are there sitting-resting areas along the coastline?
Is there a space for wheelchair users in the seating areas?
Have seating units been created for different needs such as socializing or being alone?
Is there equipment in the area that will arouse attention and facilitate the use of structural elements for children with different physical and mental development such as autism spectrum disorder, down syndrome, vision-hearing problems, cerebral palsy?
Is there a contrast between seating areas and hard surfaces?
Is there a hard floor that will facilitate the transition between walkways and seating units?

<b>CIRCULATION AND MOVEMENT</b>
Are there paths and spaces in the area that arouse curiosity and encourage individuals to act?
Do the walking paths in the area have a specific route?
Is there a connection and setup between the spaces in the area?
Do walkways, link roads, and location of plants guide individuals?
<b>NATURAL LANDSCAPE EXISTENCE</b>
Is the natural beauty of the area protected?
<b>PLANTING</b>
Are plant species that provide sensory stimulation with different color, texture, smell and auditory characteristics included?
Has the use of poisonous, prickly, irritating or harmful plants been avoided?
Are there any plant species that provide seasonal awareness?
Are plant species that attract fauna such as birds and butterflies included?
Are edible plant species included?
Are there plant species that stimulate local and cultural memory?
Are there shaded areas created by vegetative design in the area?
Are old or drying trees at risk of tipping detected?
Are the plants taken care of?
<b>REINFORCEMENT ELEMENTS</b>
Are the construction and reinforcement elements in the area strong and durable?
Are there sufficient shading elements in the area?
Are there sufficient lighting elements in the area?
Is the use of intense and disturbing lighting elements avoided in the area?
Are the recessed-protruding and slippery features taken into consideration in the selection of flooring materials?
Can flooring materials be felt by individuals with vision problems?
Are there handrails on stairs and near structures to facilitate movement?
Are there armrests that provide support in the seating elements?
Is the maintenance of the old, broken and dangerous equipment elements carried out?

## 2- RESULTS

The findings of the research were evaluated over 3 regions (Dock Region, Tayfun Gürsoy Park and Akyazı Park).

### *Telfer-Dock Region (RA-1)*



**Figure 3:** Images of The Telfer-Dock Region

Telfer-Dock region is located in the east of the research area. When the region is evaluated within the scope of 'Environmental Features', 'Accessibility' and 'Natural Landscape Existence' in terms of therapeutic landscape potential, it is seen that it does not meet only one criterion (Table 2).

**Table 2:** Analysis of Therapeutic Landscape Criterias in terms of 'Environmental Features', 'Accessibility' and 'Natural Lanscape Existence'

THERAPEUTIC CRITERIAS	SCORE
<b>ENVIRONMENTAL FEATURES (EF)</b>	
(EF) Criteria 1	(+1)
(EF) Criteria 2	(+1)
<b>ACCESSIBILITY (A)</b>	
(A) Criteria 1	(+1)
(A) Criteria 2	(+1)
(A) Criteria 3	(+1)
(A) Criteria 4	(+1)
(A) Criteria 5	(-1)
(A) Criteria 6	(+1)
(A) Criteria 7	(+1)
<b>NATURAL LANDSCAPE EXISTENCE (NLE)</b>	
(NLE) Criteria 1	(+1)

This criteria is ‘Are there hydraulic elevators at these points so that elderly and disabled individuals can go up and down the stairs or overcome the existing level differences?’ and it is very important in the context of the therapeutic landscape concept. It is a technological solution that will facilitate the access of the elderly and individuals with physical problems within the scope of within the scope of accessing the area, and such an application is not seen in the area.

When the area is evaluated within the scope of other criteria that developed in terms of ‘Structural Design’ and ‘Planting’, it has been determined two Structural Design criteria (SD 7-SD 9) do not meet at the research area. The first of these is the absence of places near the seating areas for wheelchair users, and the other one is the lack of equipment to facilitate the use of the elements that will attract attention and structures for children with different physical and mental development such as autism, down syndrome, cerebral palsy (Table 3).

**Table 3:** Analysis of Therapeutic Landscape Criterias in terms of ‘Structural Design’, ‘Circulation and Movement’

<b>THERAPEUTIC CRITERIAS</b>	<b>SCORE</b>
<b>STRUCTURAL DESIGN (SD)</b>	
(SD) Criteria 1	(+1)
(SD) Criteria 2	(+1)
(SD) Criteria 3	(+1)
(SD) Criteria 4	(+1)
(SD) Criteria 5	(-1)
(SD) Criteria 6	(+1)
(SD) Criteria 7	(-1)
(SD) Criteria 8	(+1)
(SD) Criteria 9	(-1)
(SD) Criteria 10	(+1)
(SD) Criteria 11	(+1)
<b>CIRCULATION AND MOVEMENT (CA)</b>	
(CA) Criteria 1	(+1)
(CA) Criteria 2	(+1)
(CA) Criteria 3	(+1)
(CA) Criteria 4	(+1)

Finally, the area was evaluated in terms of ‘Planting’ and ‘Reinforcement Elements’ and it has been determined two Reinforcement Elements criteria (RE 6-RE 8) do not meet at the research area. In these two criteria, it was determined that the flooring materials could not be felt by the individuals with visual problems, and that there were no armrests to provide support in the seating elements for the individuals with physical problems (Table 4).

**Table 4:** Analysis of Therapeutic Landscape Criteria in terms of ‘Planting, ‘Reinforcement Elements’

<b>PLANTING (P)</b>	
(P) Criteria 1	(+1)
(P) Criteria 2	(+1)
(P) Criteria 3	(+1)
(P) Criteria 4	(+1)
(P) Criteria 5	(+1)
(P) Criteria 6	(+1)
(P) Criteria 7	(+1)
(P) Criteria 8	(+1)
(P) Criteria 9	(+1)
<b>REINFORCEMENT ELEMENTS (RE)</b>	
(RE) Criteria 1	(+1)
(RE) Criteria 2	(+1)
(RE) Criteria 3	(+1)
(RE) Criteria 4	(+1)
(RE) Criteria 5	(+1)
(RE) Criteria 6	(-1)
(RE) Criteria 7	(+1)
(RE) Criteria 8	(-1)
(RE) Criteria 9	(+1)

#### ***Tayfun Gürsoy Park (RA-2)***

Tayfun Gürsoy Park is located in the middle of the research area (Figure 4).



**Figure 4:** Images of The Tayfun Gürsoy Park

When the area was examined within the scope of the criteria produced under 7 concepts, the same findings were reached (Table 2, Table 3, Table 4).

### *Akyazı Park (RA-3)*

Akyazı Park is located in the west of the research area (Figure 5).



**Figure 5:** Images of The Akyazı Park

Although the same findings were reached in the field, in addition, within the scope of Accessibility (Table 2, Table 3, Table 4). The criterion (A6) is 'Are there enough spaces reserved for the vehicles of disabled people in the parking lots in the area?'. It has been determined that the area does not meet the (A6) criterion, and even this alone can cause special user groups to move away from the area.

### **3. CONCLUSIONS AND DISCUSSION**

The strong bond between nature and human is effective in human psychology and health. Being intertwined with nature, feeling nature, touching the soil, or even smelling a flower can be a reason for a person to be attached to life in the strongest way (Külekcı and Sezen, 2020). So, the contribution of open and green spaces to the urban citizens in terms of therapeutic landscape concept cannot be denied.

However, these areas; In order to create the desired effect on people's health, provide access and comfortable circulation, and at the same time be sustainable, it should be arranged in a way that meets the needs of all users with different professional disciplines (physiotherapists, psychologists, physicians, landscape architects, architects and engineers) within the framework of design criteria (Arslan and Ekren, 2017; Cüce and Ortaçesme, 2020).

In the Attention Restoration Theory (ART), which they proposed in their research conducted by Kaplan and Kaplan (1989) it was concluded that watching the wild nature can provide a restorative effect and emotional relief to fatigue caused by an overstimulating environment. Ulrich (1992) supported this theory and introduced the 'Stress Coping and Restoration Theory' as a positive distraction that improves the emotional state of a perceiver who studies nature, natural features. (Said, 2003). Within the scope of Therapeutic Garden designs, according to Ulrich's "Stress Coping and Restoration Theory", "Social Support", "Sense of Control", "Physical Movement and Exercise", "Access to Nature and Positive Stimulation" reduce stress and support healing and were adopted as principles (Ulrich, 1999). In line with these basic principles, design principles have been developed for different user groups.

However, therapeutic landscapes are larger-scale areas and should include design principles that include both specific user groups and healthy individuals.

Within the scope of the research, the study area was handled within this framework and the criteria were developed in this context. There are many studies carried out at the garden scale, but there are fewer studies at the landscape scale. In this sense, the criteria developed will shed light on other studies.

If the research area is to be evaluated briefly, similar findings have been reached in the three regions covering the study area and their potentials within the scope of therapeutic landscape are almost the same.

**Table 5:** Analysis of Therapeutic Landscape Criteria for Three Region Covering the Research Area

<b>PRINCIPLES</b>	<b>RA-1</b>	<b>RA-2</b>	<b>RA-3</b>
Environmental Features	2	2	2
Accessibility	5	5	4
Structural Design	5	5	5
Circulation and Movement	4	4	4
Natural Landscape Existence	1	1	1
Planting	9	9	9
Reinforcement Elements	5	5	5
<b>TOTAL</b>	<b>31</b>	<b>31</b>	<b>30</b>

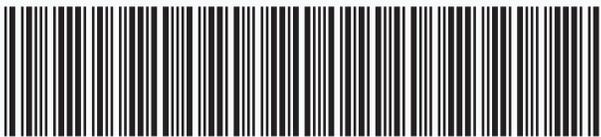
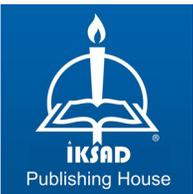
Although the area in the whole coastline offers potential, But it is insufficient for individuals with vision problems, the elderly, people with physical disabilities and children with different physical and mental development. The design of the area should be revised in line with universal design principles to cover all user groups. In summary,

- A parking solution should be introduced for disabled individuals in Akyazi region.
- Children's playgrounds should be redesigned for children with autism, Down syndrome, vision-hearing problems and disorders such as cerebellar palsy.
- Sufficiently wide areas should be left for individuals using wheelchairs on the walking paths and sitting areas.
- Technological solutions should be developed for individuals with physical problems and wheelchair users to make it easier to cross the street and overcome the elevation differences.
- Floors should be re-evaluated for individuals with vision problems, and audible or touch-sensitive solutions should be developed to enable them to perceive and recognize the area.
- In addition, the creation of armrests/railings that will facilitate the rise of individuals with physical disorders in the sitting area and other needed areas

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