



Evaluation of the Distribution of Urban Landscapes (Case Study: Rasht City)

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Abstract: *The current research is conducted with a descriptive and analytical approach using various statistics and data. It shows that, contrary to the national and international standards provided for urban landscape and despite the high potential of the region, we encounter fundamental deficiencies and according to the conventional urban landscape per capita, it should be between 10 and 15 square meters for each person, while this value is 1.1 m² per person according to the current state of the per capita landscape announced by the Parks and Landscape Organization of Rasht, which is very different from international and national standards.*

Keywords: *Landscape, Evaluation, Sustainable Development, Urban Life Quality, Rasht City*

INTRODUCTION

Landscape is a part of physical area of city which can have certain functions. The landscape sometimes plays the decorative role (urban beautification) and sometimes the recreational role, but with the increasing development of urban areas in recent decades and overtaking the urbanization from urbanism which has been accompanied by numerous difficulties such as an overestimation of the population, the cities' non-targeted structural development and increased environmental pollution, these urban landscapes have played an important role in preserving and balancing the urban environment and mitigating the pollution of the air. Considering the landscape in general as respiratory lungs of cities is not an exaggerated definition of its function. It is, however, resembles its minimum function in the ecological concept of cities. These spaces are important in terms of providing the environmental needs of urban population as well as in terms of providing leisure spaces and the context for its social interaction and communication. The pollution caused by the industries and technology has turned cities into hell for their inhabitants. The irregular development of cities horizontally and vertically has also caused the destruction of nature. Nature and landscape are served as the palpitating heart of the human habitats for many years, and they were the best location and place of the first cities. Neglecting the urban inhabitants is in decline. Since these crises threaten cities day by day, such as sound pollution, air pollution, and psychological pressures that result in living among the congestion of rocky buildings, heavy traffic and the transport of various means, considering the needs of this huge urban population is necessary.

Problem statement

The use of landscapes in cities and their proportional distribution is considered as one of the basic issues in urban planning and management. Among other issues that add to the importance of landscape use in cities, having multifunctional use (natural, aesthetic, social, etc.) makes it so important to address this issue in urban area. Population growth and its regional concentration have a direct impact on the quality of the

environment. As population growth, poverty and environmental degradation in the developing world have become a vicious circle.

The comfort and welfare in life are divided into material and spiritual parts that spiritual comfort is more important than other factors. One of the external factors for providing the comfort and well-being in urban overcrowded spaces is urban landscapes, which many studies have proved its impact on the comfort of the citizens so far. Therefore, today the critical role of urban planning and design in preserving communication and urban environments with landscapes and nature is emphasized. Since Rasht is considered as one of the metropolises of Iran and its population growth rate is high, considering the distribution of landscape in the city is of particular importance. The current status of distribution and dispensation of urban landscapes in Rasht indicates that its distribution is not based on urban planning criteria and principles, including spatial justice, as well as urban land use planning objectives. The continuity of this situation is causing citizens' dissatisfaction and urban planning and management will also face new problems and challenges in the future.

Research background

- Khosravi (2017), in his thesis entitled "The impact of Lahijan Municipal Landscape Organization activities on performance of urban service chain management (Case Study: Lahijan Municipality Areas)", concluded that the relationship between the components of municipal urban services activities and urban landscape service is significant under the supervision of the Lahijan municipality in Gilan province.
- Sasani (2017), in his master's thesis, entitled "Comparative analysis of effective geographical factors in the development of urban landscape" (Case study: three and four distinct of Rasht), indicated that the type of vegetation and soil texture and type have a lot of effects in the landscape development of 3 and 4 distinct, and the development of landscape in Rasht has improved the quality of life of citizens and generally promotes environmental sustainability of the city in pursuit of sustainable development objectives.
- Afshoon et al. (2016), in an article entitled "The importance of landscape and its impact on mental health," concluded that one should consider how to create spaces that encourage a healthier life and free of common psychosocial and mental disorder in modern societies.
- Nowroozi Yekta et al. (2016), in their article entitled "The role and importance of landscape in sustainable urban development," found that urban landscape is considered as one of the most important centers for welfare and recreational services, which, in addition to the health and mental aspects is of great importance on sustainable urban development.
- Farsha (2015), in her master's thesis entitled "Analysis of urban landscape and its role in sustainable urban development (Case study: District 4 of Region 1 in Tehran Municipality)," found that the development of landscape has a direct relationship with sustainable development, and sustainable urban development can be achieved in the form of urban regions and areas with the development of urban landscape and the precise planning in accordance with the existing infrastructure and foundation. On the other hand, the proper localization of urban landscapes is another factor in the realization of sustainable urban development in the form of urban neighborhoods. It is important to note that the study of existing needs, potentials and the use of popular participation is important considering the proper understanding of urban areas.
- Aminian (2014), in an article entitled "Sustainable development of urban landscape with integrated urban management approach," concluded that there is a direct relationship between the integrated urban management and the reduction of the negative effects of landscape development and consequently sustainable urban landscape.
- Zandieh et al. (2014), in a research entitled "Landscape role in sustainable urban development," concluded that urban landscapes has a social and ecological efficiency which the most important effect of landscape in cities are their environmental functions or ecological efficiency. They make cities favorable to live, cope with the destructive effects of expanding industry and transportation and improve the

quality of citizens' life. The importance of urban landscapes is to the extent that the existence of this use is today considered as one of the developmental indicators of societies. The most important effects of landscapes in cities are reducing air pollution, reducing noise pollution, adjusting temperature, increasing relative humidity, purifying air and absorbing dust. Other landscape effects in cities are relative, but the landscape effect set will make their presence in the cities inevitable.

- Nahibi et al. (2014) in their research "The effect of urban landscape on improving the quality of urban life (Case study: Shian neighborhood)" found that residents of Shian neighborhood consider landscape as an inseparable part of their life, life quality promoting and a sustainable and green neighborhood.
- Ajilian et al. (2013), in their article on the importance of urban landscapes in achieving sustainable development objectives, concluded that the effect of landscape development in cities would improve the life quality of citizens and generally promote environmental sustainability of the city in the line of realization of sustainable development objectives.
- Agha-Farini et al. (2013), in an article entitled "The role of landscape in sustainable urban development," found that the role of landscape in controlling air pollution, noise pollution, landscape aesthetics, mental health and the conservation of natural resources are obvious for all. That is why landscape per capita in urban design is presently considered as the main factor and plays a significant role in the sustainability of urban communities.
- Jahanshahi (2013), in an article entitled "Investigating the role of landscape in sustainable urban development," concluded that the distribution of urban landscapes would produce optimal ecological efficiency for urban living conditions. As well as, it studied the impact and importance of landscape in urban living in addition to study the standards and proposed per capita of urban landscapes by various institutions.
- Mohammadi et al. (2011) in their article "Analysis and evaluation of sustainable development of inner-city landscapes (Case study: the city of Miandoab)," concluded that contrary to existing standards and high environmental power, the city of Miandoab faces fundamental deficiencies, the difference between areas in these spaces has also increased dramatically and the imbalance in the urban spatial distribution has become more tightened.
- Khansefid (2008) in an article entitled "Investigating patterns of urban landscape distribution using urban landscape ecology approach and its relationship with urban sustainability (Case study: Tehran's metropolis)" found that the presence of nature in a metropolitan such as Tehran is important due to environmental capabilities for sustainability of urban ecosystems.
- Satari-Raouf et al. (2008), in an article entitled "Sustainable development of cities, a step towards the revival of urban landscapes," concluded that the basic principle can be used for the formation of sustainable and citizen-oriented cities based on the creation of a popular and friendly habitat, the preservation of natural resources and consideration of the localization of places with variable densities and the design of landscapes. And the human community must become familiar with the severe environmental crisis and any effective new idea should be encouraged and supported to achieve greater sustainability.
- Chiesura (2004), in an article on "the role of urban parks in sustainable city", while pointing out the importance of indoor landscapes and the lack of international studies in this area, has sought to highlight the importance of urban nature for the welfare of citizens and urban sustainability. The results of these studies show that the experience of nature in the urban environment is the source of positive emotions and useful services that meet the immaterial and emotional needs of importance.

Theoretical foundations and research literature

1- Urban landscape

Urban landscapes are some kind of urban land use levels with manmade vegetation coverings, having both socially and ecologically efficiency. The ecological efficiency is the beautification of urban areas, the reduction of ambient temperature, the production of oxygen and the increase of soil permeability to all types of precipitation. On the other hand, landscape has a social efficiency that the general public can use (Saiednia, 2004: 29), for example, a private garden has no social efficiency. Urban landscape is part of the vast or limited space within the city's functional area that has been selected to create biodiversity and beauty, enhance quality of life, provide human well-being and provide special services to citizens, and it is under the control and management of urban people with a variety of indigenous and non-indigenous vegetation coverings (Zarrabi and Tabrizi, 2006: 16).

In terms of urbanization, urban landscape is part of the city's skeletal and morphology, which determines the body and generally the city's image along with the physical skeleton of the city. Landscapes are surfaces that are turned into positive space by trees.

Areas that are free from trees and covered with grass and other plants produce a negative spatial space. Generally, landscapes can be divided into two groups:

- (a) Inner city landscapes (these types of spaces often built as parks, from urbanization perspective, it helps the urban environment to be beautiful) are dynamic living systems of which parks are a part. Parks are valuable due to their effective role in reducing urban density, creating guidance routes, completing and improving the use of educational, cultural, residential and land-based facilities for the future development. Inner city landscapes include public landscapes, private landscapes (landscapes of the state organizations). Semi-private landscapes have a low social efficiency, but private landscapes and semi-private landscapes have ecological efficiency. The green asset of a city includes public landscapes and private and state landscapes.
- (b) Surrounding city landscape (these types of landscapes play a role in suppressing urban sprawl growth and ecological-environmental efficiency of the city). The surrounding city landscape has various patterns of spatial development, such as:
 - Green Belt (Determining the city boundaries, controlling the expansion of the city, recreational Role).
 - Green axes (landscapes along the streets of the city, landscapes on the roadsides that are connected to the city).
 - The construction of National Parks in parallel to the expansion and progress of all urban services and population growth is a necessary and required phenomenon in completing urban services and improving the environment. National parks are a common name for urban and suburban types of parks, which appear to be effective in the realization of the protection of ecosystems and natural beauties.
 - Forest parks (artificial, natural). The most important forestry objectives are to create a promenade, produce wood and improve the ecological conditions of the environment.
 - Green arcs (according to this model, the surrounding city landscape is centered on its heart and expands from there to the outside).
 - Park system model (Landscape system is defined as green pieces with different sizes and functions in the form of skeletal divisions of the city.)

Urban landscapes have various functions, including:

- Landscape functions in skeleton structure: From this perspective, urban landscape is considered as an animate part of urban skeleton structure, and it forms the structure or texture of the city, in coordination with the inanimate section of the city. In this case, landscape can play the role of the city's edge, the separation of urban spaces and the arrangement of the road network.

- Environmental functions: These types of operations mainly contribute to improve the ecological conditions and reduce the amount of its pollution load.
- Psychosocial function: Landscapes and parks are places for people to walk and entertain and are a benchmark for environmental health. In fact, parks are the focal point of cities and play a key role in spending leisure and recreation for citizens.
- Landscape in its current sense should meet the goals of urban planning, modern urbanization and environmental and psychosocial needs (Mohammadi et al. 2011: 262).

2. Landscape applications

- (a) Landscape application in architecture: It is an architectural element that makes space to be divided, allowing the creation of a control shield and creating private spaces.
- (b) Landscape application in urban space engineering: Soil control and stabilization, sound control, air purification, traffic control and reflection control of disturbing lights are landscape applications in the field of urban space engineering.
- (c) Landscape application in urban planning: Urban space utilities and surrounding belt are to control the city's future development, and it separates the uses and links between the main building of the city and the satellite towns.

Landscape in its current sense should meet the goals of urban planning, modern urbanization and environmental and psychosocial demands.

3. Landscape and its impact on the quality of urban life

Undoubtedly, landscape and urban parks should be considered as one of the most fundamental factors of the sustainability of natural and human life in today's urbanization (Esmaeili, 2002: 11), if properly planned, it will have a favorable effect on body and spirit health (Shiri, 2006: 32). Urban Parks as one of the most important public and service spaces of the city play a major role in promoting the social, cultural, economic and environmental conditions of urban areas. These spaces have been considered along with the growth and concentration of urban areas in different societies and various strategies have been devised and applied to locate and distribute them appropriately in urban environments.

Addition to social and physiological benefits, urban nature can provide economic benefits for both urban managers and citizens, e.g., the air purification which is taken by trees can reduce the costs of reducing pollution and its level. In addition, the historical aesthetic values of urban leisure parks increase the attractiveness of the city, the value of tourism and consequently the income (Mohammadi, 2011).

4. The most important effects of landscapes on cities

Some their effects include reducing air pollution and noise pollution, adjusting the temperature, increasing relative humidity, favoring the air and absorbing dust. Other landscape effects on the cities are relative, but the effects of landscapes make their presence in the cities inevitable. So that it is not possible for cities to remain stable without them. Therefore, if landscape is required as part of urban texture and urban services, it cannot be isolated from the needs of the urban community. So the landscape should be quantitatively and qualitatively proportional to the physical size of the city and buildings, and should be constructed in accordance with the conditions of the streets and roads and the needs of the community psychologically, the passing of leisure and health and ecological needs of the city is to be sustainable as an active landscape (Ajilian, 2013).

4.1. The socio-cultural function of landscape

These spaces are important in terms of meeting the environmental needs of the urban population as well as in terms of providing leisure spaces and the context for its social interaction and communication. The most important functions of the landscapes in the cities are mentioned here.

1. Recreational function: Parks are the best place to relax and relieve fatigue. Nowadays, the recreational function of parks and landscapes has been replaced for part of the family's recreational functions, neighborhood and local relationships, markets, and so forth.

2. Health function: Parks and landscapes can be considered as centers of individual mental healthcare. The widespread role of landscape in nerve concentration is not neglected to anyone.
3. Communicational function: Parks are underlying for the organized unwritten relationships that are shaped and continued according to the needs of different social strata.
4. Educational function: Games and entertainment have an effective contribution to the education of the children's body and mind. Parks, although having little game's facilities, provide an area for children to achieve skills and creativity.
5. Sales function: Despite the fact that the parks are a place of promenade and tranquility, they are an excellent place to supply the various goods needed by tourists because of the massive presence of people in them.

In a general classification, the social effects of creating and extending the urban landscape can be presented as follows: (1) Sociological effects, (2) Cultural effects, and (3) Psychological effects (Ajilian, 2013).

4.2. Psychological effects of landscape on urban life quality

Human nature is created in such a way that it has many abilities and these abilities tend to depression and dejection without the connection with natural beauties, which are landscapes in the urban life, and creativities of human bloom in the light of enjoying landscape; and human beings' pursuit evolution in their lives. Although most citizens in the city are not aware of the benefits and indirect effects of landscapes on their lives, this effect and interaction between having the landscape and the lack of it on their lives has been proved by various researches. For example, this issue has been mentioned among the writings of scientists, hadiths, and the Holy Qur'an, which it follows from the collection of verses and hadiths as:

1. Looking at the landscape help human to throw his sorrows. It makes him calm, happy and cheerful.
2. Utilizing the landscape removes the state of despair and disappointment from human and creates or strengthens his passion and hope.
3. Landscape has a significant effect on the treatment of mental illnesses so that these problems are removed by looking at landscape and walking and breathing in it.
4. Linking with landscape brings vitality and an incentive to move towards excellence and evolution (Ajilian, 2013).

4.3. Economic Function of Landscape

Landscape, especially the proper planting of trees, can have a significant impact on energy consumption in buildings. The cost of heating or cooling buildings if the trees are properly applied will be reduced. Trees can absorb 9% of the solar energy in the summer and reduce the internal heat of buildings. If trees are planted at appropriate locations where shadows cover certain areas of buildings, they can save considerable fuel consumption. For example, Americans save \$ 2 million annually by planting trees at special and strategic locations around residential houses and residential buildings. In residential areas where located in windy regions, the planting of trees as windbreak can reduce the cost of heating the buildings. In addition to saving energy through the proper functioning of landscape, unique design of landscape coupled with the impact of climate on creating the appropriate tourist spaces can contribute to the country's economy by attracting domestic and foreign tourists (Ajilian, 2013).

4.4. Landscape traffic function

Landscape in the passageways: This space is continuously located in the side of the passageway width, which does not enter into buildings, pavements, roads, streams and brooks as a result of plant growth, as well as, the shadow of buildings is controlled.

Passageway landscapes are divided into the following types:

- The landscape of slow-moving accesses. The purpose of their deployment is further to control the street traffic noise and light.
- Landscape of swift-moving accesses. Their marginal texture is created for the environmental aesthetics, noise control, and the transformation of streets which are located next to the building.
- Landscape of very swift-moving accesses. Their marginal texture is created for the environmental aesthetics, noise and disturbing light control caused by traffic jams, as well as the prevention of space pollution.
- Refuge landscape. Refuges are landscapes that are built in the middle and along the length of the pathways to prevent light damage from opposite and make the path beautiful. These spaces are built in a section of the road width in order to isolate the motion of vehicles from the two bands. The refuge shapes are striped and have a width of at least 111 cm. The use of high-tall trees in the high swift-moving access refuge and the use of low-height shrubs and bushes are required in very swift-moving access refuge (Ajilian, 2013).

4.5. *Visual and aesthetic function of landscape*

The ornament of the cities and their desirability for life is due to the beauty of landscape in its various forms. The landscape partly compensates for the vast majority of urban inelegances as a man-made phenomenon against natural systems.

The intellectual philosophy of aesthetics of the city began from the 19th century, and today it is used in the concept of "building monument" and "beautifying city space." "Urban aesthetics movement" is an advanced approach that is studied not only for the sake of beauty, but also for being the means of social control by keeping people satisfied and meeting their needs. Beautifying operation is a process that addresses the qualitative development of the city's space to improve the quality of urban life in order to create a healthy cultural and human city. A beautiful city shapes based on environmental conditions and human needs logically and appropriately; and is a city that respects the quality of life and human spirit. Operational objectives of beautification based on human-oriented city thinking and the philosophy of aesthetics include: improving performance and visual quality, creating special features, expanding the pedestrian spaces and urban artworks. Three main areas of beautification activities are:

- (1) Urban design, environmental and view design for the city (landscape).
- (2) Urban furniture
- (3) Urban art

The visual quality must compete with other environmental factors in order to show its beauty and even be superior to them. A part of the health and happiness of human beings depends on the quality of urban spaces, the socio-psychological interaction and communication from the aesthetic influences. Although the landscape is eye-catching on any scale and any kind, considering the design principles makes the role of this function doubled (Ajilian, 2013).

5. Sustainable development and quality of life in cities

Despite the fact that from the beginning of the development plan, natural resources played a major role in its formation, but it was neglected by serious consideration until the last decades. Thus, there was a fundamental revision in the scientific approaches from the early 1970s (Farahanifard, 2005), and opinions were drawn to prevent pollution and destruction of resources and the environment before introduction and emphasized the need for the formation of a huge environmental revolution (Dirbaz and Dadgar, 2007: 11).

The pre-introduction of sustainable development, i.e., the development of the ecosystem, was proposed by the Global Conservation Union, the United Nations Environment Program and others in the early 1970's. The term of "Sustainable development" was first formally presented by Brantland in 1987 in the report "Our Common Future". In the broadest sense, this term means the proper and efficient operation and management of basic, natural, financial, and human resources to achieve the desired consumption pattern by utilizing the

technical facilities and the proper organization structure to meet the needs of present and future generations continuously and satisfactorily (Fotouhi, 2017: 16). The Global Environment and Development Commission in its own report (Our Common Future) defines sustainable development as follows:

"A development that meets the needs of the present without compromising the ability of future generations to meet their needs."

The term "development" refers to improving the level and quality of life for individuals and improving the welfare of the community, and its sustainability refers to the continuation of this process throughout generations (Motevaseli, 2003: 69).

The concept of development sustainability includes several concepts: sustainability of ecosystems, sustainability of natural resources, sustainability of economic development and sustainability of welfare and human development. Thus, sustainable development embraces aspects and dimensions of human life. Therefore, sustainable development means the creation of an economic, cultural, social and political environment that ensures the desired quality of life and can keep these issues in a sustainable and lasting manner (Hosseinzadeh Dalir, 2001).

Following the sustainable development perspective and more attention of experts, this model was introduced into urban planning and urbanization. Sustainable urban development theory is the forum for environmental advocates to discuss environmental issues, in particular the urban environment, which sought sustainable development theory to support natural resources.

Sustainable urban development means the conditions in which today and future city dwellers and citizens can live in peace and security and in good health, enjoy a long, yet constructive life (Salehifard, 2004: 147).

Sustainable city is environmentally city which minimizes unrenewable energy consumption, minimizes waste and has the least harmful impact on the environment as well as can maintain its current performance in the coming decades towards greater sustainability. The sustainable city is economically self-sufficient and efficient, and socially justice-oriented, and it contributes to the environmental protection of all natural species (Rezaei, 2013: 50). The Sustainable Development Association has requested from the present generation to follow a systemic approach in urban development and resource management (economic, social, environmental resources). Different environmental, socio-cultural and economic criteria such as adaptability, efficiency, safety (Ebrahimzadeh and Ebadi-Jokandan, 2008: 44), as well as availability, duration of use, quality and adaptation to the needs of the local community should be considered for the sustainable development of urban landscape.

The research scope

Rasht city is located in the center of Gilan plain, ranging from 49° 35' 45" E longitude and 37° 16' 30" N latitude. Its area is about 10,240 hectares. This city is limited to the Khamam district in the north, to the Lakan village and Roodbar in the south, to the Someasara and the city of Shaft in the west, and to the village of Kochesfahan and Sangsar in the east. This city with a population of 557,366 people in 2017 was about 4.23% of total population of the Gilan province and 956,971 people (in urban areas: 748,711 people and in rural areas: 208,256 people) settled there in 2016 (General Population and Housing Census in 2016). Rasht city is considered as the first and largest urban area of the Gilan province and its southern margin and as the political and administrative center of Gilan province (Statistical Calendar of Gilan Province, 2011: 24).

Research Methodology

The descriptive and analytical method has been used in this research. First, the concept of landscape, its dimensions, etc. were addressed in this process. Then, initial data were collected in order to study and analyze the impact of landscape on the quality of urban life and its desirable per capita in Rasht; and finally, the landscape distribution situation was evaluated and analyzed.

Socio-demographic characteristics of the study area

Rasht city is the most populous city in northern Iran and considered as a metropolitan in Iran. This city is considered as an immigration city in Gilan province, which has increased the population growth rate in this city compared to other regions of the province.

According to the first general census of population and housing in 1956, the Rasht city had a population of 109,491 people in that year. The population of the city reached 143,557 people in 1966, which accordingly the population of the city had growth rate of 2.78% per year. The growth rate was 2.74% in 1976 and the population of the city reached 188,957 people. Ten years later (1986), the population increased to 290,036 people, which represents a growth of 4.38%. The population of the city in 1996 reached to 417,748 people, which the growth rate was 3.7% according to the population of 10 years ago. According to the General Population and Housing Census in 2006, Rasht has a population of 557,366 people, a population growth rate of 2.92% compared to a decade ago. And according to the latest General Population and Housing Census in 2016, Rasht had the population of 956,971 people (Management and Planning Organization of Gilan Province, Deputy of Statistics and Information).

Table 1: Population growth rate of Rasht city

Year	1956-1966	1966-1976	1976-1986	1986-1996	1996-2006	2006-2015
Growth rate	2.78	2.74	4.38	3.7	2.93	4.6

Source: Deputy of Urban Planning and Architecture of Rasht Municipality

Study of land use change levels using city map comparison

One of the methods to study the change levels, the expansion or reduction of phenomena during different periods of time is the use of aerial photographs, satellite images, or maps of different periods. In this research, due to the lack of access to aerial photographs and satellite images, maps of Rasht city in 1991 and 2011 will be used to study the level of city change and as a result the land use changes in the marginal areas of the city. The area of service scope in the city before the start of studies of the second comprehensive city plan in 1991 was 2,994 hectares. After conducting the aforementioned plan studies, the service area of the city changed to 9,250 hectares, and after the third comprehensive plan in 2007, the service area reached 10,240 hectares.

It should be noted that there is always a significant area of lands within the urban service area dedicated to crops, gardens and other agricultural activities. In this research, GIS Arc software was used to determine the real level of urban land use area changes and calculate the precise area of use types. Finally, it was determined that the area of the city was equal to 2,876 hectares in 1991 and 6,463 hectares in 2011. Therefore, during the aforementioned period, the use of 3,587 hectares of urban margin lands has been changed and used for urban infrastructure and building. According to the table below, the use that has changed agricultural lands the most is residential use with 1,937 hectares. In this area, research and development use is placed in the second position with 350 hectares and industrial use is in the third position with 303 hectares.

Table 2: Land use change area according to the type of use (1991-2011)

Land use	Area in hectare		
	2011	1991	Changes level
Residential	2995	1058.8	1937
Research and R&D	356.9	6.2	350.7
Industrial	386.8	83.9	302.9
Transportation and storage	1124.2	890.6	233.6
Landscape	351.3	153.2	198.1
University	536.5	358.6	177.9
Under Construction	185.6	11.3	174.3
Official	128.2	88.6	39.6
Conservatory	27.4	2.7	24.7

Treatment	45.5	21.7	23.8
Sports	38.8	15.9	22.9
Municipal facilities and equipment	28.5	6.7	21.8
Commercial-service	108.4	87.7	20.7
Military and police	49.4	29.7	19.7
Repair shop	18.5	6.1	12.4
Cemetery	28.6	17.9	10.7
Elementary school	12.4	8.8	3.6
High school	30.2	27.2	3
Urban parking	7.2	4.2	3
Junior school	14.6	11.7	2.9
Other educational	2.6	1.2	1.4
Religious	8.6	7.6	1
Tourism	4.5	3.9	0.6
Sanitary	8.2	7.7	0.5
Cultural	2.7	2.5	0.2
Total	6501.4	2914.40	3587.00

Source: Rasht comprehensive plan 1993, GIS unit of Rasht Municipality, 2011, and research findings.

Research document findings

- *Per capita urban landscape*

According to studies by the Ministry of Housing and Urban Development, the conventional and acceptable per capita urban landscapes in Iran's cities ranges from 7 m² to 12 m², which is less than the levels presented by the United Nations Environmental Department (20-25 m² for each person) (Saeidnia, 2004).

The international standard of landscape for each person ranges between 15 and 50 m² and an average of 30 m². However, the standards of developing countries are lower than those in Europe and the United States (Saeidnia, 2004).

The per capita urban landscapes vary in different cities of Iran due to their different geographical and climatic characteristics with the standards mentioned by the Ministry of Housing and Urbanization. The following table shows per capita levels of urban landscapes in some cities of the world and Iran.

Table 3: The different per capita of urban landscape in some cities of the world and Iran.

City	Per capita (m ²)	Standard (m ²)
Tehran	1.4	7-12
Paris	7.4	-
Berlin	40	30-60
Tabriz	10.11	7-12
Isfahan	23	7-12
Los Angeles	50	50

(Source: Mohammadi, 2011)

Various standards for urban landscape per capita have been listed by various national and international experts and institutions. Some of these standards are shown in Table 4.

Table 4: Proposed per capita for utilization of urban landscape in different references.

Corresponding organization and bodies	Proposed per capita (m ²)
The United Nations	20-25
US National Recreation Institute	14
Public Health Committee and US Department of Housing	18
Department of Housing and Urbanization	7-12
Center for Urban Planning Studies of the Interior Ministry	10
Tehran Comprehensive Initiative	10

(Source: Mohammadi, 2011)

- ***Distribution of landscapes in urban areas of Rasht***

The population of Rasht has increased from 109,491 people in 1956 to 557,336 in 2006 and 639,951 in 2011 and its physical level has increased from 650 hectares in 1955 to 10,240 hectares in 2011, and the number of parks has increased in neighborhood, local, distinct and regional scale. Generally, Rasht has 41 parks with an approximate area of 673,361 m², which Shahr Park (Ghods) with a total area of 144,000 m², Mellat Park with an area of 120,000 m², Mafakher Park with an area of 70,000 m², and Daneshjo Park with an area of 70,000 m² have the largest area, respectively. Currently, the number of parks in the Districts 1, 2, 3, 4 and 5 is 10, 7, 11, 13, and 0, respectively. According to the climate of the city, which is moderate and humid, its standard per capita should range between 10 and 15 m² per person, while according to the current state, the per capita amount of landscape announced by the Parks and Landscape Organization of Rasht city is 1.1 m² per person (Bashardoost, 2015).

Summary of the condition for urban landscapes and parks of Rasht is as follows:

- District 1: It has an area of 1900 hectares, a population of 141,368 people, and two urban parks and eight local parks;
- District 2: It has an area of 675 hectares, a population of 13,909 people, and four urban parks and two local parks;
- District 3: It has an area of 1678 hectares and a population of 140,807 people and two urban parks and nine local parks;
- District 4: It has an area of 1799 hectares and a population of 139,017 people and two urban parks and eight local parks;
- District 5: It has an area of 4507 hectares and a population of 137,209 people, and three urban parks and nine local parks.

Analytical research findings

The rate of urban landscapes has a powerful impact on the quality of the environment, ecological conditions and general satisfaction of the population. The per capita urban landscapes are judged by the landscape level in the city in relation to the concentrated population and as the basis scale for providing landscape and future city growth. The greater area of the urban landscape is more beneficial and preferable for the general welfare, health, independence and recreation of the inhabitants, and for the urban perspective and its sustainable development (Nahibi, 2014).

Urban landscape is one of the most important elements of the cities' body, which has been invaded in terms of the land use by population growth and urban development, and its area in cities is constantly decreasing towards other uses. The city of Rasht is one of the cities with a high environmental potential has very low per capita in urban landscape. The city has been affected by factors such as population growth due to migrating villagers to the city, with the discrepancy between the numbers and per capita of parks. Analysis of the results showed that the pattern of urban landscape distribution in the current situation is not appropriate for the model, nor is the current distribution of parks based on urban hierarchy.

Spatial distribution of parks in District 5 is not appropriate and has very deficiency. Also, Districts 3 and 1 located in the eastern and northern sides of the city of Rasht, taking into account the growing trend and physical development in recent years, require new localization of parks at their own areas. Districts 2 and 4 are in a better situation. Therefore, spatial distribution in Districts 1, 3 and 5 is not desirable.

Considering the area of urban landscape and park in the Districts of Rasht city, the following formula can be used to estimate the per capita amount of urban landscape.

- Given that the existing parks and landscape area in District 1 of Rasht, which is 319,602 m² and the population of the district in all its regions is 124,368 people, the landscape per capita is 2.56 m², which is deficient according to the standards of the Ministry Housing and urbanization (7-12 m²).

- The area of the parks and landscape in District 2 of Rasht is 334,086 m² and the population of the district in all its regions is 123,599 people, however, the per capita landscape is 2.70 m², which is also deficient according to the standards of the Ministry Housing and urbanization (7-12 m²).
- As the parks and landscape area in District 3 of Rasht is 434,049 m², and the district's population in all its regions is 126,307 people, the per capita landscape is 3.43 m², which is deficient based on Ministry Standards Housing and urbanization (7-12 m² proposed landscape per capita).
- The area of parks and landscape in District 4 of Rasht with 385,204 m², and 127,517 people the population of the district in all its regions only has 3.02 m² per capita landscape, which is still deficient according to the standards of the Ministry Housing and urbanization (7-12 m²).
- The parks and landscape area in District 5 of Rasht is to be 107,659 m², its population is 123,709 people, and the landscape per capita is 0.87 m² that is also observed deficient according to the standards of 7-12 landscape per capita m² proposed by the Ministry of Housing and Urban Development (Management and Planning Organization of Gilan Province, Deputy of Statistics and Information).

Conclusion and Recommendations

Nowadays, parks have diverse social, ecological and spatial functions in urban planning. In the meantime, the park location, the park conditions and the population employing it will have an important impact on the function type of urban parks. Open spaces and landscapes will be considered valuable not only for their recreational importance, but also because of the role they play in preserving and balancing the urban environments, reducing the pollution and developing physically and mentally the city's residents. These spaces form the vital part of urban life, and city life largely relies on the quantity and quality of these spaces within and around cities. Considering that in-town and local parks are useful for meeting the social needs of citizens, the development and expansion of urban landscapes is inevitable in order to improve the quality of urban life, while the results of this study indicate that Rasht city encounters the fundamental problem of urban landscape despite all the environmental abilities and the presence of the river within the city, etc. Although urban landscapes have grown dramatically in recent years, there is still so much to reach the per capita and national and international standards, and even the proposed per capita scale in the comprehensive initiative. The per capita landscape in the districts of Rasht according to the standards proposed by the organizations and related bodies is very low, and this problem has more frequency in District 5 of Rasht than in other areas. Thus, the per capita landscape problem in Districts of Rasht is respectively prioritized as follows: District 5, District 1, District 2, District 4, and District 3.

Therefore, the following items are proposed to improve the condition of landscape in Rasht according to the results of the research:

- Development of urban landscape should be conducted by taking into account the scale of urban, regional, district and neighborhood performance.
- The rivers' basin in Rasht should be organized to increase landscape.
- Attraction of popular contributions should be considered and encouraged to invest in increasing the landscapes of the city.

The fair distribution of landscape should be considered in the city and all its 5 districts.

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