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Urban Landscape Design Criteria in Winter Cities

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Kış Kentlerinde Kentsel Peyzaj Tasarım Kriterleri

ABSTRACT:

Public open spaces, which constitute the most important parts of cities, are places where social relations are established and that provide environmental, social, and economic benefits to society. In winter cities, the use of public open spaces is severely restricted as a result of the effects of long-term cold weather conditions, wind, snow, frost, ice, and adverse weather conditions such as a reduced amount of sunlight. In this context, the physical and psychological effects of individuals in winter cities and the livability of cities are negatively affected. Accordingly, in the study, in the framework of urban landscape design of the a few winter city from the world and Turkey, it is aimed to examine the studies and practices in public open spaces. In this direction, design criteria were examined in order to create more livable spaces with high visual quality in terms of landscape in winter cities. Considering the ecological conditions of these cities with landscape design elements, plant design elements (Softscape) and structural design elements (Hardscape) it is thought to be able to develop various visual alternative solutions.

KEYWORDS: Public open spaces, winter cities, landscape design criteria.

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ÖZET:

Kentlerin en önemli parçalarını oluşturan kamusal açık mekanlar, toplumsal ilişkilerin kurulduğu ve topluma çevresel, sosyal ve ekonomik faydalar sağlayan mekanlardır. Kış kentlerinde genelde uzun süreli soğuk hava koşulları, rüzgâr, kar, don, buz, azalan gün ışığı miktarı gibi olumsuz hava koşullarının yarattığı etkiler sonucunda kamusal açık mekanların kullanımının büyük ölçüde kısıtlanmaktadır. Bu bağlamda kış kentlerinde bireylerin fiziksel ve psikolojik olarak, kentlerin ise yaşanabilirliği olumsuz anlamda etkilenmektedir. Bu bağlamda çalışmada dünyadan ve Türkiye’den bir kaç kış kentin kentsel peyzaj tasarım çerçevesinde kamusal açık alanlarında yapılan çalışmalar ve uygulamaların incelenmesi amaçlanmıştır. Bu doğrultuda kış kentlerinde daha yaşanabilir ve peyzaj açısından görsel kalitesi yüksek mekanlar yaratabilmek amacıyla tasarım öğelerinin kullanımları kriterleri incelenmiştir. Bu kentlerin ekolojik koşullarını göz önünde bulundurarak peyzaj tasarım elemanları olan bitkisel tasarım öğeleri (Softscape) ve yapısal tasarım öğeleri (Hardscape) ile çeşitli görsel alternatif çözüm önerileri geliştirilmesi düşünülmektedir.

Anahtar Kelimeler: Kamusal açık alan, kış kentleri, peyzaj tasarım elemanları.

INTRODUCTION

Public open spaces; streets, pedestrian paths, squares, and parks are the parts that form the most important landscape patterns of cities. Public open spaces are all unbuilt spaces within the boundaries of a city or a settlement that provide or have the potential to provide environmental, social, and economic benefits directly or indirectly to society. As a common ground that connects the society, public spaces are among the places that form the most important parts of cities, ranging from streets to squares and parks and the buildings surrounding them. In this direction, parks, and gardens, green areas, children's playgrounds, sports facilities, natural and semi-natural green areas, city squares, market places, streets, pedestrian sidewalks are listed as public open spaces (Erdönmez and Akı, 2005).

One of the agreed value on that city for the winter regarding public open space as a scene is considering the establishment of social relations in the regulation of this area. In urban settlements with cold climates, features such as heavy snowfall, icing, short daytime periods, ice-covered pedestrian and vehicle roads become an integral part of life. Because of these features, cold climate conditions have a determining role in the visual landscapes of cities. In this case, the cold climate becomes very dominant on identity with its effects such as allowing limited outdoor activities, increasing energy consumption, reducing recreation, and transportation opportunities (Tandoğan and Şişman, 2018).

When the definition of winter city is examined, in the literature, the temperature is below 0 ° C and 0 ° C, precipitation is generally in the form of snow, daylight is felt in limited times, these three factors occur in long time periods and there are hard seasons, is observed is defined as the city. According to Erskine (1986), a winter city is generally located at latitudes of 45 ° and above and whose temperature values are 0 ° C or below in January (Henke, 2006). As in many of the current winter cities in the world located in the cold regions of Turkey; There are winter cities such as Ardahan, Kars, Iğdır, Ağrı, Van, Hakkari, Bitlis, Muş, Erzurum, Erzincan, Tunceli, Bingöl, and Elazığ (Öztürk et al., 2017). In winter cities, design should be carried out by paying attention to certain principles in urban landscape design in order to create more livable urban open spaces that will enable the city dwellers to use the outdoor space effectively, encourage them to spend more time (Tandoğan and Şişman, 2018).

This study focuses on the importance of compositions that can make urban landscapes in cold climatic conditions more attractive and free from monotony, and at the same time be functional, with vegetal and structural design elements. The study resulted in recommendations made public open space created by the winter with the climatic conditions in the city proper and accurate bill, due to its spatial activities, it will enable the urban dwellers to use effectively outdoors, encourage them to spend more time, and lead to the creation of more livable and attractive urban open spaces.

1. City Definition and Historical Development

Urban administrative organization units can be defined according to population, economic and social criteria. In the distinction between urban and village -as it may be wrong not to consider the regions with low population density as urban although they have an urban nature- they are used in other criteria besides the population criteria. These are city definitions based on economic and social scientific criteria. One of the economic factors that define the city is the majority of the population working in non-agricultural areas (Keleş, 2002). In this context, the city is not only a place but also historical, social, cultural, political, economic, etc. It can be said that they are settlements that contain features. Cities have historically fulfilled several of a number of military, religious, political, commercial, symbolic, and cultural functions, depending on the history and geography of their formation and transformation. Similarly, the scale of the urban reflected particular social geographies and histories (Smith, 2006). The city phenomenon is a dynamic concept that has a different meaning in every period of history. When the changes in the conceptual content of the city in historical development are examined, it is observed that the concept of civilization was effective in the early periods (Ertürk, 1996).

1.1. Urban Design Concept

Although urban design guides urban development and plays an essential role in improving the quality of the urban built environment, this social art has only recently been recognized as a separate discipline. The issues discussed by both professionals and academics focus not only on the constituent elements of urban design but also in their relationship with structural arts such as urban planning, architecture, landscape architecture, and engineering (Greene, 1992). Urban design, similar to art and architecture, is the arrangement of urban spaces in order to organize and protect the environment for economic, social, political, and religious needs (Moughtin, 1992). Urban design is a detailed arrangement method that includes the analysis and analysis of multidimensional urban details in the physical, socio-cultural, and socio-economic contexts in urban space with its general expression (Kaplan, 2000). Urban space is a unit formed by buildings as a part of the environment, a three-dimensional space where all the actions people live or perceive take place, and units that also carry the fourth dimension, time. Therefore, urban design is an expertise that assumes the design of urban exteriors and plays a role in its realization and development.

1.2. Basic Elements in Urban Design

Urban design dimensions: urban aesthetics, urban landscape, urban structure, urban form, city guides, history of the city, urban renewal studies, preservation of the city, urban renewal, urban demography, design control, urban policies, urban security, environmental security, local and regional identity, renovation/renovation of the city center, property management, public-private sector participation design relations, housing, and housing areas development, urban culture, and change, the urban form structure,

women's relationship with the urban environment, sustainability, urban design practice and practice (Konuk, 1999). The basic elements to be considered in urban design are given in Table 1.

Table 1. Basic elements to be considered in urban design (Konuk,1999).

Basic elements	Explanation
Liveability	The characteristics of urban spaces where human activities and life will continue is the livability of the spaces, air, light, energy, etc. that will allow them to be renewed. it provides inputs and is safe.
Compliance with function	The suitability of a place to its function should be considered at different levels, from ergonomic fit to the human body, to cultural behavior patterns and suitability in the city.
Easily readable, able to learn, be able to take anticipation	The success of an urban environment depends on the ability of people to perceive it with sufficient clarity and, accordingly, to learn easily. In addition, people should be able to easily estimate the location of the city as a whole.
Visual satisfaction	People's perception of the built environment in which they live, the scales, proportions, colors, textures, etc. of the structures in this environment. physical properties have an important place. These features are effective in making judgments on the aesthetics of the environment.
Associative Perception	An urban design gains identity by attributing meaning to it through symbolic perceptions. The meaning attributed will change according to people, cultures and time.
Balance of spaces under private and public supervision	Urban design should be evaluated according to openness to the public, access to visual and symbolic values according to the activities of the inhabitants of the city, and the equal opportunity it provides to different segments of the society.
Feasibility	Urban design should be realistic, it should be viable. For this, in addition to the construction of infrastructure and superstructures, the creation of the envisaged life style and the ability to keep the space alive in a well-maintained manner should be addressed.

2. The Concept of Winter City

The winter season is seen as “cold, dark, uncomfortable, dangerous and boring” as stated in most sources, and brings many difficulties for both drivers and pedestrians. Providing a safe, accessible, comfortable, and aesthetic pedestrian environment with appropriate planning and design studies is very important for increasing the use of outdoor spaces. In order to improve accessibility for all as part of the pedestrian-priority design process in winter cities, it is necessary to use urban design guides that include current information and appropriate regulations on the climate-sensitive design and winter care (Pressman, 2015; Urban systems, 2000). Although there are many methods used to classify climates, Köppen-Geiger climate classification is one of the most widely used climate classifications in the world. The method, which was created by Wladimir Petrovich Köppen in 1918, was developed with the contributions of Rudolf Geiger (Köseoğlu, 2012; Öztürk et al., 2017). The method whose spatial consistency and accuracy has been checked (Türkeş, 2010) is basically based on monthly, annual temperature and precipitation data, and climate types are represented by letters (Hess and Tasa, 2011). One of the most important features of this climate classification is that the 5 basic climate types (A, B, C, D, E) used in the classification are compatible with large vegetation groups (Erinç, 1996). Turkey is seen only from the cold climate of the Dfb (severe winter, writing short and hot, rainy seasons each). Cold climate regions (Dfb and Ds) within

the provinces of Erzurum seen in Turkey, Kars, Ardahan, Van, Agri, and Mus. Turkey's Köppen-Geiger in Figure 1 (Kottek et al., 2006) are given the climate map types.

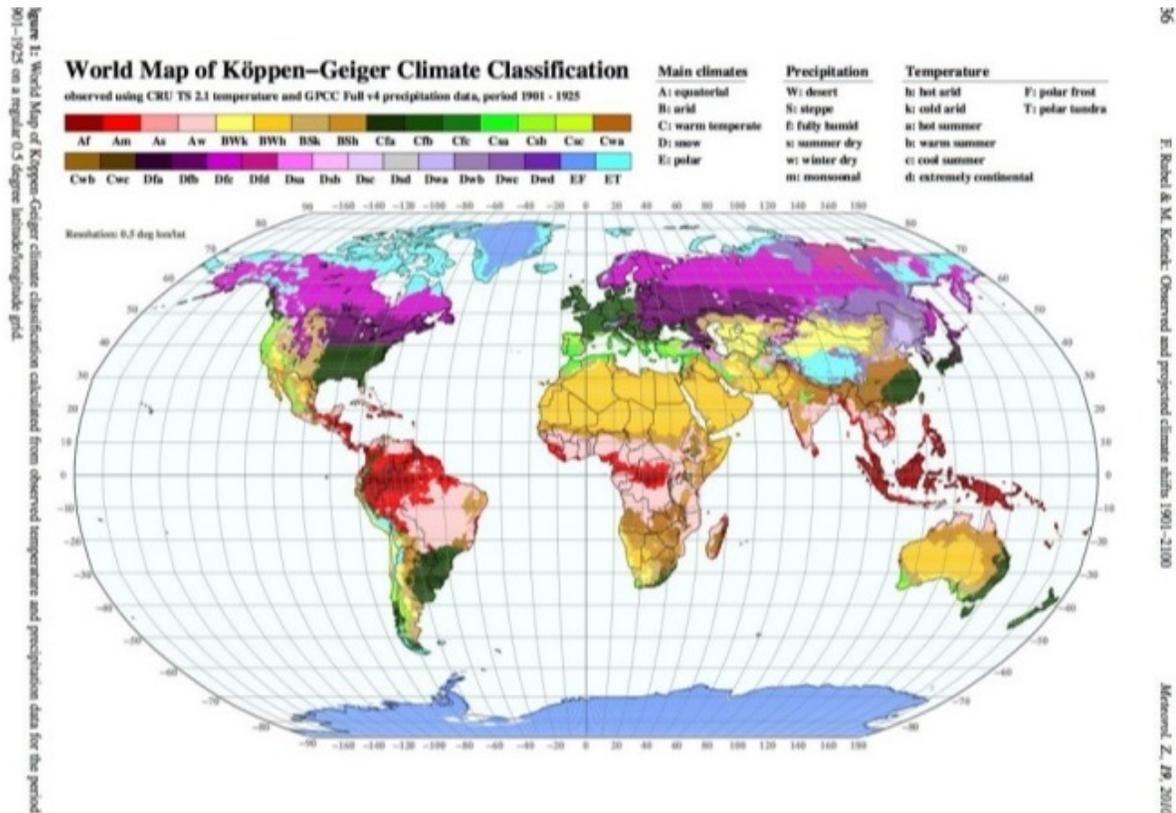


Figure 1. Köppen-Geiger climate types map of the world (Kottek et al., 2006; Öztürk et al., 2017).

2.1. Climate, Planning and Effects of Climate on the City

When it comes to the relationship between climate and planning, the situation that comes to mind is to increase the thermal comfort, that is, the quality of life in outdoor spaces (Ebrahimabadi et al., 2012). Considering the studies conducted for winter and cold climate conditions, it is seen that in regions where precipitation is in the form of snow and frequent frost events occur, very restrictive situations occur in the daily lives of people and the quality of life decreases with the addition of poorly designed environments (Pressman, 2015). For many people, winter conditions represent the beauty of nature and opportunities for sports and recreational activities.

Many planned and unplanned developments that occur during the urbanization process affect the urban climate and, as stated by Oke (1981), create temperature differences up to 12 ° C in night temperatures on normal days. Design elements such as open-closed space balance in urban areas, shaping of the built environment, coating materials, street geometry, and urban form can reveal some negativities such as urban heat island formation, rainwater retention, flood control, variable wind areas, and surface temperature differences (Balık and Yüksel, 2014). Climatic conditions are one of the important factors affecting the design of the settlement and the settlement as well as the form and distribution of the population. Urban spaces that are not designed in accordance with climatic conditions lead to the formation of lifeless cities

and this situation leads to a decrease in the quality of life of the citizens confined to closed spaces and the livability of the cities (Tan and Giresun, 2016).

Winter is perceived as a negative force that creates difficulties and increases expenditures, rather than a healthy lifestyle and recreational opportunities. In the winter season, many people experience psychological depression due to fatigue, difficulty in concentration, loss of energy, desire to sleep, decrease in social relationships, inability to enjoy life, increase in pessimistic thoughts (Bergum and Beaubien, 2009), seasonal emotional discomfort and lack of sunlight. Prolonged cold, snow, and icing cause visual monotony in the environment dominated by white and gray.

3. Urban Landscape Design

The concept of landscape, as perceived by people, is defined as a space whose character is the result of the action and interaction of natural and human elements. Human perception in this definition gains more important dimensions in urban landscapes due to the intensity of human influence that shapes the landscape (Atanur, 2010). The urban landscape constitutes the composition of the landscape in the city and expresses a conscious order of the urban environment. In the formation of the urban landscape, it has an important effect on the data regarding the socio-cultural structure as well as the physical structure. Urban landscape design, which constitutes the design pillar of landscape architecture in spaces in the whole or parts of the city; It varies between 1/100 scale and 1/1000 scale depending on the field of study (Çelik and Yazgan, 2007). According to Kaplan and Küçükerbaş (2000), the design involves increasing the quality of life to meet the human needs of the space and the combination of living and non-living materials in this direction. The application of landscape design and reaching the desired space is a time-consuming process due to the use of live materials. In this respect, landscape design is not a frozen architectural site plan. It is a living, developing, growing branch of urban design that changes color and form according to the seasons (Çelik and Yazgan, 2007). Landscape architecture, urban design process; They can participate in the urban open and green space system issues that include parts of the city such as a park, open space, square, pedestrian zone, or the whole city, and provide the interaction of the society with the buildings and the landscape in the design environment (Ter, 2002). Pedestrian roads are free from vehicle traffic, defined as pedestrians, and serve the needs of the people of the city, such as eating and drinking, physiologically, as meeting and communication centers, sociologically, and economically (Tranck, 1986; Fanuşçu, 1994). As the starting and distribution places of urban circulation, squares are meeting and activity points of the city dwellers associated with the whole of the city through streets, streets, and pedestrian roads (Aydemir et al., 2004). Parks created to respond to the passive or active recreational activities of the city dwellers are other important landscape parts of the cities that regulate the relations between humans and nature (Tandoğan and Şişman, 2018). Urban landscape design is done in the urban dimension as one of the subtitles of the landscape design process.

3.1. Landscape Design Criteria in Winter Cities

The criteria to be considered in the design of streets, pedestrian paths, squares, and parks, which are public open spaces, can be classified as follows.

3.1.1. Structural Design Criteria of Public Open Spaces

- Roads and streets should be designed in accordance with the topography in terms of protection from the cooling effect of sunbathing and wind (Tranck, 1986).

- Pedestrian paths should be designed to benefit from the sun, and the streets should be positioned to the north so that high buildings do not obstruct the sun and large shadows fall on pedestrians (Winter City Edmonton, 2013).
- Designing building facades using tarpaulins, signs, and warm colors will increase visual interest and make the streets safer and warmer spaces (Urban systems, 2000; Pressman, 2015).
- Seasonal lighting needs to be created in the street space to make the street space more attractive to pedestrians and at the same time create a special winter atmosphere (Urban systems, 2000). Seasonal and permanent building lighting designs should be coordinated to create a unique aesthetic for the night view.
- The adequacy of street lighting and street furniture in terms of quality and quantity should be ensured. Due to the lack of sunlight, streets should be well lit, and walking safety should be provided (Coleman 2009).
- Street lighting and provision of adequate street furniture will increase the comfort and safety of the street space (Urban systems, 2000) and encourage pedestrian activity all year round, even in very cold weather.
- Textured and textured flooring materials should be selected in flooring material selection (Ersline, 1986; City of Minneapolis, 2011).
- There should be a separation between pedestrian paths and roadways to protect pedestrians from mud and water sprayed by vehicles (City of Marquette, 2004).
- Using elevated pedestrian crossings to reduce the speed of vehicles in order to prevent accidents will reduce traffic speed and at the same time prevent snow accumulation in the form of melted or ice in these areas in terms of drainage, making them safe passage areas for pedestrians (Urban systems, 2000; Coleman, 2009).
- Wider arrangement of the sidewalks will allow cycling in the summer and store snow in the winter (Urban systems, 2000). It will also prevent interference between bicycle and pedestrian activity by providing sufficient space for snow storage in winter (City of Minneapolis, 2011).
- Pedestrian paths should be planned in the sun-exposed part of buildings (Urban systems, 2000).
- Lighting is an important element to make the place more attractive in the winter season when human activity decreases. A pedestrian lighting system should be installed in streets and parks where important shops are located (Urban systems, 2000).
- Warm colors should be preferred rather than cold colors such as green and blue in the arrangement of streets and pedestrian paths. Earth tones such as dark yellow, terracotta, pastel tones such as red, orange, and yellow should be preferred for highlighting. Special structures such as bridges, electric poles, and street furniture are the appropriate choice for the use of colors. Elements such as banners and posters and colors can also be used temporarily (Urban systems, 2000).
- Direction should be provided that receives direct sunlight and shadows on buildings should be avoided as much as possible. For this purpose, the north side of the open areas should be limited to the buildings, and the south side of the open areas should be left open for maximum benefit from the sun (Bergum and Beaubien, 2009; Tan and Giresun, 2016).
- The use of deciduous trees in parks and open areas will allow sunlight to access the park in winter (Bergum and Beaubien, 2009; Tan and Giresun, 2016).
- Open public spaces should be designed multi-functional in a way that allows both winter and summer activities. For example, the lake and water area that can be used as an ice rink in winter can be designed as a pond in summer (Bergum and Beaubien, 2009).
- Areas that will allow attractive winter activities should be created, festivals and similar events should be held (Bergum and Beaubien, 2009).

- Areas should be left for storing snow and ice in open areas such as squares and parks. These bumps may be children's playgrounds (Urban systems, 2000).
- Mounds to be created by using topography in open areas and parks can be used for sliding with sleds. Between these areas and the road, a safety barrier should be created with evergreen trees (Urban systems, 2000).
- Appropriate color and lighting elements should be used in the buildings surrounding the square and in the square to balance the darkness and monotony in winter (Tan and Giresun, 2016).
- The use of heaters in public outdoor spaces designed to be suitable for sitting can increase outdoor activities during the colder months (City of Minneapolis, 2011).
- In material selection, wood, plastic, and certain composite materials should be preferred as they offer comfort for a longer period of time than metal and concrete (Urban systems, 2000).

3.1.2. Planting Design Criteria for Public Open Space

- In plant selection, species resistant to cold and salt should be selected in terms of plant health.
- Due to the fact that they provide solar and wind control, attention should be paid to the size and character and growth rate of the plant in summer and winter months (Candemir, 2009).
- Choose plants that are green in summer/winter, evergreen, on the northern facade of the buildings. These plants will act as windbreakers and reduce heat losses and protect pedestrians from cold winds (Olgyay, 1962). Deciduous trees should be used in public spaces and on the south-facing facades of buildings (Coleman, 2009).
- Using evergreen plants in pedestrian areas will create a suitable environment for wind screening (City of Minneapolis, 2011).
- For the selection of the right plants in terms of resistance to cold, primarily the plants that grow naturally in that region should be determined (Urban systems, 2000).
- In cases to be used as wind curtains, it is necessary to use trees in groups instead of lining up trees (Urban systems, 2000).
- Insulation should be provided in winter by using climbing plants or intensive planting on the walls of the buildings (St. Clair, 2010).
- Shoulders and plants should be used to prevent direct snowfalls at building entrances (Cengiz et al., 2016).
- Increasing the attractiveness of the winter character of the area, such as form, color, fruit, etc. Plants with interesting winter characteristics should be selected (Coleman, 2009; Cengiz et al., 2016).
- Evergreen trees and certain plant species should be used as they offer interesting winter effects in terms of color, uniformity and form (Urban systems, 2000).

3.2. Landscape Design Examples from Winter Cities around the World

The world population is increasing day by day and the reflection of this situation on human settlements is seen as less rural and more urban settlements. There are winter cities in many parts of the world. When the landscape designs of these cities are examined, it is revealed that they have a special landscape for themselves with the effect of climate conditions as well as socio-cultural factors. A few examples of urban landscape images of different winter cities of the world are given in Figures 2, 3, 4, 5, 6, 7, 8, and 9.

Uppsala, the most environmentally friendly city in the world: “The city prioritizes pedestrians, bicycle paths, public spaces, and art studios. The air in the city is very clean due to the promotion of green energy”.



Figure 2. Uppsala- Sweden, (Url, 4)



Figure 3. Moscow-Russia, (Url, 3)



Figure 4. Stockholm-Sweden,(Url; 2)

Figure 5. Bruges–Belgium (Url, 4)



Figure 6. Hallstatt-Austria (Url, 4)

Figure 7. Prague-Czech Republic (Url, 4)



Figure 8. Bergen-Norway (Url, 4)



Figure 9. Tallinn - Estonia (Url, 4)

3.3. Winter Landscape Design Examples from cities in Turkey

In 1980 and later editing approach to environmental and open space concept in Turkey be considered a breaking point. The holistic landscaping possibilities brought by new residential areas, the upper scale interventions towards the city through urban transformation projects, and the urban renewal work that local governments have entered with the opportunities gained after the new restructuring have brought the design and usage habits for open spaces, and accordingly, new standards and expectations have been defined (Güzer and Nalbantoğlu, 2004). A few examples of the different images of the urban landscape winter city in Turkey: Figure 10, 11, 12, and 13.



Figure 10. Erzurum-Turkey (Url, 5)



Figure 11. Kars-Turkey (Url, 6)



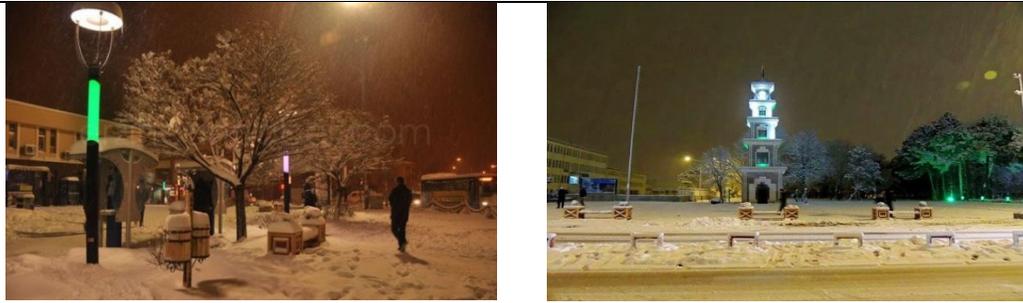


Figure 12. Erzincan-Turkey (Url, 7)



Figure 13. Van-Turkey (Url,8)

CONCLUSION

Cities are not only places that meet the shelter needs of people, but also multi-functional areas that meet the needs of recreation, health, trade, entertainment, sports, culture, education, administration, transportation, and public services. Public open spaces, which constitute the most important parts of cities, are places where social relations are established and that provide environmental, social, and economic benefits to society. Plants and structural elements that provide benefits especially in terms of climate control and aesthetics in the arrangement of these spaces are effective factors in determining the aesthetic, ecological, socio-cultural, psychological, hygienic, and functional benefits of the urban space and the level of life quality. For example, the use of color and creative use of lighting can also contribute to visual aesthetics to make a space more beautiful and inviting. However, it will be possible to cover unwanted images with creative use of light and colors in order to remove visual pollution in the urban area. Spring roads, streets, parks, and squares, which are public open spaces in winter cities, should be designed multi-functional in accordance with all seasonal activities, and spaces should be created for various activities suitable for the winter season by making use of topography. By using appropriate color and lighting elements in the buildings and squares surrounding these areas, more colorful and attractive surroundings, more materials for the user in urban furniture to be used in parks and squares should be selected, and the use of these spaces should be used. Thus, by ensuring the realization of spatial activities in these areas, more livable urban open spaces will be created, which will enable urban dwellers to use them effectively outdoors, encourage them to spend more time.

With the suggestions made as a result of the study, public open spaces designed with a design suitable for climatic conditions in winter cities will enable the urban dwellers to use effectively outdoors, encourage

more time to spend, and lead to the creation of more livable and attractive urban open spaces due to their spatial activities. Thus, the fact that public open spaces, which are social and cultural gathering areas, are more lively in the winter season, the perception of being able to do social activities, and the perception that they create opportunities for public health activities will also contribute to the social structures of the city. Relevant managers and stakeholders in winter cities will be able to ensure the active use of these areas by the citizens of the public areas in these cities in all seasons of the year by complying with the design criteria set forth.

Etik Standart ile Uyumluluk

Çıkar Çatışması: Yazarlar herhangi bir çıkar çatışmasının olmadığını beyan eder.

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