POLITECNICO MILANO 1863
School of Architecture Urban Planning Construction Engineering
MSc Landscape Architecture – Land Landscape Heritage

SOCIAL STREAMSCAPING

A NEW PERSPECTIVE FOR A FORMER INDUSTRIAL CITY

DÂMBU STREAM, PLOIEȘTI, ROMANIA

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INTRODUCTION

The current situation of Ploiești city is marked by a series of economic, social and cultural malfunctions, to which are added the problem of industrial pollution and the insufficiency of green spaces or the lack of valorization of those with potential.

In the studied site, the presence of the Dâmbu stream is perceived as a limit both in the economic and territorial development of the site, as well as a physical limit, the eatern bank being considered a more disadvantaged part of the city.

As a resident of the city of Ploiesti, I am interested in both the past and the future of this city and I believe that this project could help improve the quality of life for all the inhabitants and would stop the aggravation of the current precarious social and environmental situation in the area.

Aims of the project

Purpose

The purpose of the project is to activate the potential of the Dâmbu stream of becoming a blue-green infrastructure of Ploiești city, increasing the quality of the environment and life. One of the main goals is to improve the perception of the stream, the areas around and the connectivity along its course while integrating the disadvantaged neighborhoods in this part of the city for a better social inclusion.

Objectives

- Analysis of the current situation;
- Establishing a diagnosis about the components of the riverscape: biodiversity, infrastructure and sociological aspects;
- Developing a strategy by which the potential of site could be emphasized from a socio-ecological point of view;
- Creating a design that would solve the identified problems and improve the quality of the inhabitants of Ploiești city.

PROJECT DEVELOPMENT

1 Analysis

1.1 Localization

Ploiești is a city in Romania and who acts as the county seat of the Prahova district, being situated in the southern part of it, at 60 km North from Bucharest, 114 km South from Brașov, 71 km West from Buzău and 51 km East from Târgoviște. (Source: https://ro.wikipedia.org/). Because of its location, the city is an important point in the extra and intra carpathic transit, being crossed by DN1 (National Road 1) București-Ploiești-Brașov (through the Prahova Valley), part of the euopean orad E60, DN1A (National Road 1A) București-Ploiești-Brașov (through Vălenii de Munte), DN1B (National Road 1B) Ploiești-Buzău and DN72 (National Road 72) Ploiești-Târgoviște. The main railways that cross Ploiești make the link to Bucharest, Brașov, Câmpina and the whole Prahova Valley. Because of the above-mentioned factors, as well as the proximity of the Henri Coandă International Airport (35 km away), Ploiești city is considered one of the main road nodes and railway nodes of the country, facilitating the transit from the capital to the Transilvania and Moldova Regions. (Source: Documentație P.U.G. Ploiești, 2015)

The site is located between the the north-eastern and south-eastern part of the municipality and is a predominantly industrial periphery (mostly concentrated in the petroleum industry), being signaled weak development intentions in the area over the years (construction of the AFI Palace Mall, Dedeman and Lidl supermarket) and having a deficient urban image mostly due to the population residing nearby and the precarious aspect of the area and of the Dâmbu stream and its banks in general.

1.2 General aspects

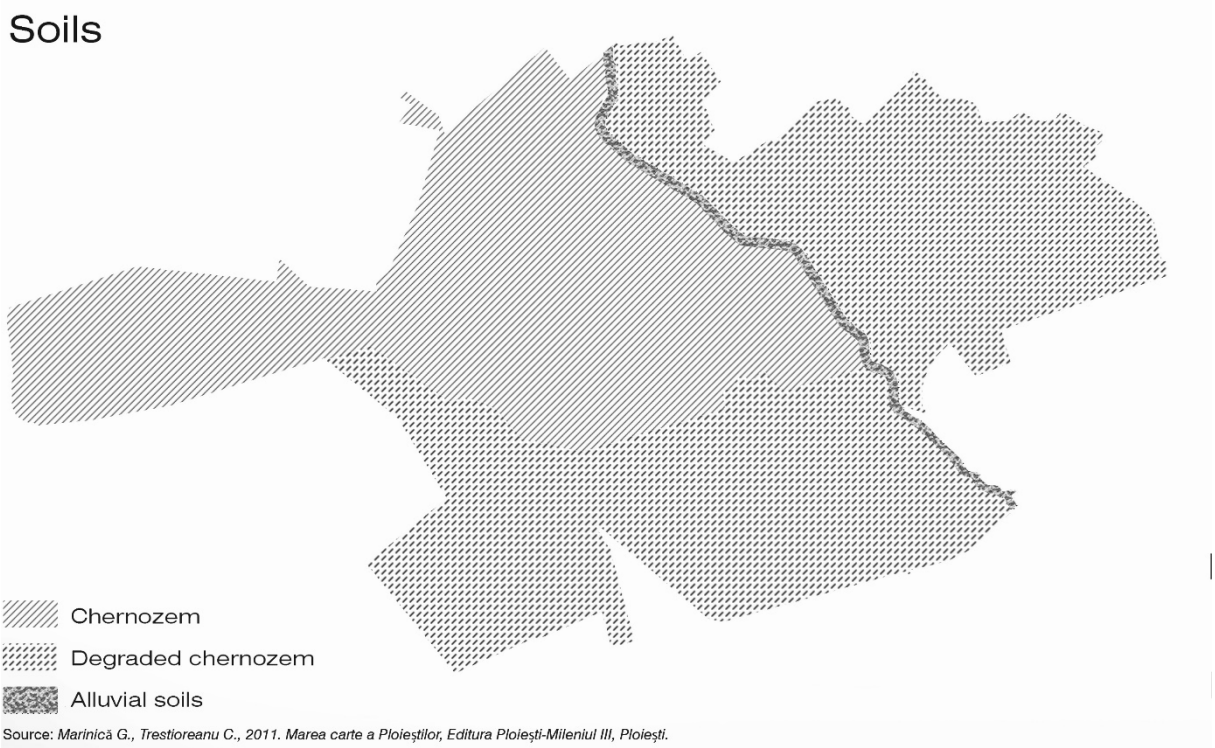
Geomorphology and topography

Ploiești is located in the center of the Muntenia region, in the central-north part of the Romania Plain and it is corresponding to the Piemontan Plain of Ploiești relief unit, one of the most important structures of this kind in the district, with a main altitude of 150m above sea level. It is located at the confluence of the Teleajen river with its tributary, the Dâmbu stream, which transits the city in the North-Eastern part. It has a slightly sloping flat surface from NW to SE, but perfectly stable; the analyzed territory does not manifest physical-geological

phenomena that would endanger the stability of the constructions. The aspect of the soil and subsoil is influenced by the localisation of the city on the alluvial fan of the Prahova river.

Soils

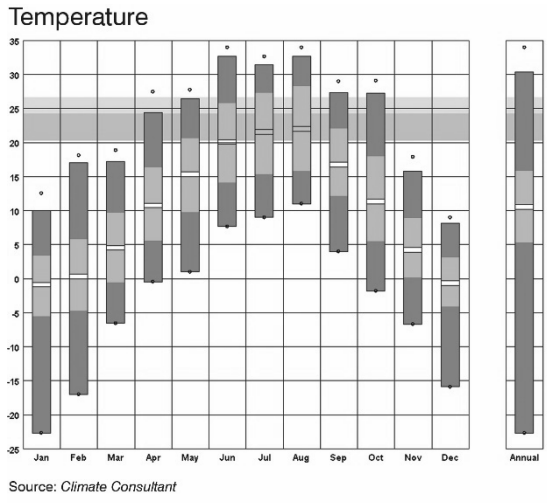
The Ploiesti Plain is covered on the surface by a thin film of rendzine (rendzines appear in conditions of fragmented terrain on peaks and slopes strongly and moderately inclined - group of soils formed on calcareous substrate in a humid or semi-dry climate with a medium natural fertility or good), placed on the terrace gravel, which drains the groundwater and rainwater. The quality of the soil and the subsoil is determined by the settlement of the city on the structures of the old alluvial fan of the Prahova river, which passes through the riverbed presently located about 25 km west and by the neighborhood of the Teleajen river (east side), with its tributary the Dâmbu stream, which crosses neighborhoods in the northeast. The soils are cambic chernozem, degraded chernozem and alluvial, in the Dâmbu stream area. (Annex General aspects)



Source: *Marinică G., Trestioreanu C., 2011. Marea carte a Ploieştilor, Editura Ploieşti-Mileniul III, Ploieşti.*

Climate

The city of Ploiești is crossed by the meridian of 25 °E and the parallel of 44°55'N (the parallel of 45°N is passing through the suburban communes of Păulești, Blejoi and Bucov), factors that give the temperate-continental aspect of the climate. The average annual temperature is 10.5 °C, with an absolute minimum of -30 °C recorded on January 25, 1942 and a maximum of +43 °C recorded on July 19, 2007. The average multiannual precipitation quantity is 600 mm, the smallest quantities being recorded in January, 30-40 mm, and the largest in June, 88 mm. The prevailing winds in the North-East sector are the following: 17% N, 17.5% N-E and 12% E-NE. (Annex General aspects). Other significant winds are located in the South-West and West, with 9.7-9.5 %. (Source: https://ro.wikipedia.org/)



1.3 Hidrology

The city of Ploiești lies between two large rivers, the first of them, Prahova, to the southwest, slightly reaching the municipality through the suburban commune Brazi, and the second, Teleajen, towards north and east, passing through the suburban communes Blejoi, Bucov, Berceni.

The city is located on the Dâmbu stream, which springs from the hill area of Bănești commune, passes through the city from North so South-East and through two suburban communes all the way above Moara Domnească, where, after 42km, it flows into Teleajen river. Upstream of Ploiești , an artificial lake area of approximately 20 square kilometers was created. Nowadays, Dâmbu stream is used as a collector for some of the city's wastewater. The supply of this stream comes from groundwater.

The slope of the rivers that cross Ploiești City is quite smooth and it determinates am average runoff of 1-2 l/s/km^2. Higher values are recorded during April and May, as q consequence of snow melting and heavier rains, while smaller values are recorded during September and October as a consequence of drought during summer, as well as during winter due to the fact that the snow does not melt.

On what concerns the temperature of the water, the annual average is of 10-11°C. During winter the temperature is around 1-2°C, causing ice forming around the banks (for an average of 40-45 days a year), while in summer the temperature is around 10-13°C.

The maximum transport of suspended alluvions takes place in April-June, simultaneously with the high waters. (Marinică, Trestioreanu, 2011)

1.4 Surface and population

The current surface of the city if of approximately 58,28 km^2 with a population of 209.945 inhabitants, as of the 2011 census, with a density of 3.499,08 inhabitants/km^2, which makes it the biggest city in the Prahova district (an estimation from 2016 shows that there are actually around 233.663 inhabitants with a density of 4.009,31 inhabitants/km^2). A more intense polarization is observed towards the northern and western areas of Ploiești, suggesting a slight decentralization of the city and a shift of interest to the western area. (Source: https://ro.wikipedia.org/)

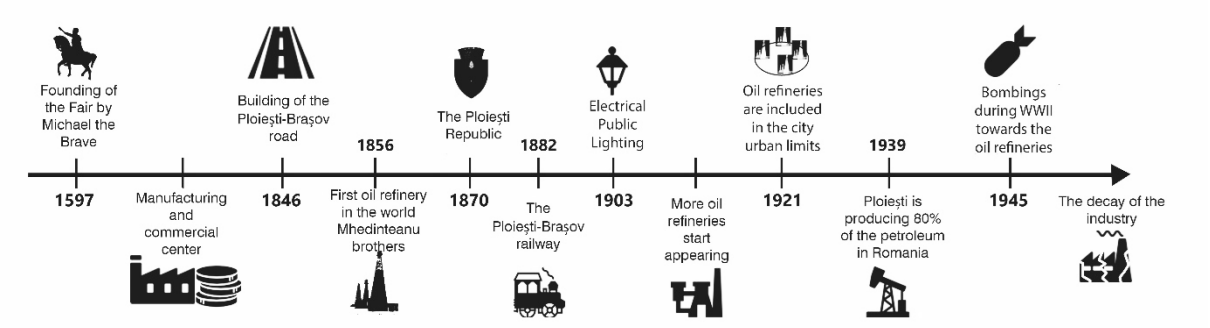
1.5 History

1.5.1 General aspects

Over time, Ploiești has undergone many changes, generated by important events (calamities that remained in the memory of the people of Ploiesti: earthquakes, fires, floods, bombings), that influenced its evolution. (Annex History)

"*From the examination of the plans made at different times and the photographs it can be seen how the city has developed into a chaotic manner. No rational structure consisting of a network of high-traffic arteries, no logical distribution of blocks of flats between streets, both 31in size, shape and orientation. A maze of narrow, twisted streets - some too frequent and some too rare. Large industries spread in the city center and all its outskirts. The almost total absence of gardens, these lungs of cities."* (Sevastos, 1935)

The lack of green areas was mainly due to the oil industry, the natural landscape in the vicinity of the city being replaced by the industrial landscape represented by oil rigs, cylindrical tanks and high fuming furnaces belonging to the refineries built between 1857 and 1921. Thus, the necessity of a public garden was outlined because the main boulevard was not offering the necessary green area. "*The architect Toma T. Socolescu elaborated a plan for the construction of a park on a portion of the Păulești forest. On the outskirts of the city, at the Bucov barrier, the Park of the Watchmen - later of the Pioneers - was inaugurated in 1939. Being close to Obor (the place where the weekend market is held) and considered to be a bad famed area, the park would not have had the chance to develop (...). After several expropriations, the City Hall managed to obtain a plot of land on Târgşor Street, where the municipal park was later built.*" (Luchian, 2017)



1.5.2 Oil industry evolution – „The City of Black Gold"

The evolution of the oil industry (Annex The evolution of the oil industry) begins with the establishment of the first refinery of this kind in the world, Teodor Mehedinteanu's "Gas Factory", in 1856. Ten years later, the second refinery, the one of Dumitru Nicolau, was founded which later became the Standard refinery. Subsequently, 8 more refineries were established until 1907, their number reaching to 15 until 1935. "*By 1921 most of these refineries, as well as other industrial enterprises were outside the city of Ploiesti and thus contributed only very little to the income of the municipality. (...) By the law of August 1921 the perimeter of the city was enlarged so as to include all the oil refineries and other nearby factories.*

The communal tasks have since passed, largely, on those enterprises and Ploeşti became able to start his era of modern economic and urban development. (...)

At the same time as the oil exploitation, the industrialization of the gases from the oil rigs started. And this industrialization was a great progress for Ploeşti. Since 1928, it has

largely used gases from oil rigs as fuel. In that year, about a thousand installations for burning gas from oil rigs were made." (Sevastos, 1935)

In 1939 Ploiești produced 80% of the quantity of oil in Romania. In 1940 in Ploiești there were nine refineries: Concordia Vega, Romanian-American, Royalty, Dacia Română, Unirea Speranța, Standard, Astra Română, Columbia Aquila and Xenia. Due to the presence of numerous refineries and of the particular economic importance, the city was bombed in 1941, 1942, 1943, during the Tidal Wave operation and 1944, when more than half of the city was affected. Many of the iconic buildings were destroyed at that time (South Railway Station, Despina Doamna High School, as well as a large part of St. Peter and Paul High School).

After the establishment of the communist regime, Soviet-Romanian joint ventures were established, the first being Sovrompetrol, "*structure in which the oil industry worked until 1956, when these entities were abolished. On June 11, 1948, all oil and gas companies were nationalized. After this date, the Romanian access to Western technology and capital was blocked. The isolation lasted two decades, until the temporary political rebound of 1968, but even then Romania could no longer afford the import of top technology, so the gap with the industrialized world persisted.* " (Dudău, 2014)

The oil industry has been in a continuous decline as a result of intensive exploitation. In the early 1990s, exploration and production activity declined sharply. The exploration activities of some international companies, for the discovery of new oil fields, did not have the expected results.

Currently, in Ploiești and its surroundings there are only three active refineries: Petrotel Lukoil (formerly known as Romanian-American) in the East, Rompetrol (formerly known as Vega), in the North-East and Petrobrazi Refinery (formerly known as Creditul Minier) in the part of South West.

1.5.3 History of the Dâmbu stream

The presence of Dâmbu watercourse has raised serious problems over the course of time due to the floods produced. "*Here the floods are not related to Dâmbu overflowing; they are made only by infiltration. The situation is similar to that of the city of Paris, which, during the winter and the rainy spring of 1911, was flooded by the waters of the Seine, also through seepage. (...) The fact is due to the circumstance that any watercourse, at some distance from its origin, collects alluvions, raises its river bed which continues as long, of course, the base*

level remains fixed. In this way, the places next to the watercourse, remain with time in a lower situation, that it is very explainable as to why they end up being subjected to floods." (Sevastos, 1935)

The most significant overflow of the Dâmbu stream took place on the 12th of July 1837, when it flooded *Sfinții Apostoli, Sfântul Ilie, Sfântul Nicolae Nou, Sfântul Nidolae Vechi* and *Sfântul Dumitru* suburbs, meaning all of the old part of the city. The flood was so strong that it took out fences and gates, took away pots and tool of the tanners, it downed vegetabe gardens and it destroyed the crops. The houses were flooded, many women and children went up on the roofs to save their lives, from where they were saved with difficulty and were taken to a safe place by policemen and people working for the magistrate.

Source: Adevarul.ro

The flood lasted for three days, after which the waters receded, allowing people to come back to their homes, although, in the last night, the had to face another flood. Fortunately, nobody died, but the material damages were quite significant.

The magistrate reported the events to the higher authorities and he demanded, in the name of the people, that actions would be taken in order to prevent these kind of events from hapenning again. The experts thught of some possible solutions, proposing that a large ditch should be built in order to collect the water that would overflow and take it outside of the city. Unfortunately, a big problem occured: the city did not have a proper systematization, which meant that the owners of the huge courtayrds and gardens should give up parts of their properties in order for the plan to be applyable, so they didn't manage to make amends. Another expert was called by higher authorities, by the name of Valhelm Lorozinca. He also proposed that a ditch of 560m long and 2m wide, which would collect, in such events, the water overflow. He also made the cost estimate, which he gave to the magistrate. Due to the fact that the project did not start right away, it was forgotten. (Marinică, Trestioreanu, 2011)

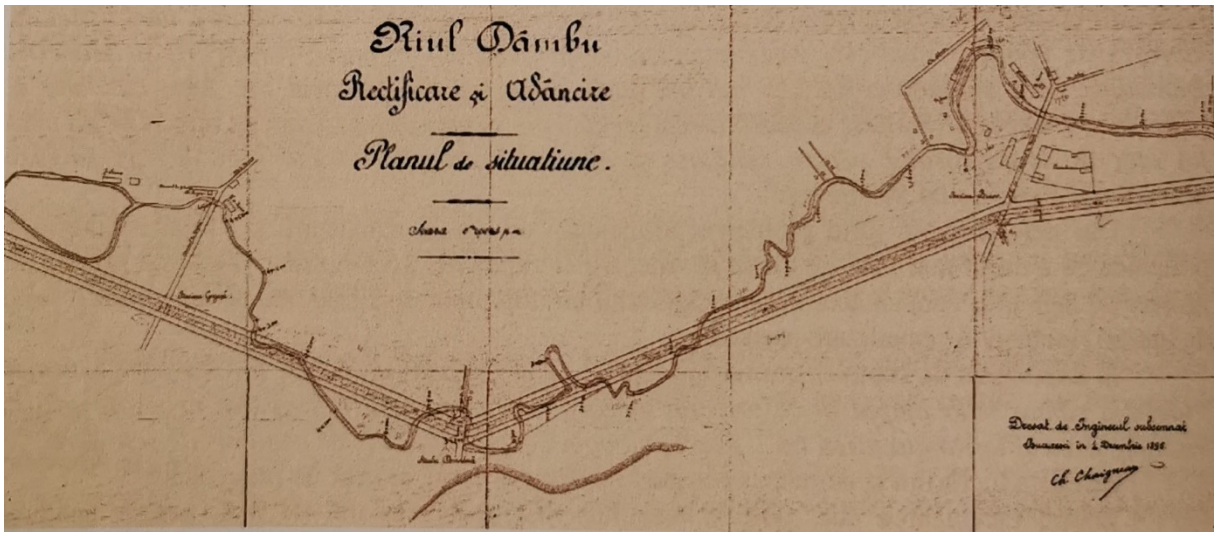
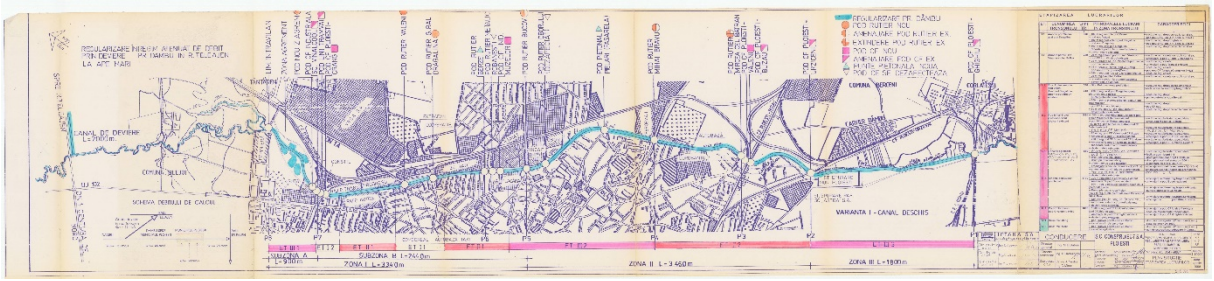


Figure 1 Plan of enginner Charles Chaigneaux for the regularization of Dâmbu stream 1896

Another intention of a project for the improvement of the Dâmbu stream was proposed in 1896 by the French engineer Ch. Chaigneaux, as part of its larger project for the sewage system of the city. The project consisted in the rectification and deepening of the riverbed of Dâmbu stream, with the following effects in mind: sheltering a part of the city from flooding, allowing the water discharge from the sewer collectors and lowering the groundwater level (in some area situated at only 0.5m deep). Chaigneaux also proposed the design of two big boulevards on either side of the Dâmbu stream recommending to not use the same solution as in the case of Dâmbovița river in Bucharest (wooden flooring of the riverbed screed) due the non-permanent flow characteristic of the Dâmbu stream. Unfortunately, the current mayor at the time, Radu Stanian, soon realized that the funding provided by the parliament was inferior to the actual costs of the project for the entire sewage system., so the funds were redirected to other infrastructure projects. (Marinică, Trestioreanu, 2011)

The problem of the Dâmbu stream was brought to the atention of the local authorities again in 1902, when they were planning to build the water supply and sewage system together. An English expert was called, by the name of W.H. Lindley, who was the one that constructed the sewage system of the Frankfurt city. The plan that Lindley made was concenring the city water supply and sewage system, as well as the problems related to the regularization of the Dâmbu stream and of some streets. Unfortunately, the works for the sewage stopped due to lack of funding (most of the funds were spent for the water supply network) and the start of the war. The sewage system would be done later on, in the interbelic period, but not the sistematization of the stream, which has not yet been made until the present day. (Marinică, Trestioreanu, 2011)



Regularization and Reshaping of the Dâmbu Stream in Ploiești City, 1998

Another significant overflow took place in 2005, when several areas of Ploiești were flooded. At that time, by decision of the Local Council, the necessary funds were allocated for the restoration of the bridge that connects *Nămoloasa* and *Berzei* streets, in the northern part of Ploiești.

The project "Flood mitigation works on Dâmbu brook upstream of Ploiești, Prahova county", approved in 2017, consists in carrying out new hydrotechnical works in the Ialomița-Prahova river basin, on Dâmbu stream, in order to reduce the damage caused by floods in the municipality. (https://www.gov.ro/)

In 2018, Ploiești City Hall announced the regularization of Dâmbu stream in the *Polux* area, where there is a permanent risk of floods, due to the fact that one of the banks of the stream collapsed. (https://observatorulph.ro) The designers proposed the reshaping of the riverbed on a length of about 150 meters, from the concrete bridge downstream, but also the realization of bank protections, with concrete walls, on a length of 150 meters on the left bank and 130 meters on the right one. (https://www.telegrama.ro)

1.6 Culture and local heritage

The culture of Ploieşti is closely linked to the history of the city. “The city of Ploiesti is a city of colonization, the first among them. Its small town, brought by the great Voivod founder, later enriched by immigration, gives it this character of colonization. This explains the almost total lack of old buildings, churches, boyar houses, royal courts, - historical traces of the past through which a more complete history of the city, as well as its artistic past, could be reconstructed.” (Sevastos, 1935)

An important event in the history of the city is the proclamation of the Republic of Ploiești, an event that took place on August 8, 1970, a movement appeared ”with or without a real reason” generated by the dissatisfaction of the people of Ploiesti related to ”prefect, police, oppression, government, violation of laws, etc. (...) As a well-deserved reward and recognition, Ploiești has received an extraordinary gift, the Statue of Liberty, which for over a century recalls the spirit of the place.” (Luchian, 2017)

The cultural facilities are concentrated in the central area of the city and on the main boulevard: the National Museum of Natural Sciences, the ”Paul Constantinescu” Museum, the ”Nicolae Iorga” County Library, the County Museum of History and Archeology, the National Oil Museum, the Hagi Prodan Târgoveț House Museum, ”Ion Ionescu-Quintus” Museum, Clock Museum, ”I.L. Caragiale” Memorial House, Art Museum, Philharmonic “Paul Constantinescu”, “Toma Caragiu” Theater, “Equinox” Theater, Premiere Cinema, Culture House of the Trade Unions, Palace of Culture. Only a few are in other areas of the city: the ”Nichita Stănescu” Memorial House in the North-East, the ”Belle Languages” Foreign Language Center in the South-West and the Children's Palace in the West. (Annex Cultural facilities).

1.7 Landscape typologies

An important natural feature that plays a decisive role in the definition and evolution of the urban landscape of Ploiești is its location on a relatively flat relief unit. This has an effect on both on the users and the ways of using the land, as well as on the road infrastructure. "The absence of morphological restrictions is perceived by the lack of steep slopes, the absence of artificialization of the relief in order to densify the different traffic arteries, especially in the case of road infrastructure, but also because of the lack of positive relief forms within the field of vision." (Gavrilidis, 2017)

The metropolitan area, on the other hand, is not characterized by a lack of relief, the level difference being of 428 m, due to the fact that in the north and north-east the area also includes sub-Carpathian hills.

Landscape typologies can be included in certain categories according to certain classification criteria:

a) By landcover: built landscape and other types of landscape;

b) According to the landscapes' function: residential landscape (single-family and multi-family), industrial landscape, institutional landscape, commercial landscape, landscape of green spaces, agricultural landscape and abandoned landscape.

At the level of the Ploiești landscape, the built landscape has a concentric structure and has a higher density in the central area, which decreases towards the periphery. In terms of fragmentation, the areas in which it is most emphasized are the northern and central-western areas, a fact determined by the presence of block neighborhoods. (Annex Landscape typologies – Macro)

Other types of landscapes include green areas, cemeteries, sport complexes, water surfaces, agricultural fields and abandoned fields.

The residential landscape, depending on the type of living, can be collective (multi-family) or traditional (individual or single-family). The collective residential landscape is found in the north, north-west and west areas, but also along the road axis that runs through the city from north to south, as well as in the east. Although this type of construction does not occupy a very large area of land, "collective residential buildings are defining and distinctive elements of the urban landscape, especially in the post-socialist space." (Gavrilidis, 2017) The vegetation is poorly represented as a number of specimens and is mainly composed of trees and decorative shrubs. In the studied area it can be found in the area of Mihai Bravu neighborhood and a part of the Bariera Bucov neighborhood.

The single-family residential landscape is characterized by constructions of type GF, GF + 1 or GF + 2. This type of landscape represents the largest share of the residential landscape in Ploiești. Buildings of this type are arranged relatively symmetrically to the N-S axis. The dominant vegetation is specific to this type of landscape, being represented by mainly utilitarian species (fruit trees, vines, vegetables) as well as perennial flowering species. It can be found in Găgeni, Transilvaniei, Berеasca, Bariera Bucov and Pictor Rosenthal neighborhoods.

The industrial landscape has been and is still a symbolic landscape of Ploiești due to the numerous refineries and industrial infrastructures present throughout the city, especially in the outskirts. Due to the decline of the oil industry and the elimination of a large part of the refineries (the only active industrial platforms being Vega and Teleajen, located along the course of the Dâmbu stream), two types were differentiated from the industrial landscape typology: the active industrial landscape and the ruined industrial landscape. Some of the former industrial platforms have undergone a functional conversion (on the site of the Flacăra factory in the northeast of the city the AFI Ploiești shopping center was built), while others have remained industrial ruins or brownfields.

The landscape of the green areas or the urban landscape of recreation includes the components of the urban landscape that have the role to improve the life of the inhabitants and to increase the degree of attractiveness of some neighborhoods (such as the northern districts, Andrei Mureșanu, Malu Rosu, West, Lămâița, 9 May, Mărășești), but also to improve the quality of the urban environment, Ploiești having many sources of pollution. This category includes public spaces such as parks, squares, street alignments, the gardens of blocks of flats. At the level of the studied area there is the Bariera Bucov Park and a small number of public squares.

The agricultural landscape is located in the periphery area and usually alternates with the industrial one. Rural settlements in the municipal area have had a significant agricultural function that influenced the outlying landscape of Ploiești in the past. At present, part of this landscape has transformed into an abandoned agricultural landscape, also known as wasteland or fallow land. These lands have become a reserve of buildable space, relating with urban expansion and dynamics. "Although both agricultural land and abandoned land constitute agricultural landscape the two modes have different projections on the levels of use as places of storage of waste, generally coming from constructions, but to which are added the households waste. (...) These practices generate positive anthropogenic relief microforms that decrease the agricultural productivity of the land. " (Gavrilidis, 2017) At the level of the studied area, agricultural fields are in the northern part, near the Vega refinery, around the Bereasca neighborhood, as well as in the southern part, all being located along the right bank of the Dâmbu stream.

The commercial urban landscape and the institutional or services urban landscape are not typologies of landscapes focused on a certain area, they are scattered all over the city. Their

existence can be summarized only on a more detailed scale, at a neighborhood or block level. Although these typologies are normally defining elements for urban aesthetics, they often contrast with the architectural style of older buildings in their vicinity. This way it can be observed that "the Ploiești municipality does not have within the administrative area a business center well defined as in the big cities of Europe and even in Bucharest." (Gavrilidis, 2017) Regarding the clearly defined commercial landscape, it exists only outside the peri-urban area (at the exit towards Brașov). At the level of the studied area they are found in the Bariera Bucov neighborhood (AFI Palace Ploiești, Dedeman, Artsani) and in the Mihai Bravu neighborhood (Kober warehouse, Lidl).

To these, at the level of the studied area, the following are added:

- The landscape of places of worship and cemeteries - the landscape of burial areas, with the spread of graves and crosses, and the constructions specific to this function (Mihai Bravu Cemetery);

- The street landscape - it stretches along the traffic arteries and is defined by the movement of the cars, by the noise and agitation, by the alignment type plantations;

- Railway landscape - the landscape described by the presence on the site of the numerous railways. train tracks, electrification lines, trains and spontaneously appeared vegetation (East Railway area, Ploiești North Railway station).









































1.8 Vegetation and fauna analysis

1.8.1 Typologies of green spaces

The total area of vegetated spaces at city level is 2.605.183 m^2 (Table 2.1), which means that the surface of green space per capita is 12.409 m^2, according to a preliminary inventory made by S.C. Urban Management Services Ploiești, Public and Private Domain Administration Ploiești, Green Space Service.

Another category includes the planted spaces that are located inside the public institutions whose use is not entirely public, being restricted by the management of the respective institution. (Table 2.2)

In addition, the planted areas that do not have a function of recreation, rest or leisure but which contribute to the hygienic-sanitary qualities of the city are added (Table 2.3), meaning that they are taken into account when calculating the surface of green space per inhabitant.

Table 1.1

Planted public areas

Type of green space	Surface (m^2)
City parks	147.112
Public gardens	115.190
Green areas near boulevards and streets	536.843
Squares	859.254
Green areas in the blocks of flats neighborhoods	789.994

Table 1.2

Planted areas with restricted access

Green spaces within educational institutions	198.085
Green spaces within healthcare institutions	15.850

Table 1.3

Planted areas without any recreational purpose

Nurseries	308.000
Cemeteries	434.000

To these Bucov Park is added, with an area of 1.840.000 m^2, which, although it is not within the administrative limit of Ploiești municipality, is part of its green system, being one of the leisure places frequented by its inhabitants, localized only 5 km away.

The number of formal green areas in quite small at a city level: Tineretului Park (Sala Sporturilor), West Municipal Park, West Park (near the West Railway station), Mihai Viteazul Park, North Park, Bariera Bucov Park, a small number of squares and playgrounds. The quality of the vegetation is affected by the environmental factors, especially pollution, as well as a lack of proper maintenance. (Annex Typologies of planted areas)

In the surroundings of the Dâmbu stream the only park is the Bariera Bucov Park and some smaller squares and playgrounds used for leisure, especially in the Mihai Bravu neighborhood.

Importance of green areas

On what concerns the importance of green spaces, on a regional level Bucov Park, Hippodrome and the Crângul lui Bot forest are important; on a city level West Municipal Park, Tineretului Park, Mihai Viteazul Park, the square in the central area, the square in front of the central market (Halele Centrale) and the one in front of the Sindicate House, the Independece Boulevard are important; on a neighborhood level there are the squares and the adjacent playgrounds are important, and at a vicinity level, there are the gardens of collective dwellings. These informations are illustrated in Annex Importance of green areas.

1.8.2 Green area malfunctions at the city level

For the Municipality of Ploiești there is no Local Register of Green Spaces elaborated according to the requirements of Law no. 24/2007 regarding the regulation and administration of the green spaces in the urban area of the localities - republished, with the subsequent completions and modifications, as well as with the Technical Norms of 17.05.2010 for the fulfillment of the provisions of this law. At the moment there is only a preliminary form of it, which contains only an inventory of green spaces.

Another problem is the way of structuring the green spaces, these being largely isolated, determining their reduced ecological importance, which is limited at most at the neighborhood level, and their quality is declining. In addition, although green spaces should be regarded as means of generating natural habitats in the urban environment, a large number of non-indigenous species are cultivated that are inefficient in reducing pollution and noise.

Although in recent years the environmental conditions have changed, nothing has been done at the level of the existing green spaces, especially those in the central area, which have been unchanged for 20 years. The vegetation is aging, but does not benefit from a gradual replacement and is affected by the lack of water due to the absence of an irrigation system.

1.8.3 Vegetation typologies on the site

The typologies of planted spaces in the studied area are generally correlated with the main functions. These are illustrated in the Vegetation Typologies Annex. Thus, I found that, on the studied site, the dominant species are the following:

In the cemetery area, the vegetation is dominated by herbaceous and flowering species, both planted and spontaneous and it contains turf mixture, flowering species (*Bellis perennis, Dianthus plumarius, Tagetes patula, Viola tricolor*) and various herbaceous species usually found in spontaneous vegetation. On what concerns the mixt trees and shrubs vegetation (both planted and spontaneous) it can be found along the banks of the Dâmbu stream and in the park in Bariera Bucov containing species such as: *Cornus alba, Forsythia x intermedia, Ligustrum vulgare, Parthenocisus quinquefolia; Thuja occidentalis, Aesculus hipocastanum, Catalpa bignionioides, Fraxinus excelsior, Populus nigra, Prunus cerasifera, Robinia pseudaccacia, Tilia tomentosa.*

In the residential areas there are planted shrub and tree consisting of species such as: *Buxus sempervirens, Cornus alba, Deutzia scabra, Forsythia x intermedia, Ligustrum vulgare, Parthenocisus quinquefolia, Spiraea vanhouttei, —Syringa vulgaris; Pinus nigra, Thuja, Aesculus hipocastanum, Catalpa bignionioides, Fraxinus americana, Juglans regia, Populus alba, Populus nigra, Prunus cerasifera, Robinia pseudaccacia, Salix alba, Tilia tomentosa* and predominantly planted herbaceous species consisting mainly of species used for lawn and grass mixtures, as well as flowering plants such as: *Galanthus nivalis, Hyacinthus orientalis, Lilium candidum, Narcissus pseudonarcissus, Rosa sp., Tulipa gesneriana*.

Along the water course, the meadow vegetation is specific, appearing in the form of some corridors with variable width, forming the so-called lattices. The main arboreal associations are composed of poplar (*Populus nigra*) and willow (*Salix spp.*) species, and associated with them are: a shrub layer (dogwood – *Cornus sanguinea*, buckthorn - *Rhamnus cathartica*, hawthorn – *Crataegus monogyna*), several hanging plants (old man's bard – *Clematis vitalba*, wild vine, etc.) and grasses (grasses on wilted lands and hygrophilous plants on those with excess moisture). On higher lands, which are rarely affected by floods, where

there is good drainage extend quercine species and meadows with hygrophilous associations. Aquatic vegetation is present in riverbeds: the depth, speed and position of the main water currents have a significant role in its distribution.

1.8.4 Fauna

Special ecosystems have developed along the Dâmbu stream, in the cultivated agricultural areas and in the flood zone. The fauna consists of species of birds (*Corvus frugilegus* - crow, *Hirundo rustica* - swallow, *Sturnus vulgaris* - starling, *Ciconia ciconia* - stork, *Coturnix coturnix* - quail, *Larus ridibundus* - seagull, *Accipiter gentilis* - kite; insect species (*Anax imperator* - dragonfly, *Culex pipiens* - mosquito), small reptiles (*Lacerta agilis* - gray lizard, *Natrix natrix* - channel snake), *Bufo bufo* - common toad and small mammals (*Canis lupus* - dog, *Microtus arvalis* - field mice, *Lepus erupoeus* - hare, *Cricetus cricetus* - European hamster, *Cittelus cittelus*- European ground squirell).

1.9 Quality of the environment and pollution factors

1.9.1 Air Pollution

Air quality issues, reported in the documentation for P.U.G. Ploiești, 2015, are:

- High levels (by reference to the limit values set by national legislation) of air pollution with NO_2, suspended particles (TSP, PM_{10} and $PM_{2.5}$), ozone, formic aldehyde, ammonia, hydrogen sulphide and phenols, levels that determine conditions that affect

the health of the population on large areas of the center and from different perimeters of the city.

- Pollution levels with PM_{10} and $PM_{2.5}$ (the most dangerous particles for human health, as they enter the middle respiratory tract, and $PM_{2.5}$ enters the pulmonary alveoli) high in relation to the WHO recommended guidelines for the protection of the population at long term exposure (over a year), all over the city, generating conditions that affect the health of permanent residents.
- The presence in the surrounding air of benzene, arsenic, nickel and polycyclic aromatic hydrocarbons, carcinogens, which represents, for each individual substance, a risk to the city's population.
- Incidence of acid precipitations, with negative effects on biotic and abiotic environmental factors (vegetation, water, soil, constructions).
- The presence, in significant concentrations, of acid gases (NOx, SO_2, CO, CO_2) and ozone (strongly reactive gas) in the city atmosphere, which determines a high degree of aggressiveness of the atmosphere on the building materials (metal, concrete, wood, paint, etc.), accelerating their degradation. The phenomenon of degradation of construction materials is also favored by acid precipitation and by wet and dry deposition of particles.
- Simultaneous presence in the city atmosphere of nitrogen oxides, sulfur oxides and ozone, which determines conditions of chemical stress on the vegetation. The sources of atmospheric pollutants that generate these problems are urban-type sources (road traffic, residential / institutional / commercial heating with own systems) and major industrial-type sources (oil refineries, thermal power plants and other high-power combustion sources), whose contributions are cumulative.

1.9.2 Water Pollution

Problems regarding water quality:

- The subterranean water from the groundwater, mainly from the area of Ploiești and from the southern part, is contaminated with petroleum products.
- Pollution of the water of the Dâmbu stream and through it, of the water of the Teleajen river, as a result of the evacuation of untreated industrial wastewater and incompletely treated municipal wastewater in the existing wastewater treatment plant of Ploiești municipality.

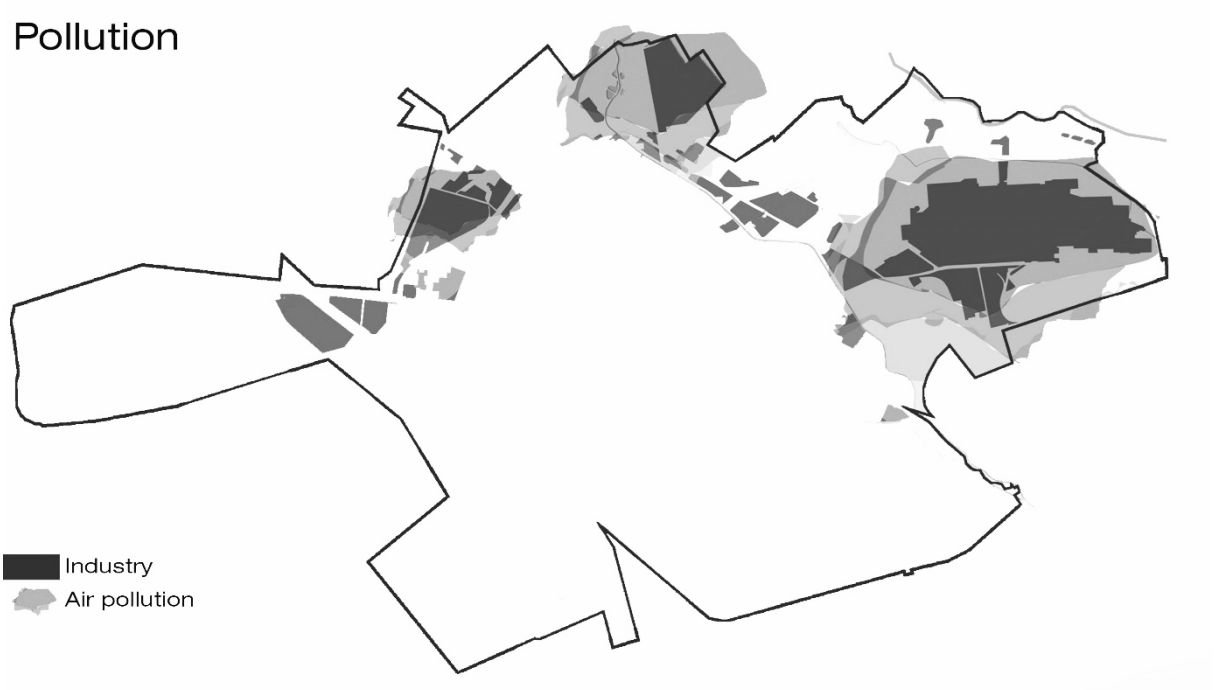
1.9.3 Noise Pollution

Problems regarding the environmental noise in the agglomeration of Ploiești municipality:

- The main sources of noise are, in order of importance: road traffic, major industrial activities, tram traffic and railway traffic.
- Road traffic on the streets in the city center, on the access roads in the city and on the West Road generates high levels of noise, above the limit values, as well as over the target values that should have been reached in 2012, both during the day, and during the night.

Road traffic is the source with the highest spatial spread (as illustrated in Annex Pollution), which, in conjunction with the high levels of the generated environmental noise, determines the largest areas of influence and, consequently, the largest number of dwellings and of people possibly affected.

- The major industrial activities in the municipality of Ploiești can cause increased noise levels (reaching the limit values and exceeding up to 5 dB of the target values) only strictly local, on restricted areas close to the limits of the industrial premises.
- Tram traffic can cause noise levels to increase (by up to 5 dB of target values) over short distances along the roads.



Source: *Toma C., Andrei C., Mădălina G., Aldea T., 2011. Periferia factor în dezvoltarea urbană. (Thesis)*

1.9.4 Waste management

In the field of waste management, the following problems are reported in the documentation for P.U.G. Ploiești, 2015:

- The lack of rules regarding the management of the special flows of waste and industrial waste, in accordance with the legal provisions, which mention the measures for reaching the targets established by the applicable specific legislation, provisions especially important for the municipality of Ploiești, in which large industrial objectives generating waste function;
- The existence in the analyzed area of deposits of industrial waste with historical and current major impact on the environment, namely: battles of acid tar and oil residues in the area of Ploiești;
- Lack of selective collection at the source of the waste generated by the population;
- Lack of composting stations for biodegradable waste;
- Uncontrolled storage of waste by the population on green spaces in the urban areas.

1.10 Built environment

With the expansion of the U.A.T. of Ploiești to the west, the share of constructions in the peri-urban and metropolitan area has increased, especially along the DN72 road, which connects with Târgoviște. The transformation of natural and semi-natural landscapes has been accelerated, the share of built area increasing from 16.02% to 18.28% in just 5 years. "Although at national and global level the economic situation has seen a significant decline, between 2008 and 2010 the built area increased by 0.57%, developing commercial, industrial and service constructions." (Gavrilidis, 2017) Thus, we can see an economic growth and a continuous development of Ploiești, even in a period of economic downturn.

1.10.1 Height regime

„The territory of the locality is characterized from the point of view of the altimetry of the existing built fund by a small and very low height regime, with buildings of maximum GF + 2 levels, covering a weight of approximately 70-80% of the total built areas, located in especially in individual housing estates, industrial areas and suburbs. The areas characterized by a medium and high height regime, with buildings between GF + 5-GF + 12 levels, are the central area and the collective housing neighborhoods, within which are dispersed, in a very small share." (Documentation P.U.G. Ploiești,2015)

In the study area (Annex Functions), the height regime is predominantly GF - GF+1, with a few compact areas (in Castor and Mihai Bravu neighborhoods) of height regime greater than GF + 1.

1.11 Functions

Functional zoning is the clear delimitation of parts of the territory of a locality with well-defined functions. A territorial balance on the functional areas in Ploieşti highlighted the fact that the main functions are housing and industry.

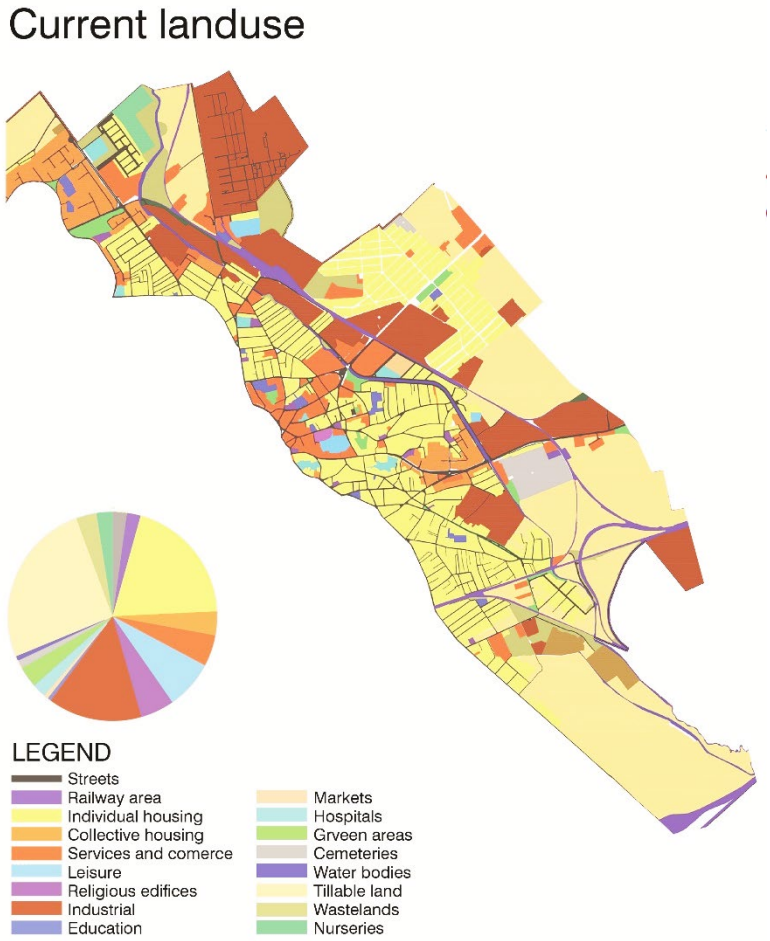
The residential area is developed, historically speaking around a central core. In parallel with the process of industrialization of the city, the residential areas expanded along the traffic arteries that connected the city with the new industrial areas. It occupies the largest space of the municipality being distributed both inside and on the outskirts. Of course, this functional area has undergone a decisive evolution over time. Thus, from the micro-districts of blocks of flats, we started to build entire neighborhoods, urban complexes with all the necessary equipment (eg: large neighborhoods Ploieşti-Nord, with over 10,000 apartments). Today, the residential area is divided into 19 neighborhoods and 5 housing units (Calea Bucureşti Ensemble, C.F.R. Depou Colony, Rafinorilor Colony, Mihai Bravu - Teleajen Colony, Vega Colony). There are also in the Ploieşti metropolitan area several neighborhoods called exterior, which are also those with major infrastructure problems, social problems and lack of facilities (for example, Berеasca neighborhood).

The industrial area - Ploieşti has a well-defined industrial area. Almost all branches of industry are present, but the most developed is the petrochemical industry. Thus, we can name several refineries as: “Vega” Refinery (also called “Refinery no.2,“ L.Edeleanu ”,“ Ploieşti-Nord ”) was modernized, developed and profiled on the production of fuels and oils; "Astra Română" which was merged with "Orion", "Noris" and "Lumina", thus forming "Rafinăria nr.1" today called "Rafinăria Ploieşti", which had also been modernized, is insolvent since 2014; The former "Creditul Minier" refinery, which later became "Brazi", merged in 1969 with the "Petrochemical Plant" and formed the largest, most complex and most modern crude oil processing unit in the country (includes 14 factories and produces over 100 products petrochemicals exported to over 50 countries); "Teleajen Refinery" (former "Romanian-American" also called "Refinery No. 3") became in 1979 the "Teleajen Petrochemical Plant" - today Lukoil Refinery; the "Xenia" refinery was renamed the "Petrochemical Plant No. 2" in

1954; since 1965 it is called "Dero" Enterprise, being specialized in the production of detergents.

The mixed area (administration, culture, trade) represented mainly by the central area of Ploieşti municipality, which occupies an area of 114.39 ha. Here are located the main socio-cultural facilities of the city, administrative offices at county and municipal level, museums, theaters, commercial spaces and galleries, the most representative accommodation units, educational facilities (university, national colleges), company headquarters, offices, bank offices. Here are the City Hall of Ploieşti and the Prefecture of Prahova County.

Analyzing the General Urbanistic Plan (Annex Functions) it can be seen that the functions provided for the studied site are: water, industrial units, services, green spaces and facilities of public interest as well as some areas of residential functions and mixed residential functions and some agricultural areas.



1.12 Infrastructure and accessibility

1.12.1 City infrastructure

The road transport network in Ploiești Municipality and in the metropolitan area consists of highways and national roads (network managed by the National Company of Highways and National Roads) that connects the city of Ploiești with other cities in the country; a belt ring composed of two segments West Belt - component part of DN1 and East Belt - component part of DN1A; local roads managed by the local authority (Prahova County Council and local councils of communes) - county and communal roads that ensure the connection with neighboring localities. These are illustrated in Annex City level traffic.

The city is connected by railway lines to Bucharest, Buzău (by the Bucharest-Galați-Roman railway), Brașov (by the Ploiești-Brașov railway, both double electrified railways), Urziceni, Măneciu, Slănic and Târgoviște. The railway node has two important passenger stations (Ploiești Sud and Ploiești Vest), as well as the secondary stations Ploiești Est (towards Buzău), Ploiești Nord (towards Măneciu), plus Ploiești Triaj (sorting station) located south of the city.

The network of streets and boulevards on the territory of Ploiești Municipality administered by the City Hall of Ploiești has historically developed mostly on a radial structure, with the transit of the central area.

Urban public transport is provided by the public authority that manages a transport network consisting of: 38 lines with an average length of 7.82 km double track, served by 183 buses; tram lines with an average length of 5.95 km double track, served by 33 trams; trolleybus lines with an average length of 5.55 km double track, served by a number of 42 trolleybuses. (Documentation P.U.G. Ploiești, 2015) In the study area the buses that connect it to the other parts of the city are number 5, 104, 40, 40B, 402 and 403.

1.12.2 Site infrastructure

Most of the streets in the studied area are minor roads, with only a few 3rd degree main streets (Apelor Street, Romană Street, Văleni Street, Transilvaniei Street) and two 2nd degree arteries (Găgeni Street and Mihai Bravu Street). Apelor street has a particularity: during the weekend, between 8 a.m. and 3 p.m., it becomes a one-way street due to the weekend market (Obor), because a portion of one of the lanes is used as parking spaces. (Annex Road infrastructure)

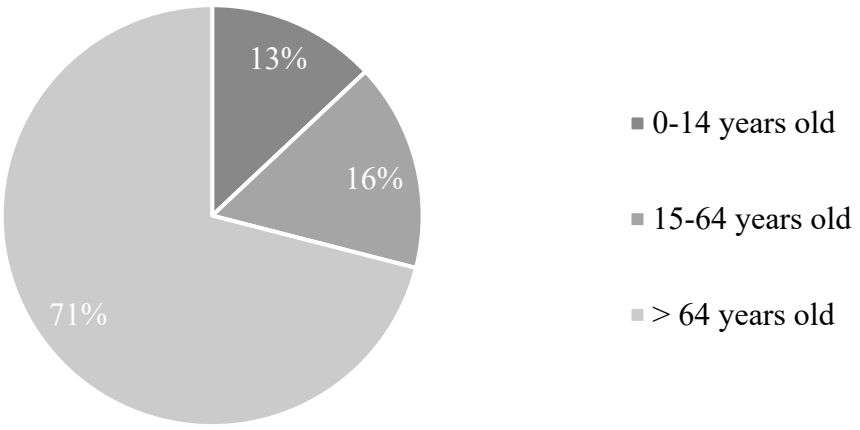
Public transport in the site is only present in the northern part, where there are also the main bus and tram terminals for the city. The area crosses with the number 101 and 102 trams paths and is transited by the number 5 bus from the District Hospital to the Mihai Bravu neighborhood.

1.12.3 Site accessibility

On what concerns road infrastructure, the site very accessible by car and by pedestrians, moderately accessible by public transport and slightly accessible (with some difficulties) by other means of transport such as bikes and scouters, this being caused by the lack of a proper infrastructure for these types of means of transport.

In the case of accessibility to the stream, sector 2 is totally inaccessible; sectors 1, 3, 4, 5, 7 and 9 are either partially accessible, in the sense that they mainly have one bank that can be either accessed on its whole length, or it can be accessed in some points, where the streets perpendicular to the stream end, or inaccessible; sector 6 is totally accessible, on both banks of the stream and sectors 0, 8 and 10, although they are accessible on both river banks, there is no formal infrastructure near them, therefore they are accessible only by foot. (Annex Contextual sections)

1.13 Social environment

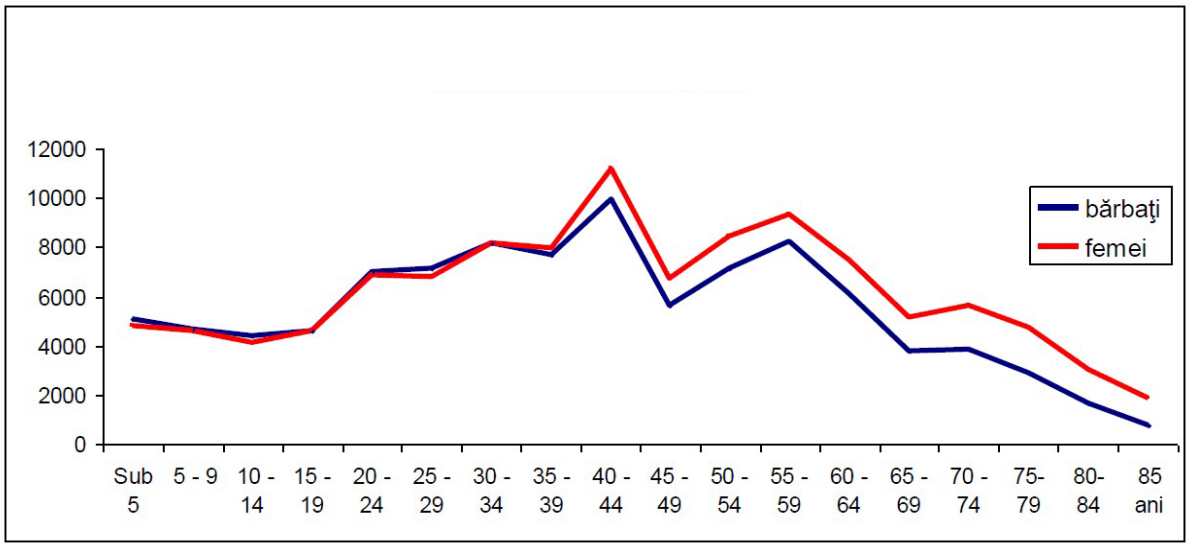


Source: Direcția Județeană de Statistică Prahova

Figure 1 - Population structure by gender and age

1.13.1 Population and occupations

According to the 2011 census, the population of Ploiești was 209,945 inhabitants, with a density of 3,499.08 inhabitants / km2. The structure of the population by sex and age groups can be observed in Figure 2.1, and the structure by age categories can be observed in Figure 2.



Source: Documentation P.U.G. Ploiești, 2015

Figure 2 - Population structure by age

The distribution of jobs by sectors of activity is as follows:

- primary sector (agriculture and mining): 3.8%;
- secondary sector (manufacturing and construction industry): 50.2%;
- tertiary sector (transport, trade, tourism, education, culture, health, etc.): 46.0%.

Table 2

Population dependency ratio

TOTAL	Active population 15-64 ani	Inactive population (0-14 ani)	Inactive population (over 65)	Inactive population total	Dependency ration
209.945	148.965	27.674	33.306	60.980	41 inactive people to 100 active people

Source: Documentație P.U.G. Ploiești, 2015

1.13.2 Sociological inquiry – quality of green spaces in the study area

Following a sociological survey with 887 respondents conducted in the documentation for the new G.U.P. of Ploiești in 2015 (although the survey was made 5 years ago, most of the problems signaled by the people have not been solved) regarding the city's neighborhoods, for

the neighborhoods in the study area, Găgeni, Transilvaniei, Bariera Bucov, Mihai Bravu and Pictor Rosenthal a total number of 74 people responded. Some of their suggestions regarding the urban and environmental context were:

Gageni - 10 respodnents

- cleaning and sewerage of the Dâmbu River;
- more green spaces, construction of a park, creation of places for spending free time;
- creating parking spaces;
- asphalting the streets;
- improving the street lighting.

Transilvaniei – 4 respodnents

- cleaning, sanitation of the Dâmbu riverbed and the space near the North railway station and in the Blejoi barrier area (CastorPolux);
- designing green spaces in the Transylvania area, Dragalina, Northern Railway Station; parks, ways to spend free time;
- continuation of the improvements and regularization of the Dâmbu riverbed between the North railway bridge, Valeni bridge and county hospital;

Bariera Bucov – 7 respondents

- sanitation of the Dâmbu stream;
- more green spaces; parks and more playgrounds for children;
- more areas for entertainment (cafes, bookstores);

Mihai Bravu – 50 respondents

- more options for public transport;
- garbage collection:
- cleaning and periodic maintenance of the Dâmbu stream;
- one-way imposition on Apelor Street, permanent;
- reconfiguration of the Dambu riverbed;
- cleaning and reconfiguration of the Dâmbu stream as a recreational area;
- development of the other bank of the Dâmbu stream, because now Mihai Bravu seems like a city edge;
- playgrounds for children and teenagers should be created such as sports fields;

- more parks and green spaces around the flats/houses;
- more ways to spend free time;
- more cleaning should be done;
- more trash cans;
- use of vacant land or abandoned buildings for the community;
- car parking;
- pollution from Lukoil refinery should be reduced;
- there is a need to increase the attractiveness of the Dâmbu stream;

Pictor Rosenthal – 3 respondents

- make a recreational park in the Dorobanțu area.

As a conclusion of this social inquiry, most respondents see this natural element as a potential place for leisure and environmental improvement, the cleaning and reconfiguration of the Dâmbu riverbed being necessary in order to increase its attractiveness.

2.2 Results

2.2.1 S.W.O.T. Analysis

Strengths

Accessibility and traffic

-Ploiești municipality is the county seat;

-Existence of a public transport network in the site area (bus);

Architecture and urbanism

-Existence of local secondary centers (multipolar city);

-Different types of housing in the studied area (collective and individual);

Economic functions and activities

-Existence of large and very large economic agents;

Landscape and environment

-Fertile soils;

-Diversity of landscape typologies;

-Biodiversity is rich in the studied site;

Weaknesses

Accessibility and traffic

-The current street infrastructure does not correspond to the needs of the population;

-Absence of a proper biking infrastructure (there are no designated bike paths in the site area);

-The Dâmbu stream is inaccessible for at least half of its course;

-Some of the bridges (especially the pedestrian ones) are not in a very good condition;

Architecture and urbanism

-Lack of coherence in terms of architecture;

-Unvalued local heritage;

Economic functions and activities

-The monopoly of industrial activities in the field of oil processing which resulted in their privatization, as a result of the lands on which they were located are wastelands;

-Presence of abandoned or partially abandoned sites along the course of the stream;

Landscape and environment

-Insufficient green spaces at a local level;

-The presence of local winds that extend pollution;

-High degree of noise, visual pollution; emissions;

-Waste and garbage is frequently thrown into the stream in some of the areas causing blockages especially near the bridges;

-Some of the green areas look completely abandoned;

Opportunities

Accessibility and traffic

-Creating a more coherent traffic strategy, especially on the area between Mihai Bravu neighborhood and Bariera Bucov neighborhood;

-Potential of developing a biking infrastructure along some parts of the stream;

Architecture and urbanism

-Developing a coherent urban strategy for the site;

Economic functions and activities

-Investment in the landscape infrastructure could increase the economic benefits for the local businesses, by attracting more customers;

-Increasing the variety of activities provided for the local people;

-Improving life of the local people by providing proper socializing spots and activities;

Landscape and environment

-Potential for capitalizing on the biodiversity of the studied site;

-Valorization of the degraded river landscape;

-Ecological benefits;

Threats

Accessibility and traffic

-Some of the infrastructure changes might be hard to be integrated/accepted by the local population;

Architecture and urbanism

-Absence of a high number of residual spaces for developing new functions (urban density);

Economic functions and activities

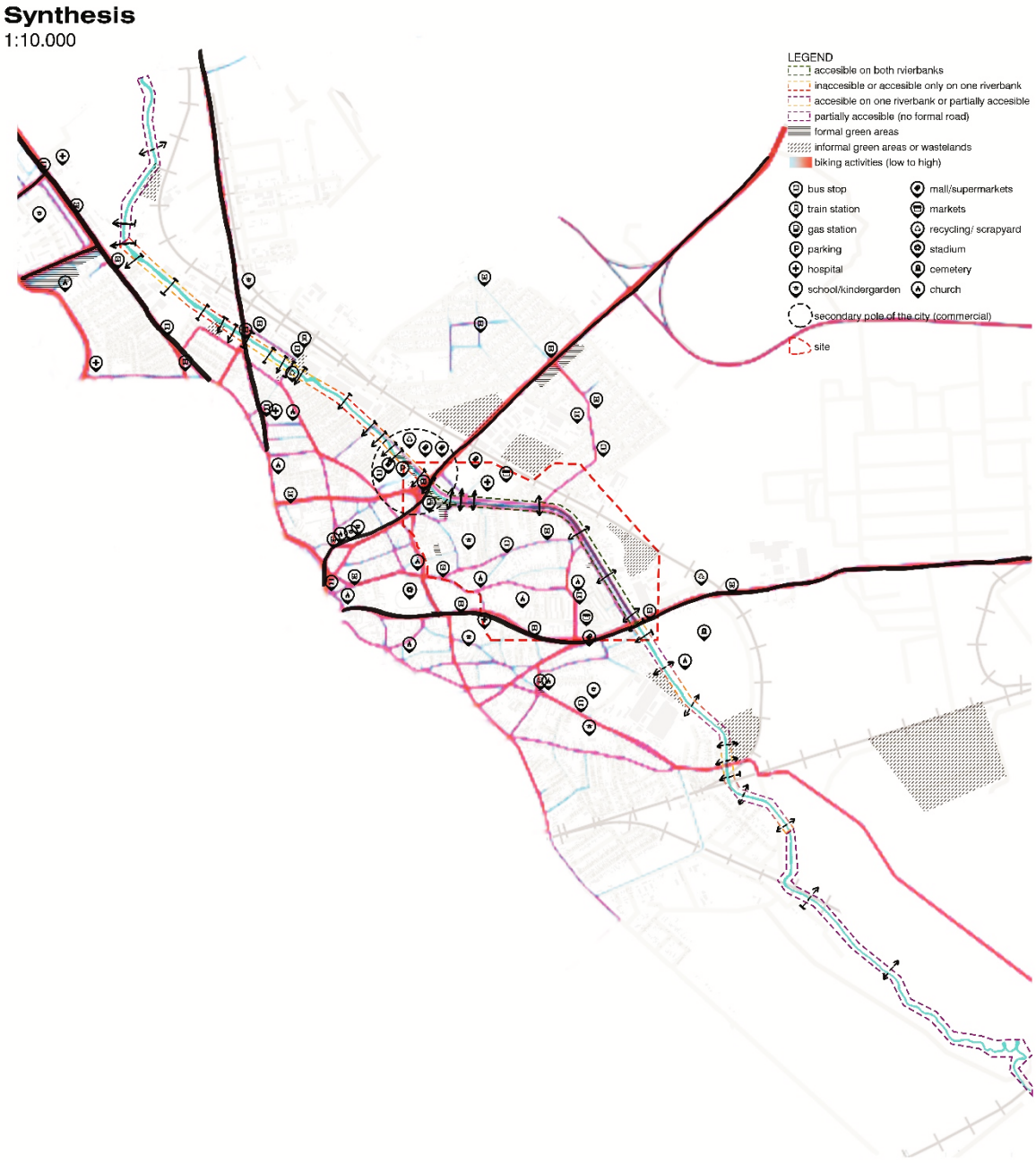
-Lack of interest to get involved from the current economic actors;

Landscape and environment

-Although the population on the city level agrees that Dâmbu stream would bring numerous ecological benefits, it might be difficult to keep the area clean on the long term.

2.2.2 Analysis synthesis - Conclusion

Considering the facts analyzed in the previous chapters, the best sector in which a design proposal could be developed at this time is the one located between the Bariera Bucov and Mihai Bravu neighborhoods as on this area, compared to the other ones, there is a potential for improving the local infrastructure, as well as introducing new functions because of the existence of the necessary land resources.



2.2.3 Diagnosis-Vision-Mission

Diagnosis

- the image of the Dâmbu stream in the community is not a very good one;
- the quality of the riverbanks is detrimental, mostly due to neglect, by both the people and the authorities;
- there is a lack of properly designed green spaces and leisure activities in the study area;
- infrastructure in the area could be improved.

Vision

Improving the image of the Dâmbu stream and the quality of the environment not only bringing beneifts to its proximity, but to the entire city.

Mission

Develop a design solution that would integrate the Dâmbu stream into the urban context, this way creating new leisure and socializing opportunities, while improving the environment and the quality of life.

2.2.4 Strategy

Macro level

- Increasing the percentage of formal green areas;
- Improving road infrastructure by turning the measure adopted now only during the weekends, into a permanent regulation;
- Creating a new layer of infrastructure by introducing a bike lane on this sector;
- Creating a new pedestrian path along the riverbank;
- Creating connections between the two riverbanks by introducing two new pedestrian bridges.

Micro level

- Improving and expanding the existent park in the Bariera Bucov;
- Creating new spaces for socializing;
- Introducing new social spaces and activities along the stream, in the Mihai Bravu neighborhood area;
- Improving and/or replacing the existing pedestrian bridges.

2.2.5 Concept - Social Streamscaping

The project focuses on improving social interaction and human connection to nature, using the Dâmbu stream as blue-green infrastructure that acts a guide and a binder of the design.

2.2.6 Design

Introducing new layers and features, the project's design idea is to increase the socializing opportunities in order to bring people closer to each other, using the Dâmbu stream as the main scene of these newly created experiences.

One of the main reasons that people do not feel a connection with the Dâmbu stream at this moment is because they can only experience it from afar: there are no sidewalks on either side of the riverbanks so they can only see it from across the street or from their cars. Because of this problem, the necessity of adding a new layer of circulation arose: a new pathway located on the western riverbank.

An important element included in the design of the project was the creation of new connections between the two riverbanks, in order to reduce the perception of the Dâmbu stream as a barrier. Two pedestrian bridges were added: one at the border between the Bariera Bucov and Bucov II area, leading to one of the entrances of the weekend bazaar, and one in the Mihai Bravu area, that connects to a club that has a football field that can be rented and a pool.

Another one of the key new layers added is the bicycle lane that starts in the parking lot of the shopping mall, with a purposely redesigned area specifically for bicycle users, goes towards Mihai Bravu neighborhood on one riverbank, and comes back on the other one, while also crossing the existing park. This newly created area provides parking for bicycles, and offers a new spot, a "bicycle pit-stop", with an indoor-outdoor contained building, where people are offered the opportunity to exchange ideas, while checking or fixing their bikes, or enjoying refreshments. From this building, it is also possible for people that do not own a bike, to rent one and enjoy the scenery of the Dâmbu stream.

In order to have a more cohesive connection with the rest of design project, the existing traffic islands, particularly the concrete ones, will be turned into new green spaces and will be planted with the same perennial species that will be used in the other parts of the project, such as the redesigned park in Bariera Bucov and the new park extension.

Masterplan


LEGEND
pathways
bicycle lane
shrubs and perennials
existing trees
proposed trees
Area 1 - Bariera Bucov
Area 2 - Bucov II
Area 3 - Mihai Bravu

2.2.6.1 Area 1 - Bariera Bucov

Located in one of the commercial poles of the city, in the proximity of a shopping mall and multiple supermarkets and stores (for construction materials and furniture especially), and near a bus terminal that provides transport to towns and villages in the Eastern part of the district, this area includes a big green space near the Dâmbu stream. Unfortunately, this park is poorly designed and outdated, offering almost no opportunities for socializing, as the sitting spaces are scarce and of poor quality (the few benches that are present are small and mostly damaged), the access to the lawns is prevented by hedges and the pathways have not been taken care of in years, presenting numerous cracks and disintegration signs. Rather then being a park that people could enjoy and want to stop in, this green area acts mostly as a shortcut for people

that want to come from the surrounding neighborhoods (especially Bucov II and Mihai Bravu) towards the commercial area and the bus terminal.

The existing park was redesigned so that it would fit better the modern needs: redoing some of the pathways and rethinking the way they work so that they would be more efficient and less numerous. New types of paving were introduced as well, in order to replace the existing asphalt: slate paving for the main pathways and cobblestone mixed with grass for the secondary ones, both of these types of paving being permeable. New types of furniture were added: concrete benches as they are more durable than the existing ones, and concrete benches with some wooden parts with backrests, providing versatile options for people of all ages. The main feature of the redesigned park is the central planted island, mimicking a calm body of water, that offers a multisensory experience, through the different textures, colors and smells. In order to improve the connection to the Dâmbu stream, the hedges were taken out, offering free access to the riverbank. In this area, a series of stairs were designed that have the purpose of diversifying the different sitting spaces and provide new socializing spots while, improving people's connection to nature and the environment.

In order to provide a better space for people and introduce new socializing spaces and create a better connection to the fluxes of people coming from the mall and the different stores in the area, I decided to expand the park on the other side of the stream, by relocating the construction materials warehouse and car wash present on the corner of the street, this way expanding the surface of green areas. The space created here is traversed by a few pedestrian paths, that create a plaza in the center. In order to bring the element of water in this new area, I designed a series of water jets that create a shallow pool of water that will be much appreciated in the warm, dry months of summer, providing entertainment to both children and adults. Another new function added to this plaza is a small-container café the provides the opportunity for people to socialize, while enjoying their favorite drinks.

This new green space could not lack vegetation, so the tree species chosen can be found amongst the ones already present in the existing park: *Fraxinus americana, Ulmus campestris* and *Ulmus laevis*, in order to have a more cohesive space and give a sense of unity. For the lower tier of vegetation, both in the exiting park, and in the new park extension, I also chose to use indigenous species in order to conserve the biodiversity and provide a sustainable plant composition that does not need much maintenance: *Cichorium intybus* (chicory), *Daucus carota* (wild carrot), *Nepeta cataria* (catnip), *Saponaria officinalis* (soapwort), *Lichnis flos-*

cuculi (ragged robin), *Veronica longifolia* (garden speedwell) and completed them with a few other adapted perennial species *Astilbe japonica* (false buck's beards), *Carex spp.*, *Festuca spp.* And Lavandula *angustifolia* (lavender). Rather than using turf, the lawns are planted with local species: *Alopecurus pratensis* (meadow foxtail), *Lollium perenne* (perennial ryegrass), *Poa pratensis* (Kentucky bluegrass), *Prunella pinnatifida* (wild basil), *Scutellaria galericulata* (common skullcap), *Taraxum officinale* (dandelion) and *Trifolium pratense* (red clover).

2.2.6.2 Area 2 – Bucov II

This segment of the design focuses mostly on the promenade on the western riverbak of the Dâmbu stream, that brings people closer to the water and provides room for new socializing spots and areas to stop and admire the stream or catch your breath. The material used for the pathway is cobblestone for its permeable properties.

On this part of the stream, apart from the sitting spaces provided by the same type of concrete and wood benches all along the pathway, in a wider area of the riverbank were added some small installations made out of wood, with elements of varying heights. These create socializing spots that would be especially enjoyed by the younger people, but not only by them.

2.2.6.3 Area 3 – Mihai Bravu

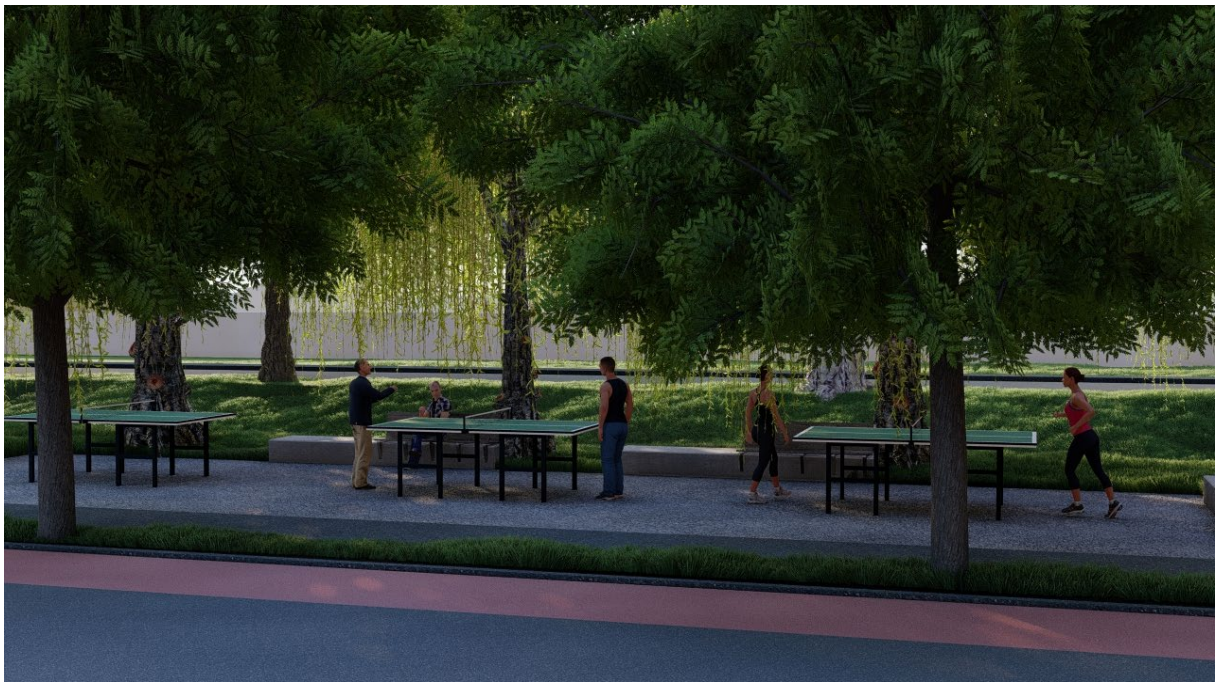
The area of the Mihai Bravu neighborhood, lacks a variety of leisure activities. The only spots provided for the residents of this neighborhood are the few benches that are mostly in a poor condition. For this area, the design focuses mostly on the active socialization, through a succession of spaces that provide a variety of possible activities. Starting with an outdoor gym area that includes more traditional outdoor fitness equipment and a more specific one for calisthenics training.

Continuing along the riverbank, a new playground was designed, that, apart from some traditional equipment, such as swings and a slide, it offers multifunctional wooden installations that give children the chance to exercise their motor skills. There are also some sitting spots from which the parents would be able to supervise their children.

The experience along the Dâmbu stream continues with a small pause place - the redesign of the existing sitting area, by replacing the existing furniture with new, more durable concrete and wooden benches and by introducing some of the wooden installations used in the the Bucov II area to provide variety.

Next, the pathway on the riverbank leads us to an area for table tennis, with adjacent benches for people to watch the ones who play and interact with them. Following by this, there is a small enclosed area that serves as a small dog park that gives their owners the possibility to socialize without them having to worry about the safety of their pets. This area, together with the outdoor gym and the playground have gravel as a ground material.

Lastly, the linear park on the Dâmbu stream ends with another promenade area, that splits into two possibilities: taking the existing path and sitting towards the street for people watching, or taking the new alternative path that is closer to the stream and gives the possibility to watch the nature. In this area, the benches are completed with the same wooden installations used in previous spaces that bring variety to the options for socializing spots.



BIBLIOGRAPHY

1. ***, 2015. Actualizare și Revizuire Plan Urbanistic General al Municipiului Ploiești, Regulament Local de Urbanism aferent, Elaborare Strategie de Dezvoltare Urbană a Municipiului Ploiești și Plan de Amenajare a Teritoriului Metropolitan, precum și documentațiile aferente. Primăria Municipiului Ploiești.
2. ***, 2015. Planul Urbanistic General Ploiești. Faza 1 – Studii de fundamentare. Primăria Municipiului Ploiești.
3. Gavrilidis A.A., 2017. Proiecția expansiunii și dinamicii urbane asupra peisajului. Studiu de caz: Municipiul Ploiești. Editura Etnologică, București.
4. Iliescu, Ana Felicia, 2003. Arhitectură peisageră, Editura Ceres, Bucureşti
5. Luchian E.-V., 2017. Ploieșteanul chip și mască. Editura Karta-Graphic, Ploiești.
6. Marinică G., Trestioreanu C., 2011. Marea carte a Ploieștilor, Editura Ploiești-Mileniul III, Ploiești.
7. Neufert E., Neufert P, 2000. Architects' Data, 3rd Edition, Oxford Brookes University.
8. Sevastos M., 1935. Monografia orașului Ploești. Tiparul Cartea Românească, București.
9. Turner,T., 1998. Landscape Planning and Environmental Impact Design, 2nd Edition, ed. UCL Press, London.
10. Toma C., Andrei C., Mădălina G., Aldea T., 2011. Periferia factor în dezvoltarea urbană. (Thesis).

http://www.dpfbl.mdrap.ro/ - Ministry of Regional Development and Public Administration
https://www.gov.ro/ - Romanian Government
http://www.mmediu.ro/beta/domenii/dezvoltare-durabila/concepte-si-principii-de-dezvoltare-durabila/ - Ministry of Environment and Climate Change
https://observatorulph.ro - Local newspaper
http://www.prahova.insse.ro/ - Regional Statistics Office Prahova
https://ro.wikipedia.org/wiki/Ploie%C8%99ti - Wikipedia page of Ploiești City
https://www.telegrama.ro - Local newspaper