

ANALYZING URBAN GREEN SPACES IN THE ECOSYSTEM OF THE DURRES CITY IN ALBANIA THROUGH PUBLIC PERCEPTION OF MEETING ENVIRONMENTAL STANDARDS, ACCESSIBILITY AND QUALITY OF LIFE

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ABSTRACT

Population growth as a result of migration from rural areas to urban centers has rapidly changed the attitude and quality of life. Rapid urbanization has brought series of environmental problems such as resource limitations, pollution and noise which affect the quality of life in urban spaces. Urban green spaces are an asset and heritage of the urban ecosystem, which have evolved along with the evolution of the city itself, but their reduction has affected approach attitude in a meaningful way the ecological functions in the urban ecosystem. The urban green spaces such as parks, small forests, wooded promenades, sports fields, gardens, vegetation, trees have many ecological functions as well as other numerous environmental and social functions. Numerous studies show that urban green spaces bring health benefits to city residents. Specifically, the city of Durres, in which this study was conducted, is a city with a high development dynamic, especially in the construction sector, a dynamic that has affected and is increasingly affecting the urban green spaces within it. Evidencing the condition of urban green spaces in the city of Durres and in particular trees, would make it possible to compare their condition with reference to the EU guidelines for this purpose and other areas in the region. The increase in urban green spaces in the city of Durres would not only affect the quality of life of citizens by providing healthy living environments and would also enable and make it potentially important for the development of tourism and eco-tourism. The involvement of the community of Durres citizens would be very important in the design and growth of urban green spaces, which would bring many social and health benefits.

Keywords: Urban ecosystem, Urban green spaces, Parks, Quality of life

1. INTRODUCTION

Urban ecosystems, like all ecosystems, are composed of biological and physical components that interact together. What distinguishes them from natural ecosystems is the presence of people who interact directly with the urban environment. But they also include the physical complex such as buildings, transportation networks, energy use and import, material transformation, modified surfaces, and environmental changes resulting from human decision-making (Encyclopedia Britannica, 2020). Urban ecosystems are dynamic ecological systems, they are subject to rapid changes in land, plant cover, temperature, and water availability. However, urban areas are home to more than 54% of the global population in 2017, and this ratio is expected to reach 66% by 2050 (United Nation, 2017).

Urban ecosystems cover about 4% of the world's land area, and the rapid growth of cities worldwide indicates that urban ecosystems are the only major type of ecosystem that is expanding. Urban areas will add about 2 billion new inhabitants worldwide by 2030, increasing from the current urban population of 2.9 billion to 4.9 billion (UN: World Urbanization Prospects: The 2018 Revision). But this rapid population growth towards urban areas affects the quality of life of people living in cities. This is because, among other things, urban growth modifies large land areas in the urban ecosystem, which brings environmental changes and, above all, reduces urban green spaces. Biodiversity losses in urban green spaces caused by demographic population growth and urban sprawl tend to be more severe and longer-lasting (Hector, A., & Bagchi, R. 2007). Urban green spaces, which are considered urban green infrastructure, perform a series of services in the urban ecosystem, especially the presence of trees. Urban green infrastructure is a green network of land, water and other natural features within urban areas. Green infrastructure is a strategically planned network of natural and semi-natural areas with other characteristic environments designed to provide a wide range of ecosystem services (EU: Green Infrastructure: A Strategic Approach to Conservation of Ecosystem Services, 2019). Ecosystem services are of particular importance in cities, as they affect water quality, stormwater, flood and erosion control, waste disposal and air quality, as well as cultural services such as recreation, health and well-being, contributing to the quality of that place (Ugochukwu Kanayo Ashinze et al. 2024). Therefore, the quality of life of urban residents is closely linked to the areas of green spaces where they live. Many environmental problems encountered today in urban ecosystems and related to the quality of life of citizens must be sought in urban expansion and the chosen way of life (Brosz M., Dymnicka M., Sagan I., Załęcki J., 2023). The Millennium Ecosystem Assessment (MEA) concluded that 60% of the world's ecosystems are degraded or used unsustainably, with negative effects on service provision and human well-being (MEA, 2005).

The city of Durres, described as the “*tavern of the Adriatic*” by the Romans 2070 years ago, is today not only the oldest city and the largest port of Albania, but also the largest tourist destination

in the country. Museums, buildings and monuments, as well as the city itself and the surrounding area of Durres reflect its historical, archaeological, ethnographic, natural and urban values. The city of Durres is also one of the cities in Albania that has undergone major demographic changes since the 1990s. These demographic changes have brought major environmental problems to the urban ecosystem of this city.



Figure 1: Geographical location of the city of Durres

The city of Durres lie on the Adriatic Sea with a coastline of about 30 miles. The western coast of the province is washed by the waters of the Adriatic Sea. The city of Durres is in the shape of an arc along the Adriatic coast, occupying most of the Durres Bay and occupies an area of 46.1 km² and represents 10.67% of the area of the district (territorial strategy municipality of Durres 2015 - 2030).

Durrës is part of the area with a typical Mediterranean climate, with a mild, wet winter and warm, sunny and quite dry summer. Compared to Mediterranean areas, the rainfall in the country is dense, while the hilly areas of Durrës are among the wettest regions in Europe. The average temperature is around 24 °C and the annual amount of rainfall is up to 836 mm.

The territory of the municipality of Durrës continues to maintain a considerable variety and amount of biodiversity. This territory is part of the Mediterranean biogeographical area and is notable for the high diversity of marine, coastal, lagoon, marsh, river ecosystems, Mediterranean evergreen and deciduous shrubs and oaks. However, numerous plant and animal groups are still unknown and unstudied.

The lack of scientific knowledge about the potential and values of the plant and animal heritage has led to the fact that this asset is not economically valued, which would bring an increase in income to local residents. The territory of the municipality of Durrës has Mediterranean shrubland vegetation (evergreen and deciduous), oakland vegetation and representatives of the beechland despite the low altitude above sea level. These territories also have a great wealth of animal life, both terrestrial and aquatic. The terrestrial animal has as its habitat areas rich in plant life, while the aquatic animal is found in the salty waters of the Adriatic Sea, coastal lagoons, but also in the freshwater of the Erzen and Ishëm rivers (Keci E., Pepa B., Paparisto A., Duka S., 2017).

Flora in the Municipality of Durrës can be divided into these main types: (a) natural plants and (b) ornamental plants planted in different environments. The ornamental plants are characterized by the coastal vegetation and that found mainly in the hills of the city, not to mention the fruit trees. The vegetation is characterized by a high diversity as a result of a high variability of ecological conditions created by the combination of soil types, rainfall and topographic position. The types of vegetation range from forest, urban trees and shrub habitats that are typically Mediterranean. The current distribution of vegetation and the state of habitats reflect human activity today and in the past. Among the main and most widespread types of woody flora can be mention: coastal pines (*Pinus spp*), heather (*Erica spp*), juniper (*Juniperus spp*), gingham (*Spartium junceum*), poplars (*Populus spp*), willow (*Salix spp*), Cypress (*Cupressus spp*), wild rose (*Rosa canina*). While the most common decorative plants in the area as *Rosa canina* and medicinal plants such as *Laurus nobilis*, *Mentha piperita* and fruit plants such as *Citrus limon*, *Citrus sinensis*, *Olea europea*, mimosas or *Acacia dealbata* (fam. *Fabaceae*), Palms (fam. *Arecaceae*), etc. In certain areas, Olive (*Olea spp*) and green shrubs such as: *Forsythia europa*, *Rubus fruticosus* are also distinguished (Paparisto, K., 1988).

The herbaceous flora, on the other hand, is represented by species of the *Graminacea*, *Leguminacea* families, as well as medicinal ones, of which we can mention: *Festuca sp*, *Trifolium*, *Vicia spp*, *Urtica dioica*, *Sanguisorba officinalis*, *Salvia sp*, *Melissa officinalis*, poppy (*Papaver rhoeas*), lemon balm (*Melisa officinalis*), chicory (*Cichorium intybus*). The vegetation of the lower zone is generally characterized by the presence of flora that normally grows in salt marsh soil, such as *Juncus acutus*, *Salicornia europea*, *Limonium vulgare*, *Hardeummarinum* and *Halimione portulacoides*, while the grassy land is generally characterized by *Dittrichia viscosa*, *Scalymus hispanicus*, *Pheniculavulgaris*, *Daucus carata*, *Eryngium spp.*, *Linaria spp.*, *Trifolium campestris*,

Avena sterilis, *Hardeum murinum*, *Cynosurus echinatus*, *Achantus spp.*, *Pteridium aquilinum*, *Rubus hulmifolius*. (Paparisto, K., 1988).

The flora of the sandy coastal zone represents the vegetation of sand dunes such as *Ammophila arenaria*, *Stachys maritima*, *Pancretium maritimum* which are also considered endangered species, since the sand dunes have also been greatly damaged due to marine erosion.

Fauna of the city of Durres is conditioned by urban and rural developments as well as by agricultural activity. Of the mammals, in the peripheral areas of the city and outside the inhabited centers, the wild hare (*Lepus europaeus*) and the fox (*Vulpes vulpes L.*) are found, the weasel (*Mustela nivalis*), rodents (*Mus musculus*, *Mus domesticus*, *Rattus norvegicus*, *Rattus rattus*, *Apodemus sylvaticus*), bats (genus *Pipistrellus*, *Myotis*, *Rhinolophus*). In the places along the Erzen River, the river otter (*Lutra lutra*) is found, and in the wider area, the badger (*Meles meles*) is found too (AKM/NEA, 1999).

The avifauna of the area under consideration includes birds characteristic of the bush but also of the urban environment such as *Anthus campestris*, *Corone cornix*, *Corvus corax*, *Pica pica*, *Passer domesticus*, *Carduelis carduelis*, etc. Particularly well-known are the blackbird (*Turdus merula*), the black starling (*Sturnus vulgaris*), the lark (*Aleuda arvensis*), the common gull (*Larus ribibundus*), the pigeons (*Columba palumbus* and *Columbia*), the European gull (*fam. Muscipidae*) (AKM/NEA, 1999).

Of the reptiles, especially in dry hilly areas, the horned viper (*Vipera ammodytes*), the long arrow (*Coluber caspius*), the short arrow (*Coluber gemonensis*), the house vole (*Elaphe longissima*) as well as *Anguis fragilis*, *Lacerta viridis*, *Podarcis muralis*, etc. Of the turtles, the most widespread is the common tortoise (*Testudo hermani*). In particular, the humid climate and the hydrographic range have favored several species of amphibians such as the common frog (*Rana ridibundo*), the common toad (*Bufo bufo*), the green toad (*Bufo viridis Laur*), *Triturus vulgaris*, etc. (AKM/NEA, 1999).

Referring to studies carried out, it results that the city of Durres is a territory with a rich biodiversity, especially in the urban peripheral area. However, this biodiversity is seriously threatened by rapid urbanization, which has created serious problems with the occupation of green spaces and damage to the archaeological heritage of the city of Durres, while the rapid urbanization of the sea coast has created an overload of public services and difficulties in creating the necessary infrastructure.

The city of Durrës has undergone great development in recent decades and it is observed that the intensity of construction has caused green spaces to be under constant pressure to reduce them. The development of the formal and informal urban area has shrunk natural areas, affecting and damaging the biodiversity of the area in general and the urban green spaces, within the city in particular (Shitolle M., 2024). In recent decades, urban centers have significantly changed their

nature, making those ecosystems increasingly distant from natural ecosystems. And this is due to the fact that changes in the composition of the ecosystem have been made by reducing urban green spaces which are the most important element in the function of improving the quality of life in urban areas. One of the cities in Albania that is under higher pressure from the loss of urban green spaces is the city of Durrës. Studies conducted (Durrës Municipality Report, 2016) show that the areas of green spaces in the city of Durrës (with 0.14% of the area of the Durrës municipality) are well below acceptable standards (9 m² of green space per city resident), as recommended by the World Health Organization (WHO, 2010).

A very important indicator of the economic and morphological evolution of the region is the change in forest areas observed in the years 1930 and 2015 of the land use maps where we can distinguish that there has been a clear expansion of urban areas to the detriment of forest areas, which have almost been halved to become new agricultural, industrial and urban areas (Co-Plan, Eper Center, year 2005).

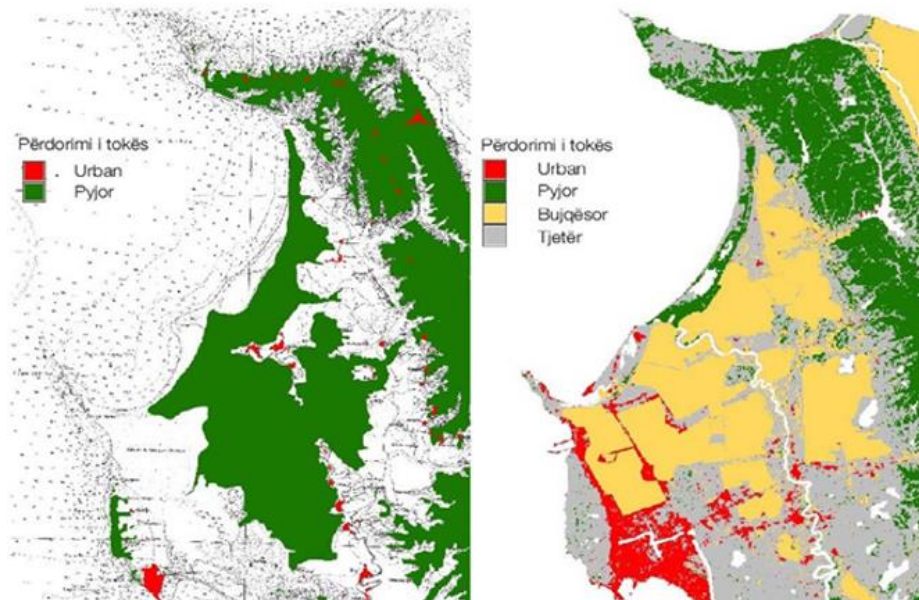


Figure 2: Map of change in forest areas observed in the years 1930 and 2015 (Co-Plan, Eper Center, year 2005)

Taking a representative area into random analysis, it results that the green areas of this area have decreased from 2007 to 2018 by 28%. Also, using the geography for the measurements of 2007 and 2018 that are reflected in it, it is observed that in 2007 there are reflections / downward trends compared to 2018 (Co-Plan, Eper Center, year 2005). The metalworking industry is one of the industries that has had the greatest impact on the reduction of green surfaces. (United Nations Environment Programme, 2023).

The development of the infrastructure of this city aims at protecting the ancient values and the history that this city carries by designing a new city stripped of barriers, aiming to unite the suburbs of the city “New Durrës”, as well as returning green spaces to every citizen (Statistical Bulletin of the Municipality of Durrës, 2015). On the other hand, not everyone understands the importance of green spaces in the urban context and for this it is necessary to increase the level of community awareness. From field observations it is observed that urban green spaces and the preservation of their natural values in the city of Durrës appear in a relatively weak conception of their importance by residents but also by the decision-making and planning institutions of the territory. And this requires, among other things, the involvement of the public in decision-making regarding the planning of urban green spaces. This is due to the fact that public perceptions are different regarding the presence of urban green infrastructures in the city (Langemeyer et al. 2015). There are many studies on the role and importance of urban biodiversity and urban green spaces and the public perception of the benefits that derive from them (Baur et al. 2013 ; Jim and Chen 2006, D. Latinopoulos, 2022).



Figure 3: Map of changes in green areas in Durrës observed in 2007 and 2018 (Co-Plan, Eper Center, year 2005)

But as our cities grow, the question that needs to be addressed is what we need to do to transform our urban areas into healthy places to live (Jacobs J., 1992). A large body of research tells us that we need to allow nature to return and be widely integrated into urban areas (Sisui Cai, 2024). They show very clearly that we need nature in our living environment. Increasing biological diversity in

urban space will not only affect the quality of life of citizens, but would also enable and make it potentially important for the development of tourism and eco-tourism, especially for urban areas with this destination, such as the city of Durres (Rega-Brodsky C. at al. 2022).

From this conception, the city of Durres should also be seen, a city with a high development dynamic, a dynamic that has affected and also affects the urban green spaces within it (Millennium Ecosystem Assessment, 2005). The presence of urban green infrastructures within the urban ecosystem should be evaluated for the numerous environmental, social, health, and cultural services and the European Commission emphasizes the support of urban biodiversity and a comprehensive vision of urban green infrastructures within the urban concept (EC 2013). The importance of urban biodiversity and its impact on the quality of life of citizens is also emphasized in the European Green New Deal (EC 2019).

2. MATERIALS AND METHOD

Many methodologies are used to assess the benefits of urban green infrastructures. Currently, there are many studies that assess the benefits that come from urban green infrastructures through the investigation of public behavior and attitudes towards this problem (Baur et al. 2013 ; Jim and Chen 2006).

Precisely, to identify the state of urban green spaces in the city of Durrës and in particular trees, through public perception and field observations, this study was conducted, which identified the real state of the presence of urban green spaces, and made it possible to obtain public perception with reference to other countries and EU guidelines for this purpose.

The study took into account the urban area of the city of Durrës, for which the following were taken into consideration :

Bibliographic data of the area which served as an basis for analyzing the real state of green spaces within the urban area of Durrës and their comparison with international standards. The bibliographical research includes the Regulatory Plan of the Municipality of Durrës (VKKT, No.4, date 27.07.2022) ; Territorial Strategy of the Municipality of Durrës (2016) ; studies on the urban planning of the city and its natural resources as well as additional literature with data on flora and plant associations, fauna, hydrology, geomorphology, climate, etc.

Collection of terrain data. In order to obtain information regarding flora, fauna as well as data on the social, economic and territorial development, data were obtained using direct field observation and evaluation methods. After identifying the state of green spaces, an assessment of ecosystem services from the biodiversity of the urban area was realized. A special place was taken by the description of the tree species present in the green spaces, where the sampling method was used during the field verification. In particular, for trees were analyzed different parameters such as

total length, crown height, crown width, trunk diameter, percentage of active crown, percentage of dead crown, lighting indicator and many other biometric indicators.

Monitoring of urban greenery in the Municipality of Durrës was carried out in four zones, Zone "A" (central zone), Zone "B" (industrial zone), Zone "C" (suburban zone) and zone "D" (beach zone), as shown in the map below, during the period January 2019-February 2022. Each of them is divided into subzones and is composed of 73 subzones in total. Field measurements of urban greenery consisted of identifying the type of tree, measuring its diameter and height, the presence or absence of a cavity, as well as its general condition. Through this data, using the "tree age calculator" and the "Tree benefit calculator" (Fleming, Lynn E. 1988), the age of the tree was then identified, and several ecosystem services provided by the tree were calculated, such as: the amount of O₂ (kg/year) it releases; the amount of CO₂ (kg/year) it sequesters; the energy it saves (kwh/year) and the water-holding capacity (L/year). Then, all these services were converted into monetary value. So, what is the monetary benefit that the tree brings from the oxygen it releases, from the carbon dioxide absorbed, from the energy saved for both heating and cooling, and from the capacity to absorb rainwater.

Drafting questionnaires on urban green infrastructure with citizens. Also, citizens of the city of Durres were asked about their attitudes regarding urban green infrastructures in the city, their condition and the transformations of the urban landscape. Citizens' attitudes towards urban green infrastructures were obtained through interviews using structured questionnaires according to selected methodologies (Balram and Dragičević, 2005). A total of 150 questionnaires were drafted, which will be completed through field surveys with citizens according to their residential areas. The questions of the questionnaires were oriented towards the availability of green spaces at the disposal of the places of residence, their sufficiency, the frequency of their attendance, the attendance schedules, the maintenance of green spaces, participation in decision-making, etc.

Statistical processing of data. All information collected in the field was processed according to the methodology selected for this purpose and based on the findings, the state of urban green infrastructure was analyzed and compared. Also, based on the Likert scale methodology, questionnaire data was processed to verify the attitude of Durres residents regarding urban green infrastructure in the city of Durres.

3. RESULTS AND DISCUSSIONS

3.1. Results of terrain data collection

(i) Green Spaces in the City of Durrës

The green area under the Municipality of Durrës is 473,257 m², or only 0.14% of the municipality's area (territorial strategy municipality of Durres 2015 - 2030). With a population density of 949 per km², this area is much lower than the standards suggested (9 m² of green space per city inhabitant),

by the WHO (WHO, 2010). The forest-park area (urban green infrastructure) that is a necessity for the quality of life of citizens has been significantly reduced in the last 10 years and some of the green areas in Durrës no longer exist on the city map, as is the case of the Kodër Vilë area, which from a green oasis for the city has turned into an urban construction area (Durrës Municipality report, 2020).

In recent years, the “Rinia” park, in the center of which is the Royal Villa (Vila Kodër), has fallen prey to numerous uncritical constructions, which have massively damaged the pine trees ([http://arkiva.ata.gov.al/Agjensia Telegrafike Shqiptare](http://arkiva.ata.gov.al/Agjensia%20Telegrafike%20Shqiptare)).

The choice of the typology of plants planted in parks and city streets is mainly based on aesthetics, economics and availability, while the ecological aspect and interaction with other elements and natural phenomena such as flooding in urban areas with non-porous surfaces are not taken into consideration. Urban forestry (trees) has little maintenance, in many cases non-autochthonous species are used such as palm trees and their positioning/planting is done in unsuitable areas.

Scenario Modeling based on using Urban Growth Scenarios by inputting various growth scenarios (e.g., population increases, infrastructure expansion), urban planners can predict how these scenarios would impact green space. This can help in assessing the potential for green space loss or gain under different circumstances (World Bank – Urban Growth Scenarios, 2009).

(ii) Green space lost in the city of Durrës

In 5 years (2015-2020), Durrës has lost about half of its green space in its historic center (zone A) (Co-Plan, EPER Center, 2020). The “EPER” Center has carried out field monitoring of urban greenery during the period March 2019 - June 2020 and through a comparative photo reflects the changes that have occurred in the last 5 years in this area (Ortofoto of Albania, 2015).



Figure 4: Existing and lost spaces in the central area (zone A) of the Municipality of Durrës (Co-Plan, EPER Center, 2020)

The urbanization process, the high level of pollution and the phenomenon of climate change are the three main factors in the loss of 4.38 ha of urban greenery in the Municipality of Durrës during the period 2015-2020. From 9.34 ha of green space in 2015, it has been reduced to 4.38 ha, leaving almost half of the former area (only 4.96 ha remain) (Co-Plan, EPER Center, 2020).

In different areas, the loss of green spaces has been at different levels. From the collection of data in the field and from the studies carried out (Co-PLAN, 2023), the loss of green spaces by area has been as follows:

Table 1: Existing and lost green spaces in the Municipality of Durrës by area.

| Zone | Existing green area (ha) | Lost green space (ha) |
|----------------|--------------------------|-----------------------|
| Central (A) | 9.34 | 4.38 |
| industrial (B) | 4.99 | 1.79 |
| Suburban (C) | 6.9 | 0.44 |
| Beaches (D) | 2.3 | 2.1 |
| Total | 23.53 | 8.71 |

Source: <https://drive.google.com/file/d/1wZS3iI9ZQvkserbnZPA1wbNISU1g8HVS/view>

The contribution of areas and economic valuations to the release of O₂ and the sequestration of CO₂ is as follows:

Table 2: Contribution of urban green spaces to the release of O₂ and the sequestration of CO₂ in the Municipality of Durrës by areas.

| Zone | Total oxygen release surface area O ₂ (ton/year) | Cost (lekë) | Total CO ₂ carbon sequestration area (ton/year) | Cost (lekë) |
|----------------|---|-------------|--|-------------|
| Central (A) | 13.4 | 4498786 | 31 | 44612 |
| industrial (B) | 25.22 | 7923126 | 9.45 | 185001 |
| Suburban (C) | 25.8 | 8115206 | 9.68 | 191987 |
| Beaches (D) | 15.2 | 4798047 | 5.7 | 113702 |
| Total | 79.62 | 25335165 | 55.83 | 535302 |

Source: <https://drive.google.com/file/d/1wZS3iI9ZQvkserbnZPA1wbNISU1g8HVS/view>

The contribution of urban green spaces to water retention capacity is as follows:

Table 3: Contribution of urban green spaces to water retention capacity in the Municipality of Durrës by zones

| Zone | Total surface area of water storage capacity (m ³ /vit) | Cost (lekë) |
|----------------|--|-------------|
| Central (A) | 3687 | 107484 |
| industrial (B) | 16442.23 | 31740 |
| Suburban (C) | 16333.4 | 33008 |
| Beaches (D) | 5403.4 | 10705 |
| Total | 40866.03 | 182937 |

Source: <https://drive.google.com/file/d/1wZS3iI9ZQvkserbnZPA1wbNISU1g8HVS/view>

(iii) Types of urban trees in the urban area of Durrës

According to the Eper Center, 2292 urban trees have been identified in the central area of the Durrës municipality, which are mainly of the following types: acacia (*Acacia Farnesiana*, *Acacia Logifolia*), linden (*Tilia Cordata*, *Tilia Europaea*, *Tilia Platyphyllos*), plane (*Platanus Orientalis*, *Platanus Occidentalis*), privet (*Ligustrum Lucidum*, *Ligustrum Ovalifolium*), maple (*Acer Saccharinum*, *Acer Platanoides*), pine (*Pinus Pinea*, *Abies Alba*), etc. (<https://drive.google.com/file/d/1wZS3iI9ZQvkserbnZPA1wbNISU1g8HVS/view>).

Each of them has a diameter (from 10 to 150 cm) and a certain age (up to 100 years old). In general, the natural vegetation of the Durrës area is characterized by a variety of species as a result of the variability of ecological and edaphic conditions created by the combination of soil types, rainfall and topographic position. In the current state of habitats, especially in the distribution of vegetation, the great impact of activity throughout the seasons is also expressed. On many roads in the city, especially the one leading to the Train Station, decorative trees have been planted, which enrich the urban environment of the city with floristic elements with an irreplaceable

positive impact not only in terms of landscape but also in the quality of the urban environment as a whole.

3.2 Interviewing the citizens of Durrës and analyzing questionnaires on urban green spaces

During the months of June - August of the year (2021), a questionnaire was carried out on Public Green Spaces in the city of Durres. The questionnaire was carried out with the aim of obtaining a direct perception from citizens on the fulfillment of environmental standards, their accessibility and the quality of life for the urban green spaces that they have available in the city of Durres. After drafting the questionnaires, a survey of citizens was conducted and the questionnaires were completed directly in the field through interviews. The total number of respondents was 150. The results of the attitudes of citizens, assessed according to the Likert scale, towards urban green spaces in the city of Durres are presented below:

1) What gender do you belong to?

From the analysis of the interview, it results that the majority of the interviewees are female (70%) and the rest (30%) are male.

2) Your age?

The majority of respondents (72%) are between the ages of 9 and 45 years old, (14%) between the ages of 10 and 18, (10%) between the ages of 45 and 65, and (4%) are 65 and older.

3) Do you have enough green space in the area where you live?

(60%) of respondents said that they do not have enough green space in the area where they live, while (40%) of them responded positively, saying that they have enough green space in the area where they live.

4) Do you think there is enough green space in the city?

(80%) of respondents said that the city of Durrës needs more green space because there is not enough.

5) Are the benches (seats) in parks and public spaces sufficient and well-maintained?

The majority of respondents (50%) stated that the benches in public parks in the city are sufficient but damaged, while (40%) of them assessed that the benches in the parks are not sufficient and are not maintained, and only a small percentage (10%) stated that they are sufficient and maintained.

6) Do you think that there are enough baskets and containers for waste in parks and public spaces and are they maintained by the responsible institutions?

The majority of respondents (70%) stated that in the city of Durres there are not enough containers for waste in parks, they are in poor condition and do not perform the function they should for

containing waste and that most of this waste is dumped outside the containers, also the green spaces are not maintained by the responsible institutions, causing people who want to spend a pleasant afternoon to reduce the frequency of visits to these places.

7) Is there a green space/park in the neighborhood where you live and what is its condition?

40% of respondents said that there is green space in their neighborhood and it is in good condition, another 40% said that there is green space in the area where they live but it is not maintained and a small percentage said that there is no green space in the area where they live.

8) How often do you visit public parks?

There is a high percentage (64%) of people who rarely visit parks, and (20%) of them never visit them. This shows that although (12%) of them visit them often, from the data and interviews conducted with people living in Durrës it is estimated that the green spaces are insufficient and not in good condition for relaxing and spending free time.

9) At what time of day do you use the parks the most?

From the analysis of the interview, it results that (30%) of them use parks more in the morning, some for physical activity, to drink morning coffee before going to work, some say that they feel more energetic throughout the day, etc. Meanwhile (28%) say that they visit parks in the afternoon, this is because most of them are at work, or for various reasons such as high temperatures during the day (especially during the summer period) etc., and a small percentage (14%) visit parks during the day, this mostly includes the age group 60 and above.

10) How do you evaluate the maintenance of parks?

Of the respondents (52%) consider that the maintenance of the parks is good, and (40%) of them state that the maintenance of the parks is insufficient and think that many adjustments need to be made, starting from benches (seats), playgrounds for children and more green space.

11) Who is the most frequented park in your neighborhood?

From the analysis of the interview, it results that the majority of the respondents (58%) answer that the park in their neighborhood is most frequented by the older age group ranging from 65 years and above, while those who frequent the park the least are young people between the ages of 18 and above.

12) Do the residents of the neighborhood care about the maintenance of the park and public spaces?

(86%) of the respondents responded that the residents of the neighborhood do not care about the maintenance of the park or public spaces, and the remaining (8%) and (6%) responded positively.

13) What type of transportation do you use to visit a green space/park?

From the analysis of the interview results that (42%) of the people interviewed use the car to visit a green space, (22%) use the bus, (28%) visit parks on foot, most of them live nearby and do not need to use transportation and a small percentage (8%) prefer to use the bicycle because they think it is environmentally friendly.

14) Which of the following problems influences your decision not to visit a green space?

From the analysis of the interview, it results that (36%) of the interviewees do not frequent green spaces due to noise (noise from cars, constructions being carried out in the area, etc.), (20%) of them have complaints about the waste thrown everywhere in the park due to the irresponsibility of people and the lack of a sufficient number of containers, (12%) due to the high temperatures in August and the health risks caused by these temperatures, (14%) stated that the fumes of cars passing near the parks, dust from constructions as well as the waste that causes unpleasant odors prevent these people from visiting green spaces, (12%) of the interviewees stated that due to their introverted nature they do not prefer to frequent green spaces that may be surrounded by people.

15) Have you ever been invited by local institutions to discuss and offer proposals about green spaces in the city?

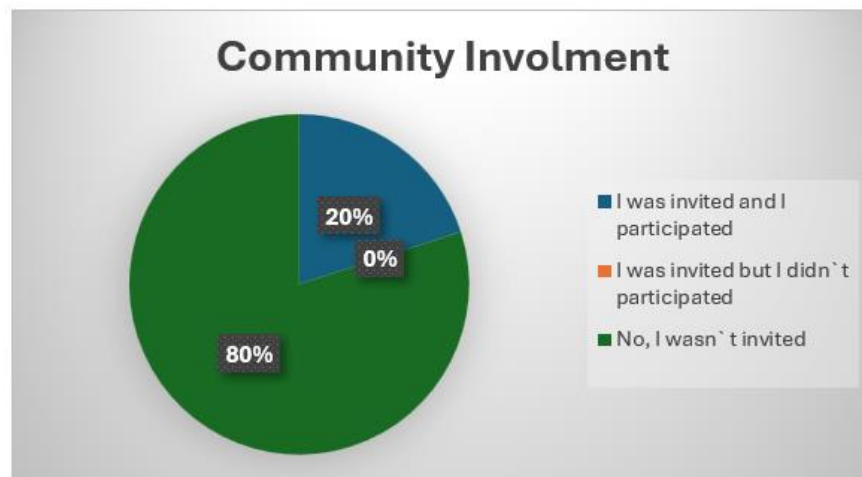


Figure 5: Community participation in decision-making for urban green space planning

From the analysis of the interview, it results that the majority of interviewees (80%) responded that they have never been invited by local institutions to discuss and offer proposals about green spaces in the city, while (20%) stated that they have been invited and have participated.

4. CONCLUSIONS

From the findings of the conducted research it conclude that in the urban area of the city of Durres, green areas have decreased from 2007 to 2018 by about 28% and from 2015-2020 there have been lost 8.7 hectares of green spaces, leaving 47.3 ha of green areas, or only 0.14% of the total area of

the Municipality of Durres. With a population density of 949 per km², this area is far from the standards suggested by the WHO (with 9 m²/inhabitant).

Testing the attitudes of Durres citizens regarding the standards of green spaces, accessibility and impact on their quality of life shows that they are generally satisfied with green spaces but the city has parks but they are dysfunctional due to poor condition and institutional lack of maintenance.

There is a lack of green spaces, they do not have good environmental standards and are insufficient to meet their needs for recreation and entertainment. The community is not actively involved in their maintenance and the majority of the community has not been part of public decision-making regarding the planning of urban green spaces in order to improve their quality of life.

Creating actionable strategies to promote sustainable urban development and preserve green spaces is critical for Durresi city local authorities is a crucial element. They should implement policies that require a certain percentage of land to be dedicated to parks, gardens, or green infrastructure in new developments or redevelopment projects. They should encourage or mandate the use of green building standards that incorporate green roofs, rainwater harvesting systems, and energy-efficient designs in all new buildings.

Also, they should prioritize development that includes green infrastructure elements like permeable surfaces, tree canopy cover, and vegetated swales to manage stormwater and enhance urban greenery.

Involving the Durresi community in the decision-making process by hosting town halls or workshops where citizens can share their thoughts on green space development will help the local authorities to predict proper urban sustainable development actions. This can include input on the location, size, and type of green spaces that would best serve the community's needs.

REFERENCES

- [1]. AKM/NEA (ed.) (1999): Albania: Convention on Biological Diversity. Biodiversity Strategy and Action Plan (National Report), National Environmental Agency (NEA), Tirana: p 1-100.
- [2]. Balram S, Dragičević S (2005). Attitudes toward urban green spaces : integrating questionnaire survey and collaborative GIS techniques to improve attitude measurements. *Landscape Urban Plan* 71(2-4) :147-162
- [3]. Baur J, Tynon J, Gómez E (2013) Attitudes about urban nature parks : a case study of users and nonusers in Portland, Oregon. *Landscape Urban Plan* 117 :100-111
- [4]. Buletini Statistikor Bashkia Durres, 2015
- [5]. Brosz M., Dymnicka M., Sagan I., Załęcki J., The Environmental Dimension of City Dwellers' Quality of Life and the City's Social and Spatial Variability 2023

- [6]. Co-PLAN Instituti për Zhvillimin e Habitatit: Studim mbi çështjet mjedisore Rajoni Qendror, 2023, p 12
- [7]. Co-Plan, Eper Center, economic and morphological evolution of the region year 2005
- [8]. D. Latinopoulos, (2022). Evaluation the importance of urban green spaces : a spatial analyses of citizens' perceptions in Thessaloniki, Euro-Mediterranean Journal for Environnemental Integration (2022) 7: 299–308
- [9]. Durrës Municipality report, 2020
- [10]. Enciklopedia Britanica, 2020
- [11]. European Commission (2013). Green infrastructure (GI)—enhancing Europe's natural capital. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committes of the Regions, COM/2013/0249 final.
- [12]. European Commission (2019) The European Green Deal. COM (2019) 640 final (11.12.2019). European Commission, Brussels
- [13]. EU Joint Science for Policy Report “Green Infrastructure: A Strategic Approach to Conservation of Ecosystem Services” 2019 p 21-23
- [14]. EU: Green Infrastructure: A Strategic Approach to Conservation of Ecosystem Services, 2019
- [15]. Fleming, Lynn E. 1988. Growth estimates of street trees in central New Jersey. Unpublished MS Thesis, Rutgers University, New Brunswick, NJ
- [16]. Health Organization, report
- [17]. Hector, A., & Bagchi, R. (2007). Biodiversity and ecosystem multifunctionality. *Nature*, 448(7150), 188-190
- [18]. Keci E., Pepa B., Paparisto A., Duka S.: “Biodiversity indices and nutrient load assessment in Ishmi River, Albania, during 2012-2013” 2017 p 253-254
- [19]. Jim CY, Chen W (2006) Perception and attitude of residents toward urban green spaces in Guangzhou (China). *Environ Manage* 38:338–349
- [20]. Jacobs J.: *The Death and Life of Great American Cities*, 1992, p 89-112
- [21]. Langemeyer J, Baró F, Roebeling P, Gómez-Baggethun E (2015) Contrasting values of cultural ecosystem services in urban areas: the case of park Montjuïc in Barcelona. *Ecosyst Serv* 12:178–186
- [22]. MEA, 2005. Millenium Assessment Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC. Copyright © 2005 World Resources Institute. p.155
- [23]. Maes J, Lique C, Teller A et al (2016). An indicator framework for assessing ecosystem services in support of the EU Biodiversity Strategy to 2020. *Ecosystem Services* 17:14-23

- [24]. Maciej Brosz, Małgorzata Dymnicka, Iwona Sagan, Jarosław Załęcki: "The Environmental Dimension of City Dwellers' Quality of Life and the City's Social and Spatial Variability" 2023, p 6-10
- [25]. Ortofoto of Albania, 2015.
- [26]. Qendra Mjedisore për Mbrojtje, Edukim dhe Rehabilitim EPER Center, Durres, 2020
- [27]. Papparisto, K. (Tiranë 1988), Flora e Shqipërisë, Vol. 2, 50-100
- [28]. Rega-Brodsky C., Aroson M., Piana M., Carpenter E.: "Urban biodiversity: State of the science and future directions" 2022, p 1-3 Urban Ecosystems
- [29]. Teknikat inovative të vëzhgimit për një buxhetim më efektiv për shërbimet mjedisore, Bashkia Durrës, 2020, fq 13.
- [30]. Shitolle M.: "Urbanization and its impact on biodiversity", 2024, p 8-14
- [31]. Sisui Cai Trends and Prospects of Ecodesign in Urban Landscape Design in the Context of Artificial Intelligence, 2024, p 2 - 3
- [32]. Statistical Bulletin of the Municipality of Durres, 2015
- [33]. Territorial Strategy Municipality of Durres 2015 - 2030, p 17-25
- [34]. World Bank's "Urban Growth Scenarios", 2009
- [35]. WHO (2010). Urban planning, environment and health: from evidence to policy action. World Health Organization.

Websites

- [1]. [http://arkiva.ata.gov.al/Agjensia Telegrafike Shqiptare](http://arkiva.ata.gov.al/Agjensia%20Telegrafike%20Shqiptare)
- [2]. <https://drive.google.com/file/d/1wZS3iI9ZQvkserbnZPA1wbNISU1g8HVS/view>
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- [3]. <https://greenlungs.al/tree.php?lng=al>
- [4]. [http://www.akm.gov.al/assets/permbledhja-joteknike-\(1\).pdf](http://www.akm.gov.al/assets/permbledhja-joteknike-(1).pdf)
- [5]. <http://www.cdc-tff.org/web/wp-content/uploads/%E2%80%9CTeknikat-inovative-t%C3%AB-v%C3%ABzhgimit-p%C3%ABr-nj%C3%AB-buxhetim-m%C3%AB-efektiv-p%C3%ABr-sh%C3%ABrbimet-mjedisore%E2%80%9D.pdf>
- [6]. <https://www.unep.org/news-and-stories/story/cities-embrace-zero-waste-philosophy-amidst-torrents-trash>
- [7]. https://www.euro.who.int/_data/assets/pdf_file/0004/114448/E93987.pdf. Accessed 15 Jan 2022
- [8]. http://www.un.org/en/development/desa/population/publications/pdf/urbanization/the_worlds_cities_in_2016_data_booklet.pdf.
- [9]. <https://drive.google.com/file/d/1wZS3iI9ZQvkserbnZPA1wbNISU1g8HVS/view>

- [10]. <https://cdinstitute.eu/wp-content/uploads/2016/03/Bashkia-Durres-Strategjia-e-Zhvillimit-Territorial-2015-2030.pdf>
- [11]. https://www.researchgate.net/publication/363738094_Biodiversity_indices_and_nutrient_load_assessment_in_Ishmi_River_Albania_during_2012-2013
- [12]. <https://www.unep.org/news-and-stories/story/cities-embrace-zero-waste-philosophy-amidst-torrents-trash>