proGIreg

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Spatial Analysis in Front Runner and Follower Cities

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Partner organisations

No.	Name	Short name	Country
1	Rheinisch-Westfaelische Technische Hochschule Aachen	RWTH	Germany
2	Stadt Dortmund	DORTMUND	Germany
3	Città di Torino	COTO	Italy
4	Grad Zagreb	ZAGREB	Croatia
5	Cascais Ambiente – Terrestrial and maritime environment management	CASCAIS	Portugal
6	Dimos Peraia	PIRAEUS	Greece
7	Asociatia de Dezvoltare Intercomunitara Zona Metropolitana – Cluj	CLUJ	Romania
8	City of Zenica	COZ	Bosnia and Herzegovina
11	lohrberg stadtlandschaftsarchitektur	LOHRBERG	Germany
12	Kyttaro Enallaktikon Anazitiseon Neaon	KEAN	Greece
19	Urbasofia s.r.l.	URBASOFIA	Romania
22	Consiglio Nazionale Delle Ricerche	CNR	Italy
23	Politecnico di Torino	POLITO	Italy
26	Zenica rezvojna agencija	ZEDA	Bosnia and Herzegovina
30	Sveučilište u Zagrebu - Arhitektonski Fakultet	AF ZAGREB	Croatia
31	Udruga Zelene i Plave Sesvete	ZIPS	Croatia
32	Zavod za prostorno uređenje grada Zagreba	ZZPUGZ	Croatia
34	OrtiAlti	OA	Italy

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Abbreviations

AxTo	Azioni per le Periferie Torinesi (Actions for the suburbs of Turin)
CMA	Cluj Metropolitan Area
CSA	Community-Supported Agriculture
CSR	Corporate Social Responsibility
EEA	European Environment Agency
ELP	Emscher Landschaftspark
FRC	Front-Runner City
FC	Follower City
GDP	Gross Domestic Product
GI	Green Infrastructure
HSP	Hoesch Spundwand und Profil
IGA	International Garden Exhibition Ruhr 2027
IPA	Instrument for Pre-accession Assistance
LAU	Local Administrative Unit
LL	Living Lab
NBS	Nature-Based Solutions
NDVI	Normalized difference vegetation index
NUTS	Nomenclature of Territorial Units for Statistics
PM	Particulate matter
PPP	Public-Private Partnership
proGIreg	productive Green Infrastructure for post-industrial urban regeneration
RA	Replication Area
R&D	Research and Development
R&I	Research and Innovation
ROP	Regional Operational Programme
SDG	Sustainable Development Goals
SWOT	Strengths, Weaknesses, Opportunities, Threats
TNE	Torino Nuova Economia
TRL	Technology Readiness Level
UIA	Urban Innovative Actions
VOC	Volatile organic compound
WP	Work Package

Executive Summary

This report provides an overview of the state of art in the development of the Front Runner Cities (FRC) and Follower Cities (FC), in what concerns the four key assessment domains of the proGIreg project: socio-cultural inclusiveness, human health and wellbeing, ecological and environmental restoration, and economic and labour market. The analysis covers all four FC (Cascais, Cluj Metropolitan Area, Piraeus, and Zenica) and three FRC (Dortmund, Turin and Zagreb; FRC Ningbo entered the partnership at a later stage), at the level of the cities, as well as the Living Labs (LL, in FRC) or Urban Regeneration Areas (in FC), where this assessment was possible.

The report follows the methodology developed in Deliverable 2.1 – *Methodology on Spatial Analysis in front-runner and follower cities* (Elisei and Leopa, 2018), and represents the collaborative work of city partners, aimed at grounding the future implementation of nature-based solutions (NBS) in FRC, as well as their embedding in Urban Regeneration Plans in FC.

The report is structured into six main parts, following a short introduction and revision of the methodological approach. Each part provides a general introduction and overview, followed by individual sub-chapters for all FRC and FC analysed. Thematic chapters (plan and policy analysis, stakeholder identification, spatial data and indicators) also include an overall cross-analysis and conclusion part.

Chapter 3 introduces the basic data and context of the proGIreg cities, providing information on the scales and delineation of the Analysis Areas considered further in the assessment of the cities. A standardized identification fiche for the cities is provided, together with a descriptive part of their development context, general description, levels of analysis and the NBS to be implemented (FRC), or those identified for potential implementation at this stage (FC). FRC are testing each a number of NBS in clearly defined post-industrial neighbourhoods with related socio-economic challenges (Huckarde, Mirafiori, Sesvete), while for FC, Urban Regeneration Areas have been defined, ranging from neighbourhoods (Cascais) to river corridors across the whole city (Cluj-Napoca) as well as dispersed locations in specific city districts (Piraeus).

Chapter 4 addresses the need to provide an overview of the partners' current planning tools of relevance for the implementation of proGIreg NBS, at different territorial governance levels. It screens upper territorial (regional), local and LL / Urban Regeneration Area levels for existing normative and strategic plans, as well as other city investments or actions on the topics of interest for proGIreg: urban development, green infrastructure, urban regeneration, participation and social inclusion. The purpose is that of assisting operationalisation of NBS into the local policy and plan framework, providing context information and support for translating scientific evidence of the project into policy and action. Findings of each city's analysis are included as a last subchapter in this section and indicate supportive planning frameworks for all the FRC. Dortmund and Turin can foster synergies with wider region- or city-wide strategies (IGA Ruhr 2027 in the first case, and Turin Metropolis 2025 Strategy in the latter). In FC, previous experience with NBS is limited (existing most notably in Cascais); hence proGIreg offers the opportunity to embed the solutions in new plans and policies. There are concrete possibilities to contribute to the development of spatial planning documents in FC Metropolitan area of Cluj (County / Metropolitan Plan) and FC Zenica (Green City Action Plan), under development.

Further, an overview of the core, primary and secondary stakeholders of each city is presented in Chapter 5, in order to obtain a comprehensive image of the stakeholder landscape, as a step for future participation and NBS co-design. The four types of stakeholders afferent to the quadruple helix approach in proGIreg are identified and described, and generally represent well-rounded, robust

groups. This is in particular the case in the FRC, with Dortmund being more oriented towards inclusion of SMEs and businesses within the NBS value chain, Turin partial to inclusion of social NGOs, and Zagreb having a mixed approach specific to the scope of creating ownership and social entrepreneurship in the area of Sesvete. Stakeholder lists of the FC are still in an incipient stage, leveraging on the „usual suspects" of local participatory processes, and will need to be refined as the project progresses and the cities clarify their approach to developing the Urban Regeneration Plans.

Chapter 6 presents the quantitative data collection, relying on a cooperative indicator framework developed between WP2 and WP4. A set of 71 indicators based on the four key assessment domains offers a baseline image into the situation at the scale of the city and – where available – the LL or Urban Regeneration Areas. The final indicator collection fiches are presented in ANNEX 1, showing a rather heterogeneous availability of indicators, with very limited data particularly in what concerns information on the health of the population and the environment quality (air, water and soil). Cross-city comparability of datasets is thus limited, but the indicator lists offer nevertheless important information for performing interim and final analyses of NBS implementation within each of the FRC.

Based on the collected data, as well as spatial information available at the level of the cities, Chapter 7 synthesis the indicator assessment, in the form of SWOT (Strengths, Weaknesses, Opportunities and Threats) tabular analyses at two levels (city and LL / Urban Regeneration Area, where available). These findings are further spatialized in thematic SWOT maps and point to common challenges for FRC LL areas, such as: social deprivation, lack of public services, low urban fabric permeability and accessibility of green spaces, higher comparative incidence of respiratory, cardio diseases and allergies, problems of urban public safety, higher-than-average unemployment and a generally low-dynamic business and entrepreneurship environment.

Finally, conclusions of the report outline the state-of-play situation in the cities and their specific proGIreg NBS implementation areas in what concerns socio-cultural inclusion, human health and wellbeing, ecology and the environment, economy and labour market. An overall cross-assessment of findings is presented at the end of the report, with the aim of informing further activities of the proGIreg project. The common challenges will contribute to the baseline established through WP2 and WP4. Corroborated with the results of LL implementation (WP3), they could also help frame a strategy for replication of the proGIreg approach in the future.

In what concerns the FC, the Spatial Analysis represented an opportunity to narrow down the potential NBS and implementation areas, in order to better capitalize on the knowledge transfer process from the FRC. So far, FC have presented very diverse approaches, stemming from different drivers to NBS implementation, but interestingly converging towards an almost-identical set of three NBS (3, 5 and 6). It is to be expected that a re-consideration (and possibly even expansion) of their selection of NBS will be employed in the near future, in preparation of Task 2.3.

Overall, the Spatial Analysis Report represents a first building block framing the local challenges and priorities, and the extent to which relevant, in-depth data has been provided and analysed has been dependent mainly on data availability in the cities.

1. Introduction

Productive Green Infrastructure for Post-industrial Urban Regeneration (proGIreg) focuses on developing and testing new nature-based solution (NBS)-oriented economies shared between public authorities, civil societies and industry / SMEs. Leveraging on the potential of Green Infrastructure (GI), proGIreg will demonstrate the integration of **eight NBS into business models,** which will be economically self-sustaining, and provide multiple benefits for the economic, ecological and social regeneration of deprived urban areas suffering from the consequences of de-industrialization. **The NBS will be tested within four Front-Runner Cities** (FRC), while another **four Follower Cities** (FC) will be supported to develop their strategies for embedding nature-based innovation at local level, through participatory processes (see Fig. 1). Of the FRC, the present report encloses information pertaining to Dortmund, Zagreb and Torino; Ningbo, pending lengthier consortium accession formalities, will be addressed at a later stage within a subsequent update of the Spatial Analysis.

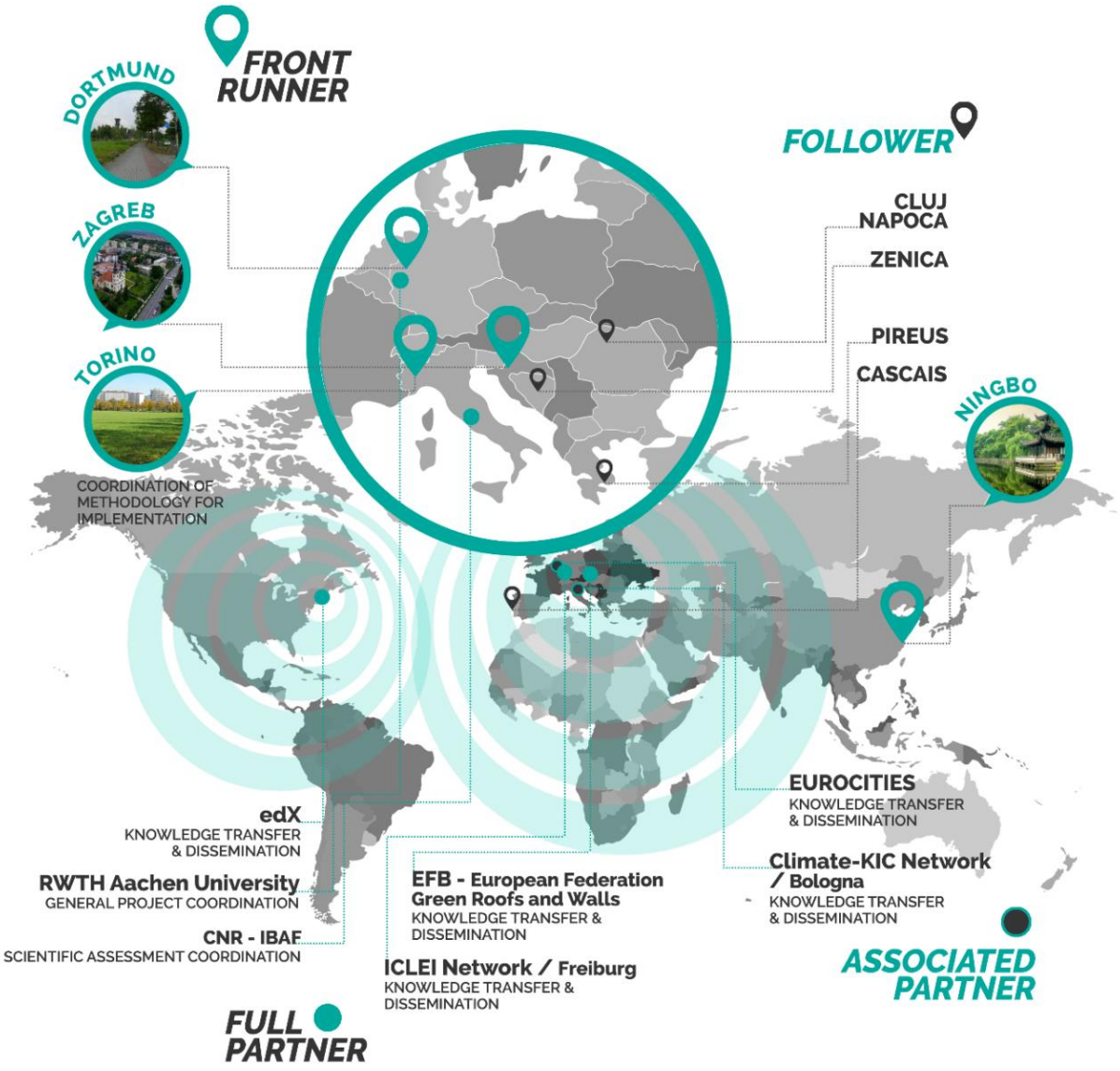


Figure 1 - The proGIreg partnership. Source: RWTH, proGIreg Application Form

ProGIreg has started with setting up a solid base for future planning and implementation, through **Work Package 2 (WP2) – Planning, design and participation processes for NBS,** which aims to enable and prepare implementation of co-designed, locally adapted NBS in the FRC and to identify the potential for their transfer to the project's FC.

Task 2.1: Spatial Analysis in front-runner and follower cities assists cities to generate a comprehensive spatial database as baseline input **(„state of play")** for further activities in the project, aiming to:

- Render a holistic picture on the specific local issues and challenges in FRC and FC as background for the NBS co-design and implementation processes;
- Specifically for FRC, support the co-design activities (Task 2.2) and NBS pilot implementation (WP3) with contextual information, also contributing to a better definition of a common methodology for implementation of the Living Labs (LLs); assist the quantitative NBS benefit assessment and monitoring (WP4) activities in defining the set of spatial indicators;
- Specifically for FC, evaluate the state of art for NBS within the local policy framework and as background for the co-design of urban plans (Urban Regeneration Plans – RP) in Task 2.3.

Task 2.1 analyses the available (from the dataset point of view) **baseline conditions** for the four key scientific assessment domains defined in WP4. It leverages on the cross-disciplinary, multi-benefit approach used by the NBS assessment framework developed by the Expert Working Group (EWG) of the EKLIPSE project under EU-DG R&I request and further developed in Raymond et al. (2017), as well as input coming from the WP4 in forms of indicators transposing the assessment domains at spatial-urban level:

1. Socio-cultural inclusiveness
2. Human health and wellbeing
3. Ecological and environmental restoration
4. Economic and labour market.

The Spatial Analysis in FRC and FC relies on the previous deliverable **D2.1 – Methodology on Spatial Analysis in front-runner and follower cities** (Elisei and Leopa, 2018), which outlined the common working methodology and analysis guidelines for the FRC and FC, in order to provide a coherent and comparable approach between all involved cities**.**

D2.2 develops a common spatial framework based on spatial data (hard data) and also on soft contextual information, where this information is readily available, guiding further project implementation in FRC (co-design processes and NBS pilot implementation within the LLs) and FC (development of locally adapted Urban Regeneration Plans for the implementation of NBS).

2. Methodological approach to the Spatial Analysis

2.1. Initial Methodology

In order to guide and standardize the analysis approach across cities, a Methodology on Spatial Analysis in FRC and FC (Deliverable 2.1) has been developed.

The Methodology explained the fundamental, descriptive research method used and the primary components of the Spatial Analysis, which the FRC and FC conducted with assistance from the task and WP leaders:

1. Basic data collection and identification of the two territorial scales of analysis: 1) metropolitan / city level (for both FRC and FC) and 2) Living Lab level (FRC) and Urban Regeneration Area level for FC, where possible,
2. Plan and policy framework analysis,
3. Stakeholder identification,
4. Collection of spatial indicators,
5. Baseline assessment / SWOT analysis (textual and graphical).

The latter two components are built on the four key scientific assessment domains of the NBS benefit assessment and monitoring.

Further, the guidelines for Spatial Analysis detailed the concrete scope, approach and methods to realize the above-mentioned components by the FRC and FC, providing a common set of requirements for all partners. The guidelines for the spatial analysis rely on existing information and planning frameworks at local level (plans and policies), partner constellation knowledge on existing networks and key actors (stakeholder identification), pre-existing datasets and indicators, collected at local, regional or national level by the partners, or by other organisations or entities (i.e. EUROSTAT, OECD, etc.).

It is to note that the Methodology initially provided a consolidated „long list" of state indicators, based on previous work carried out in the Horizon 2020 „EKLIPSE" and „CityKeys" Projects, specifically aimed at quantifying and assessing the current situation in the eight project cities. After submission of D2.1 and relying on advances in the tasks afferent to WP4, the list has been revised to integrate new data requirements.

2.2. Approach to working with FRC and FC

Each of the three (in the current phase excluding Ningbo) FRC and four FC has had the specific task of developing, together with their local partner cluster, the per-city Spatial Analysis report. The work has been kicked off in September 2018, and given the complexity of the task, as well as the challenge of submitting data requests to other institutions for the required indicators and subsequent joint requests between WP2 and WP4, the delivery of data has been carried out until February 2019.

The work carried out by partners has been finally summarized textually (per-domain SWOT analyses) and visually (thematic maps on the four key scientific domains), and conclusions have been drawn to the reports.

There have been several particularities of the data collection, processing and visualisation roadmap, which represented constraint factors for the Spatial Analysis. These are further detailed in the conclusions section of the document.

3. Basic data for proGIreg cities

The aim of this first section is to provide a general context for the analysis, framing the baseline assessment of local conditions and the spatial indicators, while also synthesizing the main characteristics of the cities / metropolitan areas involved in the project in a way which can be compared and disseminated at local and project level.

ProGIreg will implement NBS with potential of generating benefits for the whole urban area, in particular social and economic benefits. Contextualizing these changes implies conducting a baseline spatial analysis at **two different territorial scales**:

1) the city/metropolitan analysis scale,

2) the LL analysis scale (for FRC), and the regeneration areas for which Urban Regeneration Plans will be designed (for FC)

The delineation of the spatial analysis area for the city / metropolitan scale has been conducted considering the **administrative border of the city and / or the limit of the metropolitan area or metropolitan association area**, depending on the partner.

The delineation of the spatial analysis area for the LL / regeneration areas was a case-by-case decision for each of the FRC and FC, considering two factors:

1. First, the structure of the LL / Urban Regeneration area, its territorial coverage and potential impact area. This was of particular importance to inform the delineation of wider areas of impact than the actual LL implementation sites (see for example the offset of the Dortmund Analysis Area). It was also an aspect, which played a role in approaching impact of the more diffuse interventions foreseen (such as insertions of NBS in the urban fabric in the district of Mirafiori).

2. Secondly, that structure was overlapped with the borders of the city's subdivisions, for which statistical data was available, for ensuring the possibility of having actual data for the analysis areas of the LLs in FRC, and the Urban Regeneration Plans in FC.

This has resulted in the following delineations of LL / Urban Regeneration Plan Analysis Areas for the proGIreg cities:

Table 1 - Definition of FRC and FC Analysis Areas

proGIreg city	Analysis Area and availability of data
FRC Dortmund	A 22 km^2 area surrounding the LL area, mainly containing Huckarde neighbourhood (West), the port (East), parts of the neighbourhoods Westerfilde, Deusen, Innenstadt Nord, Dorstfeld and Union quarter (see Fig. 3).
FRC Turin	The Mirafiori District with 11.49 km^2 contiguous area in the south of the Turin city (see Fig. 8). In the Turin case, the Analysis Area and the LL overlap.
FRC Zagreb	The local census districts Sesvetska Sopnica, Novi Jelkovec, and parts of the districts Staro Brestje and Centar in Sesvete (see Fig. 11).
FC Cascais – Provisional identification	The Urban Regeneration Area has been defined as a 0.42km^2 area encompass the localities of Tires, Matarraque and Zambujal, that belong to the parish of São Domingos de Rana. (see SWOT Maps in Chapter 7.4
FC Cluj Metropolitan Area – Provisional identification	The Urban Regeneration Area has been delineated as a corridor along the Somes River and Railway in Cluj-Napoca, crossing the whole city in its densest area. The Analysis Area has consequently cover the municipality of Cluj-Napoca of 179 km^2 (see SWOT Maps in Chapter 7.5 and Fig. 15). There is a considerable difference in size in what concerns the Analysis Area between this partner and the rest, partly because of unavailability of sub-municipal data and partly because Cluj Metropolitan Area itself is 1,538 km^2.
FC Piraeus – Provisional identification	The Urban Regeneration Areas have been identified in Fig. 16. Indicator data is only available at municipal level, however some data could be provided for the two districts containing the possible Urban Regeneration Areas: District C' (1.77 km^2) and District E' (2.69 km^2).
FC Zenica – Provisional identification	The Urban Regeneration Area has been delineated in this stage as a 0.34 km^2 area containing the Kamberovića field and the Bosna riverbanks in the central part of the city. Due to lack of sub-municipal data, it was not possible to use an area for the two-level analysis – all indicator collection and SWOT analysis are conducted at city level.

3.1. Front Runner City Dortmund (DE)

3.1.1. City Identification Fiche

DORTMUND IDENTIFICATION FICHE		
Localization of City	Federal State / NUTS 1*	DEA (North Rhine-Westphalia)
	Region / NUTS 2*	DEA5 (Arnsberg)
	Province / NUTS 3*	DEA52 (Dortmund, Kreisfreie Stadt)
	Coordinates	51° 30′ 58″ N, 7° 28′ 05″ E
Information about the City	Population (2017)	601,780 inh.
	Surface Area	280.8 km²
	Density	2,143 inh./ km²
	Elevation	50 to 254 m NHN
	Climate	Cfb – Temperate oceanic climate (Köppen and Geiger classification)
	Average temperature in winter	3.1°C
	Average temperature in summer	17.9°C
LL area	Population	56,812 inh.
	Surface Area	22.8 km²
	Density	2,496 inh./ km²
Contact and Information from the Municipality	Municipal website	www.dortmund.de
	Data sources	see Chapter 9

City plan (map)

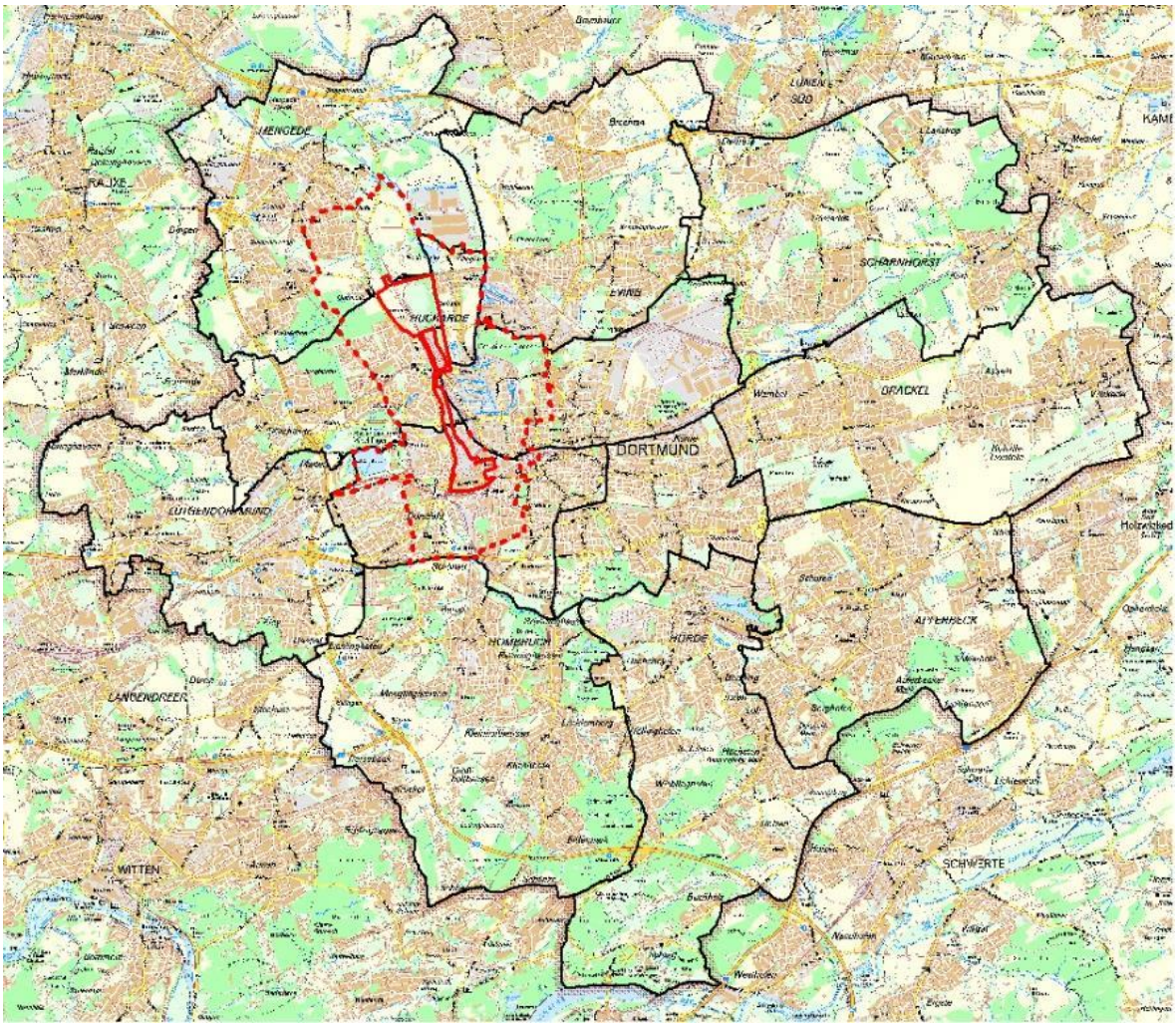


Figure 2 - Dortmund City plan with outer lines of Living Lab (red continuous line), Analysis Area (red dotted line) and City Level (outer black line). The inner black lines show borders of Dortmund´s twelve city districts. Source: City of Dortmund

Living Lab Area Map

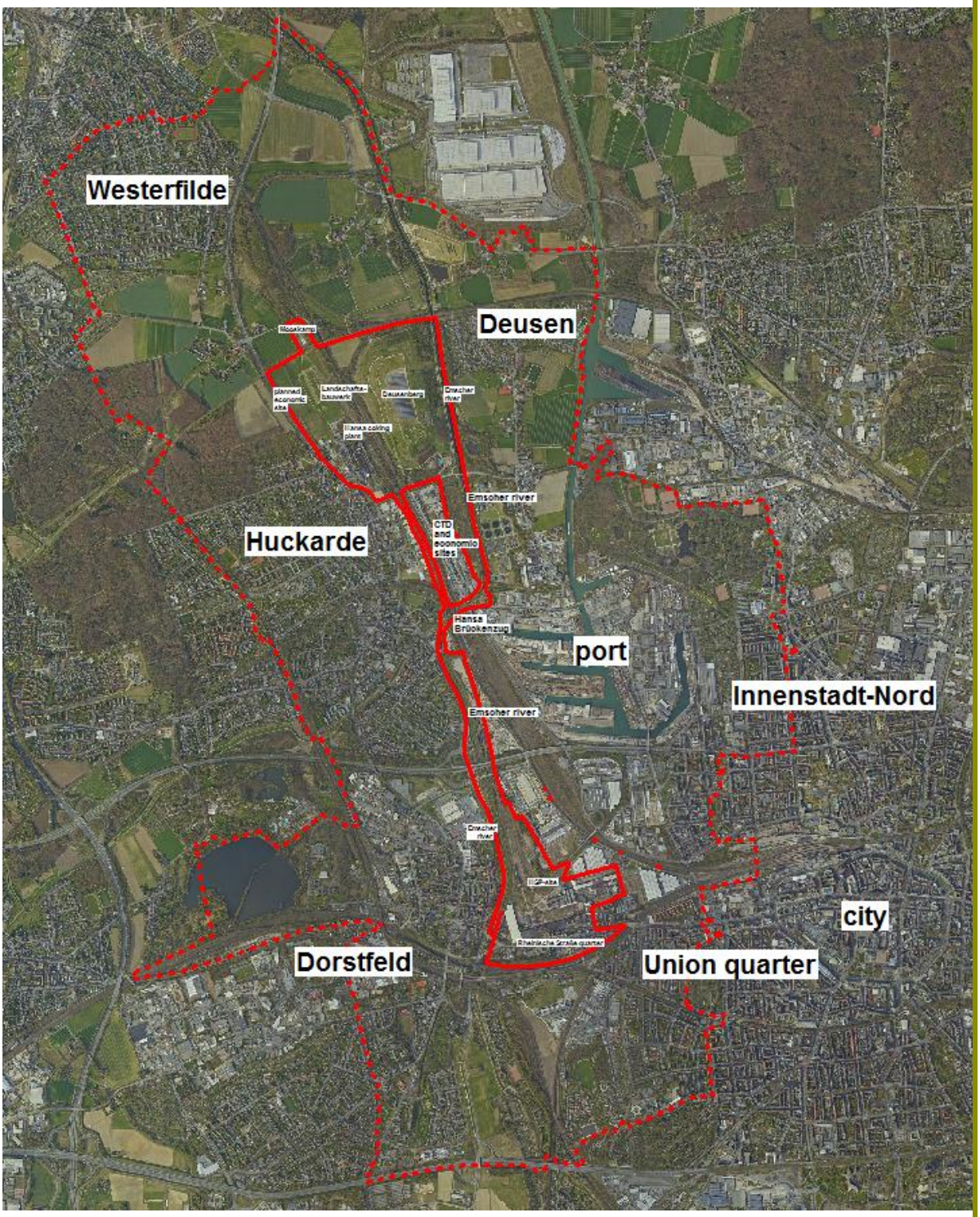


Figure 3 - LL Area of Dortmund. Settlements and location of port within Regeneration Area (Source: City of Dortmund)

3.1.2. Context and description

With coal and steel production and its ancillary industries as the dominant forces for urban and environmental development since 19th century, the cities in the Ruhr region predominantly grew quickly around coalmines and steel mills. The decline of the coal and steel industries started in the 1960´s and ended in Dortmund with closing the last coal mine in 1987 respectively with the closedown of the last blast furnace in 2001.

With structural change towards a modern service-oriented region its infrastructure and appearance has gone and still is going through severe changes. Environmental aspects have gained more importance compared to former times. Manifold small improvements over the past decades have helped flora and fauna to regain better conditions. In addition, living conditions and quality of life have improved thus helping to attract also well-educated workforce from outside the Ruhr region.

Being the fifth largest metropolitan area in Europe, the Ruhr region is an area with a high density of population, work places, and traffic. Within the Dortmund Living Lab, the historic land use as well as structural changes can clearly be recognized, thus showing a typical section of the Ruhr region in what concerns the urban landscape.

The Ruhr region is a place, which only can be understood by knowing its history. Its actual appearance and current plans for development always have a strong link to the past. Therefore, this chapter provides background information about past man-made changes and succeeded efforts to adjust them. Moreover, it allows an overview about current land use and appearance of Dortmund Living Lab with an emphasis on GI.

As long as the Ruhr region was dominated by industrial growth, the securement of industrial interests was a dominating force for development. This changed with the decline of the coal and steel industry.

The Emscher River has its well east of Dortmund in Holzwickede and is an affluent of the Rhine river. In its headwater, the Emscher flows in south-north direction, later in east-west direction. It is a relatively small river, which is in Dortmund about 3 to 6 m wide. Its average natural drainage is relatively small (2,000 l/s), but due to lead-in of drinking water pumped from the Ruhr river into the Emscher river its actual average drainage is about five times higher.

During the past 200 years, the 89 km long Emscher river has been considerably changed by construction. Originally, the slow 109 km long river was characterised by a manifold flora and fauna. In the middle of the 19th century with increasing industrialization and population growth, the Emscher was used as a wastewater sewage for cities, mining companies, and industry. In only few years, the flora and fauna disappeared more or less completely. Land subsidence up to 20 m caused by mining activities led to changes in drainage of the Emscher. Especially during flooding, the polluted water remained longer in its floodplains thus yielding to more epidemics. As a corrective, the technical development of the Emscher started in the beginning of the 20th century in order to bring the wastewater as quickly as possible out of the densely populated region in an open concrete canal. Due to land subsidence, the Emscher was redirected twice to a new course.

Nowadays, mining activities are no longer taking place and land subsidence has slowed down considerably. This made it possible to renaturalise the Emscher River and its confluences, and to finally construct a regional sewer and treatment plant system for wastewater at the same time. This Emscher reconstruction (*Emscherumbau*) encompasses unusual dimensions – time wise, technically and financially as well as in cooperation with numerous local and regional partners. The “generation project” started in 1992 and will be finished within the next years costing around 4.5-5 billion €.

The Emscher Landschaftspark (ELP) started as a regional cooperation project to create a connected park system at the same time with renaturation processes. Intention was to combine areas of pre-industrial culture landscapes with industrial and post-industrial landscapes thus establishing a new type of park. The concept was realized during the Internationale Bauausstellung Emscher Park (International Construction Exhibition, 1989-1999). It connected seven regional green corridors with existing parks ("Revierpark") by covering an area of 450 km². In addition, various industrial heritage monuments were restored and opened to the public ("Industrial Heritage Trail"/ Route der Industriekultur). As a result projects were designed which still today reflect cultural identity, quality for leisure activities and touristic attractions of the Ruhr region.

During the second decade of the park's development, strategic development guidelines were formulated in the "Masterplan Emscher Landschaftspark 2010" and enacted regionally. 20 cities and two administrative bodies cooperated on 430 projects.

Realisation of the ELP continues. In 2005, the third decade program "Position Emscher Landschaftspark 2020+" started and focuses on "guidelines for park development" which are categorized into aspects of:

- climate protection and climate adaption
- integrated urban development
- nature for all people
- productive park.

Today, the Emscher Landschaftspark is the green corridor throughout the Ruhr region contributing to an increase of quality of life. Many historic and outstanding industrial sites are accentuated by appearance or use, thus serving as points of attraction.

The enforcement of the former industrial agglomeration into a new urban cultural landscape is the achievement of the whole region. With the appointment of the Ruhr region as a "cultural capital of Europe" in 2010 (Kulturhauptstadt Europas RUHR.2010) the industrial culture was awarded as a unique feature in Europe. In 2016, the Ruhr region applied to the UNESCO for the recognition of the industrial cultural landscape in the Ruhr region as a world cultural heritage – the examination is still ongoing.

3.1.3. Spatial analysis levels and NBS to be implemented

The implementation of the mentioned NBS will take place in the Living Lab. Nevertheless, these projects are supposed to have an influence beyond the Living Lab. To measure and evaluate these effects, a larger area surrounding the Living Lab will be examined.

In this report, three different spatial levels are referred to, while two will be used further into the analysis (the City Level and Analysis Area):

1. The **City Level** (280 km²) comprises Dortmund city area which is administratively divided into 12 city districts. The City Level serves as a comparison level for statistical analyses.

2. The **Analysis Area** (2,275 ha) represents a 500 m to 2,000 m wide buffer around the Living Lab. The outer line of 13 statistical sub-units defines its boundary. The effects of realized NBS may have a direct impact on the Analysis Area as numerous inhabitants are living here in several settlement areas directly adjacent to the Living Lab: Huckarde in the North-West, Deusen in the Northeast, Dorstfeld in the South-West, the Rheinische Straße quarter respectively the Union quarter in the South. Several industrial sites are in the East.

3. The **Living Lab** (215 ha) comprises the project area in which the NBS are intended to be realized. It is situated about 2 km west of downtown Dortmund. At its longest north-south extension, it is 4.8 km long. At its broadest extension in the northern part it is 1.25 km wide, at its most narrow section it is only 40 m wide.

Dortmund Living Lab is divided into three parts: two larger areas in the North and the South and a small green and blue ribbon along the Emscher River in between.

The **Emscher River** is the linking element between all three parts. It has been recultivated. Its adjacent foot and bike path is well integrated into the regional path network, but local connections are missing in some sections.

In the **northern part** of the Living Lab, Hansa coking plant is situated which closed in 1992. Nowadays it is a listed monument of industrial heritage, a popular museum of regional interest, and a location for events, being restored since 2008 and with more restoration projects within the near future. The coking plant is also a place used by schools to illustrate industrial history of the Ruhr valley, structural change, or “industry nature”.

North of Hansa coking plant, green open spaces are used as fields (north-west) and grasslands (northeast). The grasslands cover an area of the former coking plant with rehabilitated soils and a dump for contaminated soils (“*Landschaftsbauwerk*”).

North of the freight train tracks, the light rail traffic museum “Mooskamp” is located on the former train depot of Hansa coking plant. The popular museum keeps 25 old locomotives, which still use the tracks north, and east of the coking plant. Moreover, the museum is a location where long-term unemployed persons are given a chance for reintegration into labour market by participating in special training programs for restoring and repairing the machines.

East of Hansa coking plant the former landfill Deusenberg is situated with extensions of 500 m x 1,000 m. For about 70 years 11 billion m³ of household garbage was dumped there until 1992. Afterwards, according to legal regulations and approvals, the dump received a gasket and a drainage to prevent pollutants to penetrate into ground water bodies. Dump gases were extracted and converted into electricity. The surface received a soil cover to allow revegetation. Today, the recultivated 50 m high hill is accessible and allows a spectacular sight. On the slopes, 150,000 trees and shrubs have been planted. On top a 3.56 MW photovoltaic power plant is in use since 2017. Some constructed paths are part of a mountain bike area, others are designed for pedestrians (overall length: 6 km). So far, the Deusenberg is only accessible from the eastern side from the Emscher pathway and via a bridge over the Emscher River from the Deusen district.

The **central part** of the Living Lab encompasses mostly areas directly adjacent to the Emscher River. In the northern half, the Living Lab is divided into two parts, with a western part encompassing freight train tracks, which are used by engines of Mooskamp light rail traffic museum. In this part, the Container Terminal Dortmund and other industrial sites are surrounded by the Living Lab.

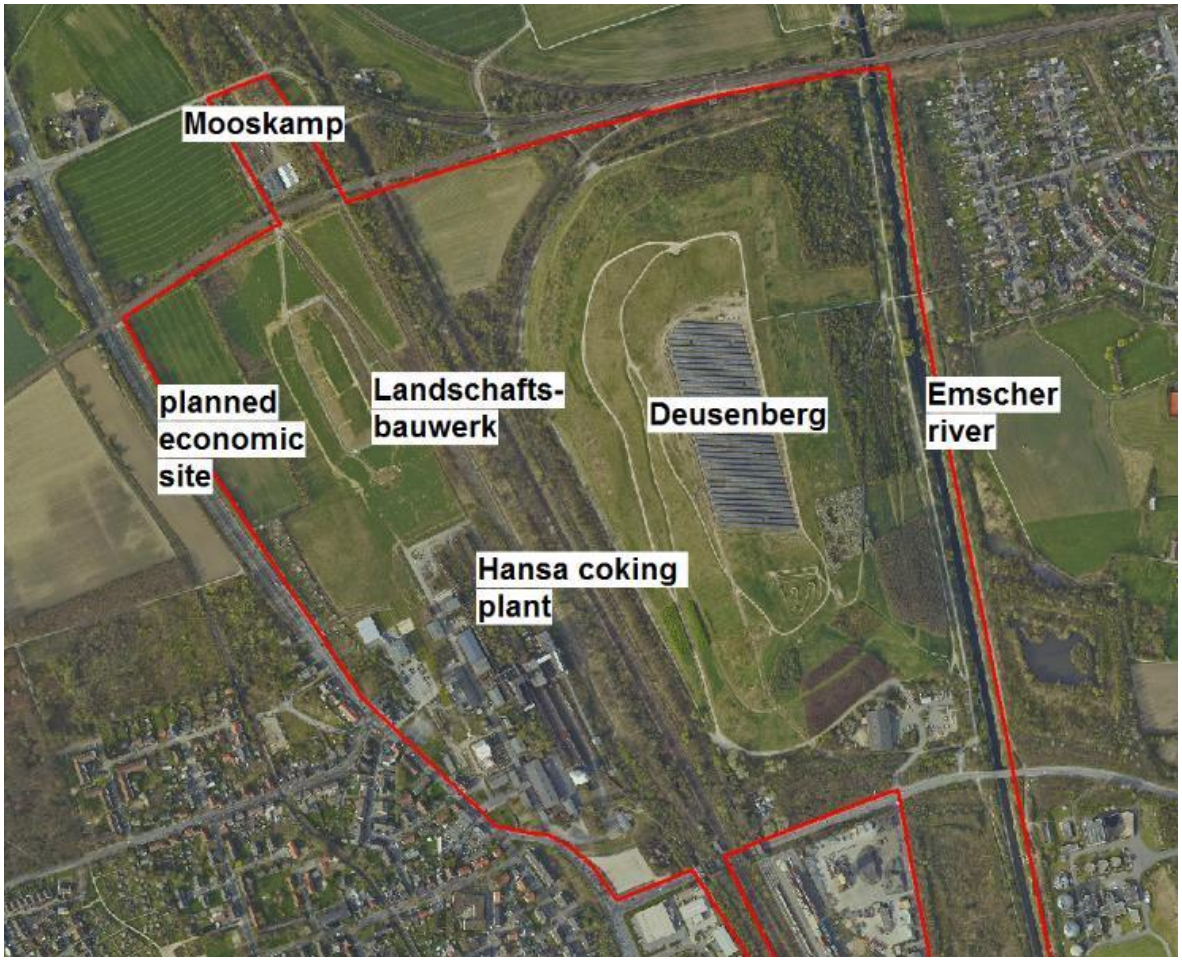


Figure 4 - Northern part of Dortmund Living Lab. Source: City of Dortmund

Where both parts of the Living Lab come together, Hansa Brückenzug as a preserved and listed part of a pipe for blast furnace gas, which crosses several bridges thus being characteristic for the former collective economy of the Ruhr valley. This situation is unique, but today hidden and hardly visible.

The Living Lab area south of Hansa Brückenzug is limited in the west by the Emscherallee, an important road in north-south direction, and artificial dams in the East respectively industrial deposition sites. To the East an artificial, vegetated dam limits the Living Lab. On its eastern side, a building yard is located.

North of the large west-east street (Mallinckrodtstraße) the only apartment house within Dortmund Living Lab is located.

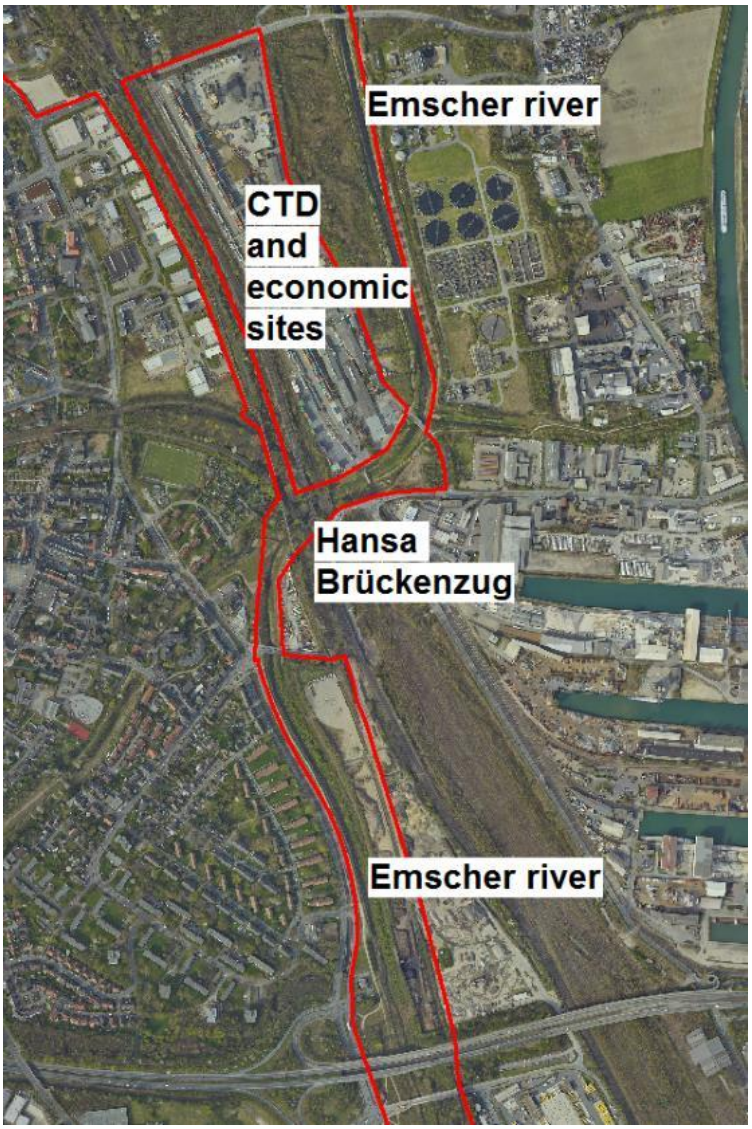


Figure 5 - Central part of Dortmund Living Lab. Source: City of Dortmund

The **southern part** of Dortmund Living Lab encompasses the Emscher River and its adjacent areas in the West, the 45 ha large Hoesch Spundwand und Profil (HSP) site and in the south the Rheinische Straße quarter.

On the HSP site, a traditional steel piling manufacturing plant was located, which closed in 2016. In the meanwhile, a private investor bought the site and will develop it. Plans are designed to reuse the area for housing, as economic sites and for green infrastructure including an artificial lake. Currently, the planning process is at an early stage. The industrial buildings still exist.

The transition will also have a positive effect on the Rheinische Straße quarter south of the HSP-site, which is isolated. Housing is dominated by buildings in art nouveau style, but often needs restoration.

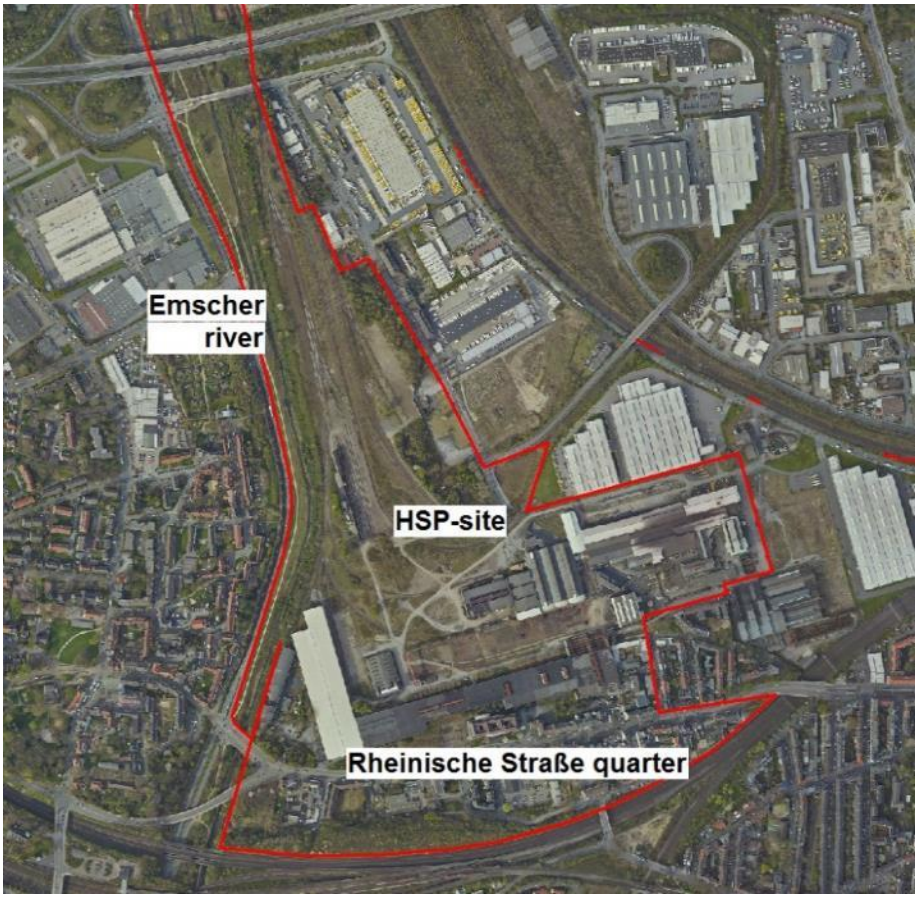


Figure 6 - Southern part of Dortmund Living Lab

Source: City of Dortmund

In Dortmund, the following set of NBS will be realized:

DORTMUND PROGIREG NATURE-BASED SOLUTIONS

- NBS 1: Renaturing landfill sites for leisure use and energy production
- NBS 3: Community-based urban farming and gardening on post-industrial sites
- NBS 4: Aquaponics as soil-less agriculture for polluted sites
- NBS 6: Connecting the isolated Huckarde borough with the renatured Emscher river and Deusenberg sites
- NBS 8: Pollinator biodiversity improvement activities and citizen science project

3.2. Front Runner City Turin (IT)

3.2.1. City Identification Fiche

TURIN IDENTIFICATION FICHE		
Localization of City	**Region (NUTS 2)**	ITC1 (Piemonte)
	Sub-region (NUTS 3)	ITC11 (Torino)
	Coordinates	Latitude 45° 03' 00" Nord; Longitude 7° 40' 00" East
Information about the city	Population (2017)	884,733 inh.
	Surface area	129.99 km²
	Density	6,805.690 inh./km²
	Average elevation	250 m
	Climate	Cfa – mild temperate climate (Köppen and Geiger classification)
	Average temperature in winter	1.4 °C
	Average temperature in summer	23.6 °C
LL area	Population	34,659 inh.
	Surface area	11,491 km²
	Density	3,016 inh./km²
Contact and Information from the Municipality	Municipal website	http://www.comune.torino.it
	Data sources	http://geoportale.comune.torino.it/web/
Description of context	Specific objective for proGIreg implementation	- The LL methodology applied to NBS; - Education in schools; - inclusion for disadvantaged social groups (social housing inhabitants; refugees; - Support to new entrepreneurship and new green jobs;

		- Common goods regulation to apply on NBS
	Past intervention	Living Labs on other topics, common goods regulation, educational environmental lab in school

City plan (map)

Figure 7 - City of Turin with areas with main GI, urban regeneration areas and proGIreg LL area. Source: proGIreg AF

Living Lab Area Map

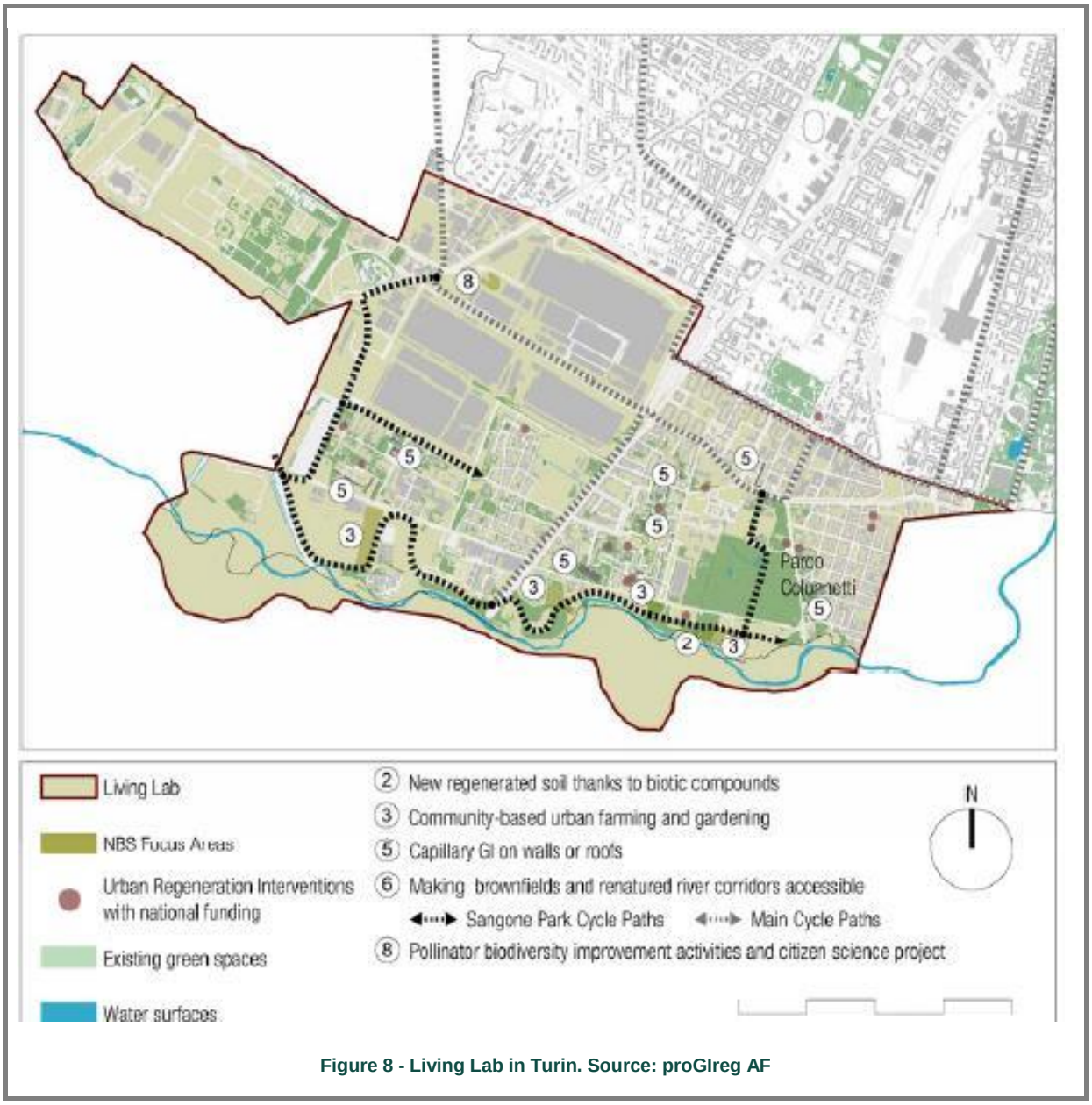


Figure 8 - Living Lab in Turin. Source: proGIreg AF

3.2.2. Context and description

The Municipality of Turin is the capital of the Piedmont region (North- West Italy). With 884,733 inhabitants, 130 km² territorial extension and a GDP of 55 billion euros (which is 4.5% of the national GDP) it is one of the most important cities in Italy. The administration, with about 9.000 civil servants, deals with the overall management of municipal assets and public services. Since the 1990's, Torino has been transformed from an industrial capital (predominantly in the automotive sector) into a centre of innovation and culture.

In 2009, Turin officially kick-started its path to become a „Smart City" when the City Council decided to take part in the "Covenant of Mayor" initiative of the European Commission. As one of the first Italian cities, it developed an Action Plan for Energy in order to reduce its CO_2 emissions more than 20% by 2020. In 2016, the City won the second prize as "European Capital of Innovation" for open innovation models supporting social innovation start-ups and creating new market opportunities for urban innovations.

The Turin Living Lab (LL) will test and develop models for participatory urban regeneration whilst implementing the new municipal regulation on common goods. The LL area is the post-industrial "Mirafiori Sud" district (34,659 inhabitants on 11.5 km^2) which is located along the river Sangone. The former working-class district is characterised by poor quality of the urban environment (green and grey infrastructure) accompanied by social segregation, poverty and security problems.

3.2.3. Spatial analysis levels and NBS to be implemented

In this report, the following investigation levels are used:

1. The **City Level** (129,99 km^2) – Citta di Torino area, which is administratively divided into 8 districts (*circoscrizioni*)

2. The LL **Analysis Area** comprises the Mirafiori Sud district (1,149 ha), one of the largest districts in the city, and the area in which the **Living Lab** is going to be implemented. It is situated in the southernmost area of the Municipality.

Since the 1970s, the urban green area grew from 4 to 18.4 km^2, reaching a standard per inhabitant of 19.05 m^2 that puts Turin in first place in Italy. This increase, a result of a far-sighted and ecologically sound strategy, was guided by a series of urban studies elaborated since the late 1970s, which informed the General Regulatory Plan approved in 1994. Now, the city's urban green network includes:

- The "Green-Blue System" connecting four river corridors and the "Green Ring" (Anello Verde), a 45 km path system connecting hills and river banks
- The "System of the Cyclopists" along transport corridors and within the system of urban and peri-urban parks
- The "Spine System", green areas created following former railway lines and industrial areas of the semicentral urban area
- The "Urban Park Network", parks and gardens of the urban core area
- The "Urban Tree Network", the city's woodland heritage network distributed across the city
- The "Network of small green neighbourhood areas" for which the city administration is seeking direct involvement of citizen groups.

The purpose of proGIreg implementation in Turin is to address the issues of the Mirafiori district (pertaining to infrastructure, poor urban quality, social and economic issues, and safety concerns) by implementation and testing of NBS through the LL methodology. The outcomes are supposed to contribute to:

- Education in schools;
- Inclusion for disadvantaged social groups (social housing inhabitants; refugees);
- Support to new entrepreneurship and new green jobs;
- Common goods regulation to apply on NBS.

TURIN PROGIREG NATURE-BASED SOLUTIONS

- NBS 2: a 2 000 m² test area “New soil and plant species for urban forestry” in Parco Sangone
- NBS 3: a 8 ha development area for urban farming and gardening involving disadvantaged groups
- NBS 4: a small aquaponics testing installation
- NBS 5: small scale GI interventions
- NBS 6: a new greenway and cycling corridor along Sangone river which is connected to the overall Turin metropolitan cycling network and links ex-industrial private areas with public ones
- NBS 7: New environmental compensation instruments, connected with the environmental assessment and compensation of big events and the realisation of a “green business network”
- NBS 8: Pollinator friendly green spaces

In Turin, the following set of NBS will be realized:

3.3. Front Runner City Zagreb (HR)

3.3.1. City Identification Fiche

ZAGREB IDENTIFICATION FICHE		
Localization of City	**Region (NUTS 2)**	HR04 (Continental Croatia)
	Sub-region (NUTS 3)	HR041 (Grad Zagreb)
	Coordinates	Latitude: 45° 48' 54" N; Longitude: 15° 58' 55" E
Information about the city	Population	790,017 inh.
	Surface area	641 km²
	Density	1232.45 inh./km²
	Average elevation	158 m
	Climate	Cfb – temperate / marine west coast climate (Köppen and Geiger classification)
	Average temperature in winter	1 °C
	Average temperature in summer	22 °C
LL area	Population	9,150 inh.
	Surface area	3.0 km²
	Density	3,050 inh./km²
Contact and Information from the Municipality	Municipal website	https://www.zagreb.hr/en
	Data sources	Municipality data Public Health Institute
Description of context	Specific objective for proGIreg implementation	- inclusion for marginalized social groups - Support to new entrepreneurship and new green jobs - Introduction of NBS as catalyst in re-claiming of the former industrial zone

	Past intervention	- Temporary uses, allotment gardens, “Green and Blue Sesvete” conceptual study

City plan map

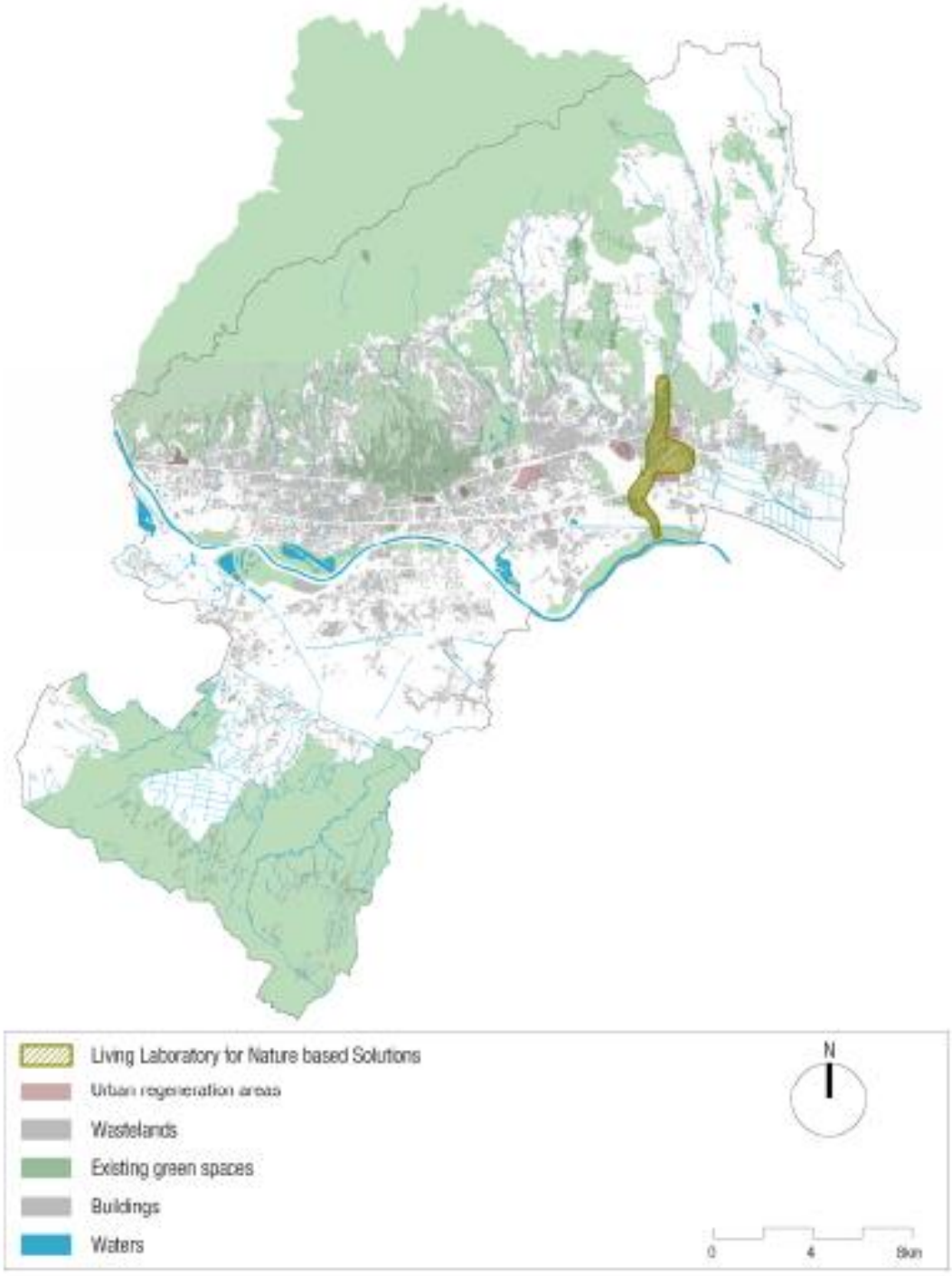


Figure 9 - City of Zagreb with areas with main GI, urban regeneration areas and proGIreg LL area. Source: ZZPUGZ, proGIreg AF

Living Lab Area Map

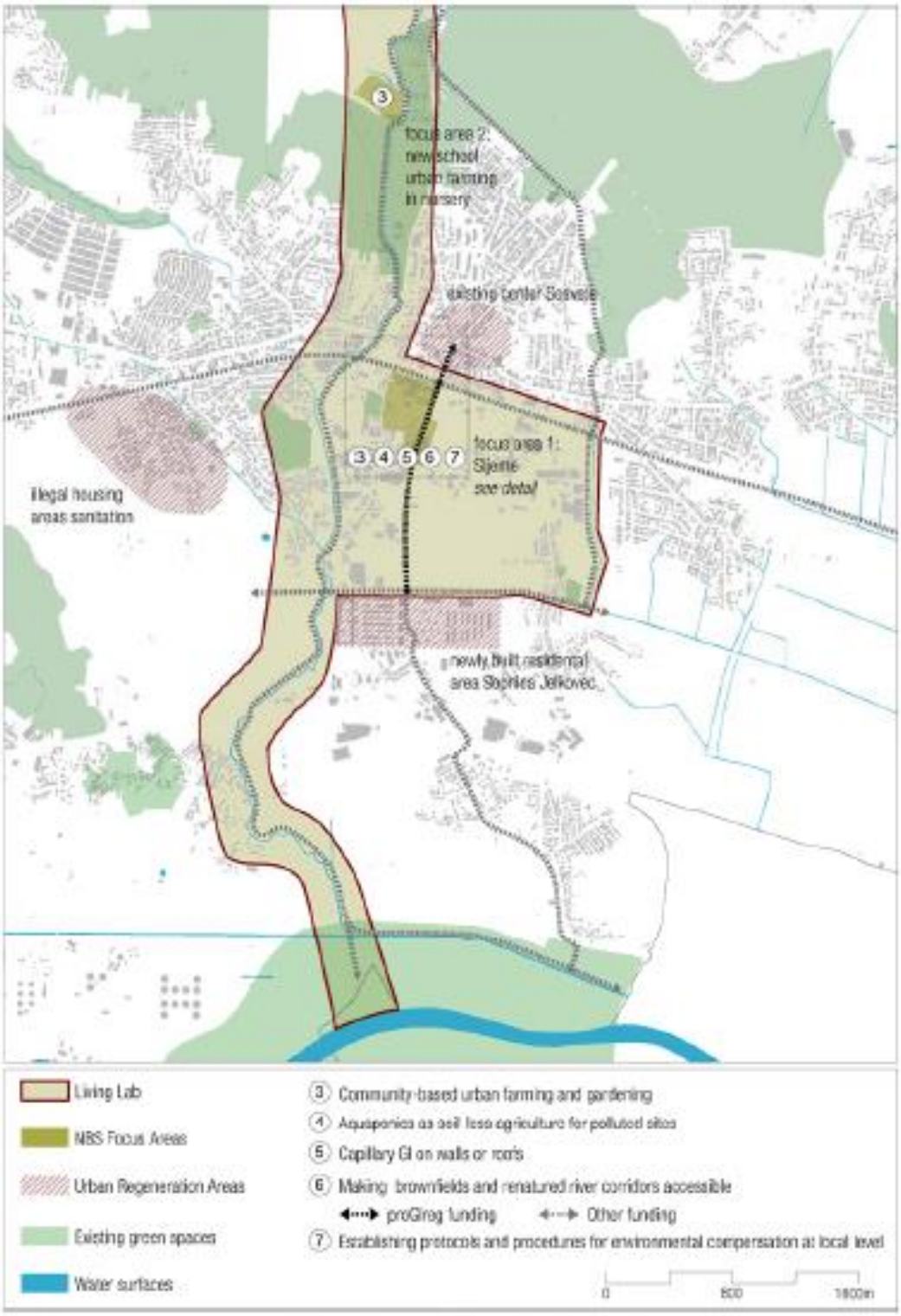


Figure 10 - Living Lab in Zagreb. Source: ZZPUGZ, proGIreg AF

3.3.2. Context and description

Zagreb is the capital of Croatia, covering 641 km². It has 17 districts and 790,017 inhabitants (2011 census). Zagreb plays a very important role in the wider metropolitan region. Its two neighbouring counties provide a portion of its natural resources and food, as well as providing residential space for commuters who including many workers, students and others. This surrounding area fulfils Zagreb citizens' needs for recreation, nature and housing, thus creating further demand for commuting, suburbanisation and the growth of towns in the area.

The population of Zagreb together with the Zagreb metropolitan region, consisting of the larger area of 690 municipalities, includes around 1.1 million inhabitants. In recent years, the suburban population has grown, whilst in contrast, the City of Zagreb, especially its historical centre, has witnessed a decline in population. Zagreb continues to integrate and incorporate former suburbs within its urban fabric. Positioned between the historical centre and the newly planned New Zagreb, the Sava River and its surrounding area form the geographical axis of the city.

Sesvete is a district of the City of Zagreb and a part of the Zagreb urban agglomeration. It is the easternmost neighbourhood of the Zagreb administrative area, covering 20% of the overall surface area of Zagreb. According to the 2011 census, Sesvete has 70,009 inhabitants; the number of households is 22,512 and the number of dwellings 30 256. The population has grown by 10,000 people since 2001, whilst the number of households has grown by 5,000 and the number of dwellings by 10,000. Sesvete has the youngest population in Croatia, with an average age of 38.

It is connected to the city centre by railway and several important city roads (Zagrebačka, Branimirova, Slavonska and Vukovarska in the future). The nearby tram station of Dubec may be extended to provide access to the centre of Sesvete. The Sesvete District is also located on important European traffic corridors leading to Budapest, Riga, Germany, Austria, Belgrade, Sofia, Athens and Istanbul. It has an industrial tradition, which has today been replaced with other economic activities including transport, automobile and the construction industry.

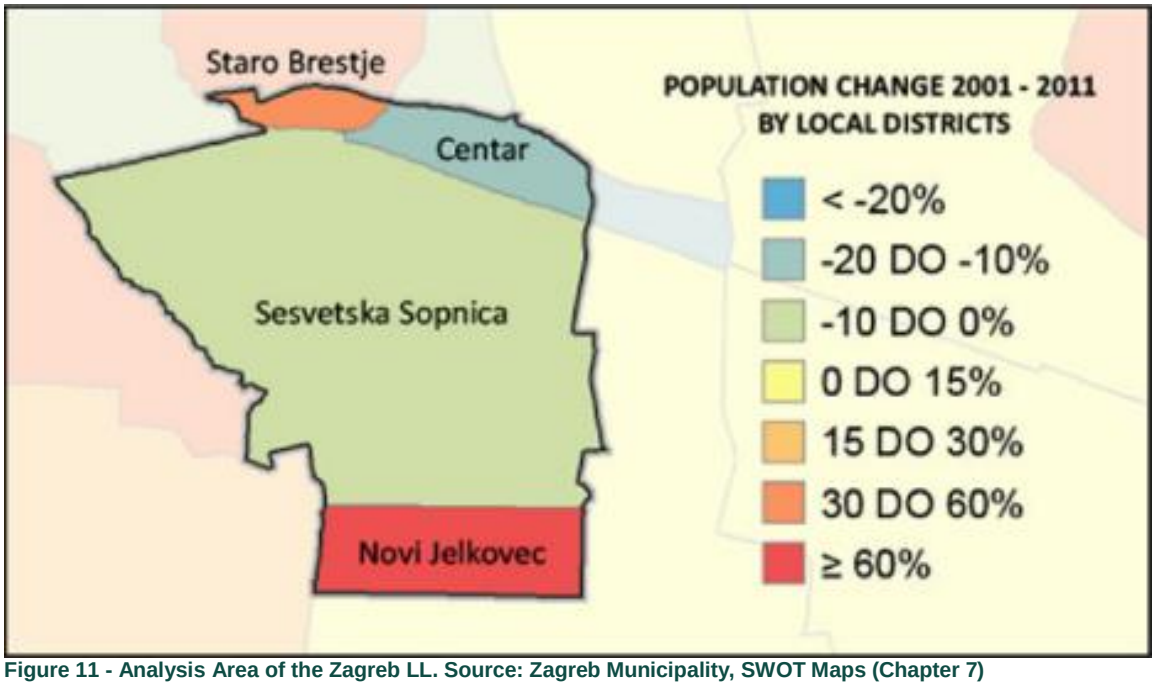


Figure 11 - Analysis Area of the Zagreb LL. Source: Zagreb Municipality, SWOT Maps (Chapter 7)

The Analysis Area of the LL Zagreb considers both the Sljeme Factory and service/industrial area Sesvetska Sopnica, as well as the immediately adjacent Novi Jelcovec, one of the most dynamic residential areas in Zagreb.

Intense growth of Sesvete has resulted in a neighbourhood which lacks key amenities such as a human-scale centre, a central urban park, suburban landscaped parks, cycle tracks, sports fields and many other facilities. One of the key problems is traffic; Sesvete lacks good north-south connections and is cut off by the railway and major roads oriented in an east-west direction. It also lacks public facilities such as a music school, a municipal court, police and fire service buildings and other cultural assets. Although it is presently an incomplete municipality, it has the full potential to become a true neighbourhood.

3.3.3. Spatial analysis levels and NBS to be implemented

In this report, the following territorial levels are used, with the first two being also further investigated in the analysis:

1. The **City Level** (641 km²) – divided into 17 districts,
2. The **Living Lab analysis area – District Sesvete** (165.25 km²), bordering on the eastern side with Zagreb and including 36 smaller self-contained settlements.
3. The **Living Lab** of Zagreb, which primarily consists of the former meat processing factory Sljeme (0.128 km²), and a N-S green corridor connecting with the Sava river.

As a community, Sesvete is somewhat traditional and closely-knit. Although with an entrepreneurial mind-set, Sesvete has never developed a clear urban form or clear identity in the past. However, thanks to the activities of a local NGO in recent years it is now developing an increased sense of confidence with people demanding better-connected public spaces and parks, bike lanes, more public facilities and a hub for start-up businesses and culture, to create a new urban identity. These objectives have been articulated in the study “Green and Blue Sesvete” (2016) which proposes the development of a new housing area for more than 20,000 inhabitants on a former industrial site, which will connect the two existing settlements.

The core of the LL will be the 128,000 m² brownfield site of the former meat-processing factory Sljeme that is now owned by the City of Zagreb. It is located south of the railway line and is part of the economic zone that now lies between the older centre of Sesvete and the new neighbourhood development to the South in Novi Jelkovec with 11,000 inhabitants. Its location is adjacent to the present centre of Sesvete. It is connected to the railway and will be well served by the future road network. Distinctive, tall silo buildings form a unique industrial heritage, which is characteristic of the local identity of Sesvete. Several existing buildings will be reused to accommodate the public facilities, which will be created for the local community. In addition to the architecturally attractive heritage, the new part of the city will be green, sustainable and smart and will promote healthy and sustainable lifestyles, entrepreneurial opportunities and a “share culture”.

The main objective of the brownfield regeneration program in the Zagreb LL is the creation of new public spaces, to ensure spaces for required public facilities and introduce principles of sustainable urban planning. The GI approach must strengthen initiatives regarding urban resilience (low water table, storm water), wellbeing programs (jogging and cycling paths, recreation areas), community activities (urban gardens, green market) and bioclimatic building principles (mitigating city heat islands, natural cooling, green roofs and facades).

As part of the proGIreg LL, in Sesvete the following NBS will be implemented:

ZAGREB PROGIREG NATURE-BASED SOLUTIONS

- NBS 3: developing urban gardens on 10 250 m² for 102 prospective users and additional green areas with 12 500 m² and an educational area next to the HUB building for growing plants used as biomass
- NBS 4: a small aquaponic testing installation on the north side of the existing urban garden for technology transfer from Dortmund. It will be run by City of Zagreb with the partnership of the local community and Faculty of Agronomy. The size of the aquaponic installation will be about 100 m²
- NBS 5: 4 historic buildings of the former Sljeme meat-processing factory will be reused for public facilities and will be equipped with green roofs and/or green walls. Testing locations for this are the roof (700m²) and wall (300m²) of the HUB_S building
- NBS 6: A new cycle path of 850 m length will connect the Sljeme brownfield urban gardens with the neighbourhood of Novi Jelkovec housing 11 000 inhabitants
- NBS 7: New ways of promoting and financing of environmentally important projects will be sought, and procedures will be devised, with the aim to include it in the development strategy and implement it in the legislative process.

3.4. Follower City Cascais (PT)

3.4.1. City Identification Fiche

CASCAIS IDENTIFICATION FICHE		
Localization of City	Region / NUTS 2*	PT17 (Lisbon Metropolitan Area)
	Province / NUTS 3*	PT170 (Lisbon Metropolitan Area)
	Coordinates	38° 41' 54" N; 9° 25' 20" E
Information about the city	Population (2011)	206,479 inh.
	Surface Area	97 km²
	Density	2,120 inh./ km²
	Average elevation	Min. elevation 0m; max. elevation 475m
	Climate	Csa – Hot summer Mediterranean climate (Köppen and Geiger classification)
	Average temperature in winter	Avg. High °C 11.7
		Avg. Low °C 8.1
	Average temperature in summer	Avg. High °C 24.8
		Avg. Low °C 14.9
Information about the potential regeneration area	Population (Census 2011)	2,333 inh.
	Surface Area	0.42 km²
	Density	5,568 inh./ km²
Contact and information from the municipality	Municipal website	https://www.cascais.pt
	Data sources	https://www.cascais.pt/ https://geocascais.cascais.pt/

Description of context	Objective(s) for proGIreg Urban Regeneration Plan	Upgrade from traditional public green recreational areas to productive GI with social and economic benefits
City plan (map)		

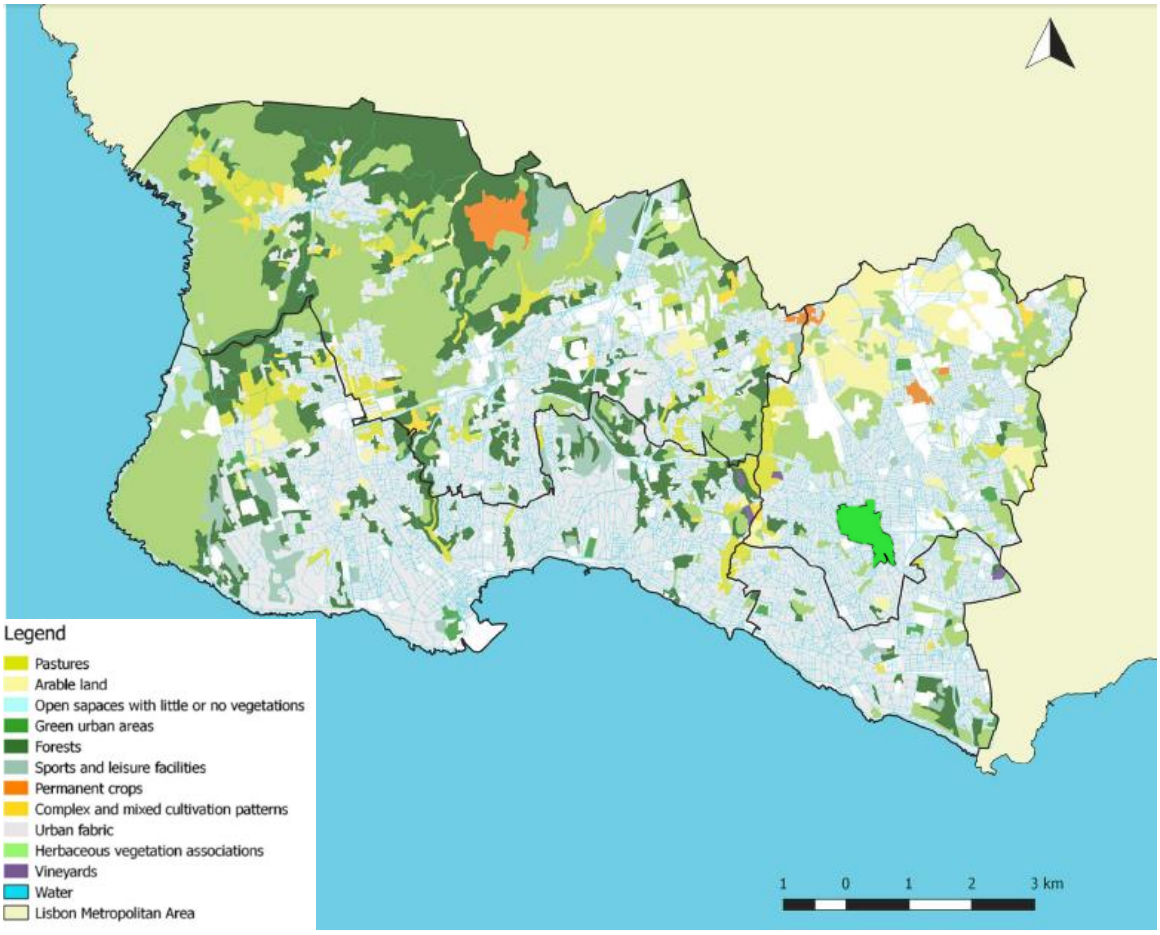


Figure 12 - Cascais Municipality zoning plan, with the identification of Regeneration Area (red). Source: RWTH Aachen based on Urban Atlas

Regeneration Area (map)

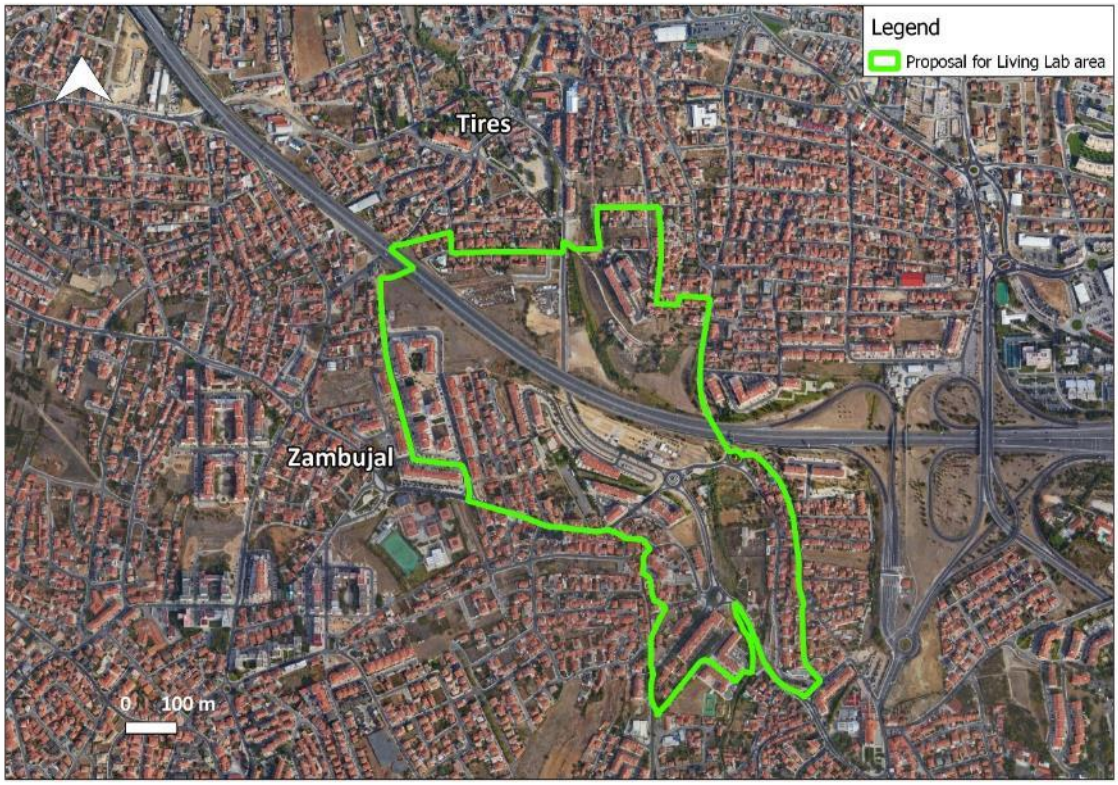


Figure 13 - Proposal for the Cascais Regeneration Area. Source: Cascais Ambiente

3.4.2. Context and description

Cascais is a coastal municipality in the Lisbon Metropolitan Area. With an area of 97 km² and over 30 km of coastline, a third (33%) of which is protected as the Sintra-Cascais Natural Park, a UNESCO Reserve.

Over the last 40 years, Cascais has experienced high demographic and urban growth. As the increase in construction occurred in an uncoordinated way, the result was a fragmentation of urban center as well as an excessive and inappropriate use of key ecological areas. Therefore, Cascais might not face post-industrial challenges, but instead rather chances to upgrade GI areas of potential by means of NBS.

Through urban agriculture projects, it has already been possible to regenerate some land with agricultural potential, which had not been used as such, thus promoting the recovery of the GI. The work carried out helps to develop land in terms of wealth creation, entrepreneurship and social cohesion. The production of income through these areas is central to effective soil protection; the soil resource being non-renewable and under great pressure from real estate interests.

3.4.3. Spatial analysis levels

In this report, the following investigation levels are used:

1. The **City Area** (97 km²) – administratively divided into 4 civil parishes, of which São Domingos de Rana (20.36 km²) in the eastern part, hosting the potential Regeneration Area;
2. The **Regeneration Area**, comprising of part of the localities Tires and Zambujal in São Domingos de Rana (see Figure 13), spanning about 0.42 km².

Regeneration Area Cascais faces challenges posed by areas which are within the GI network, but which are currently not sufficiently valorised through NBS. The lack of appreciation of these spaces results in increased pressure for urbanisation. An operational programme, which values these spaces is an urgent requirement, and one which can be addressed by proGIreg.

In Cascais, the following three NBS are of particular interest and will be pursued in the development of the Urban Regeneration Plan:

CASCAIS POTENTIAL PROGIREG NATURE-BASED SOLUTIONS

- NBS 3: community-based urban gardening and farming on post-industrial sites
- NBS 6: making post-industrial sites and renatured river corridors accessible for local residents
- NBS 8: Pollinator biodiversity improvement activities and citizen science project

3.5. Follower City Cluj-Napoca (RO)

3.5.1. Metropolitan Area identification fiche

CLUJ METROPOLITAN AREA IDENTIFICATION FICHE		
Localization of Metropolitan Area	Region / NUTS 2*	RO11 (North-West)
	Province / NUTS 3*	RO113 (Cluj County)
	Coordinates	46° 46' 0.12" N; 23° 36' 00" E
Information about the Metropolitan Area	Population (2017)	427,681 inh.
	Surface Area	1,603 km²
	Density	266 inh./ km²
	Average elevation	410 m
	Climate	Dfb - Warm Summer Continental Climate (Köppen Climate Classification)
	Average temperature in winter	Avg. High °C 0.3
		Avg. Low °C -6.5
	Average temperature in summer	Avg. High °C 24.5
		Avg. Low °C 12.7
Information about the potential regeneration area	Population (National statistics, 2017)	322,595 inh.
	Surface Area	179.5 km²
	Density	1,797 inh./ km²
Contact and information from the Metropolitan Area	MA website	http://www.adizmc.ro/
	Data sources	http://www.adizmc.ro/ https://primariaclujnapoca.ro/

		http://statistici.insse.ro
Description of context	Objective(s) for proGIreg Urban Regeneration Plan	Address three key challenge areas within the Cluj-Napoca Municipality, through an integrated approach in which GI provides the backbone for testing new models of urban regeneration using NBS
	Priorities to be addressed through the Urban Regeneration Plan	- regenerate the rail and industrial corridor, - re-integrate the Somes River Corridor, - connect to the Faget forest as leisure opportunity / green ecological corridor
City plan (map)		

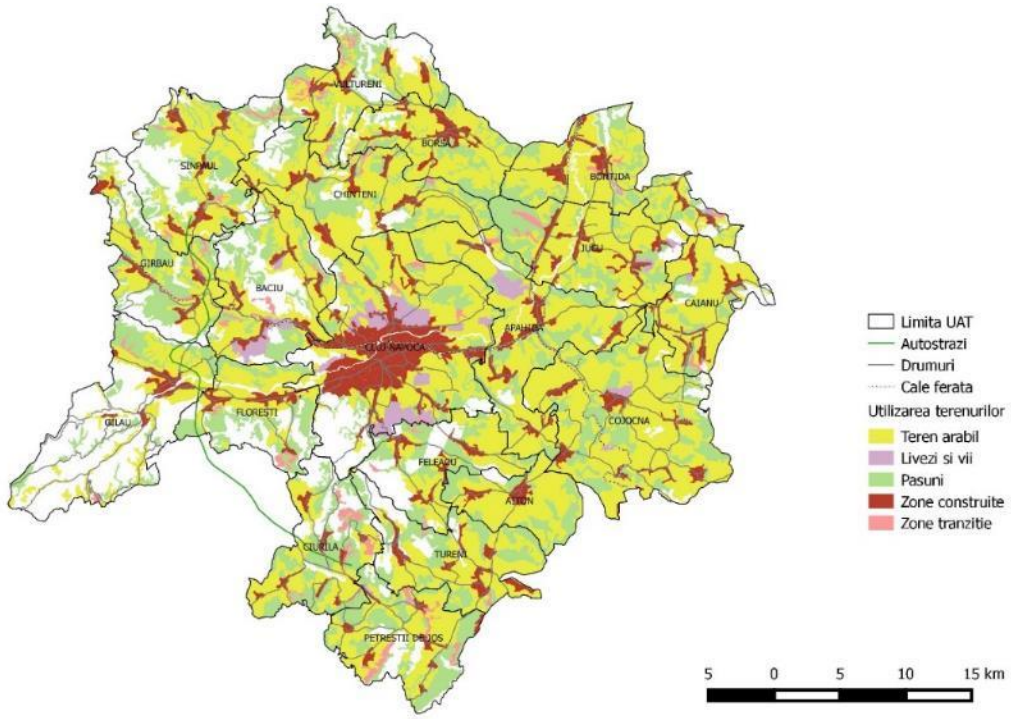


Figure 14 – Cluj Napoca Metropolitan Area zoning plan. Source: URBASOFIA, CMA Integrated Strategy (2015)

Urban Regeneration Area (map)

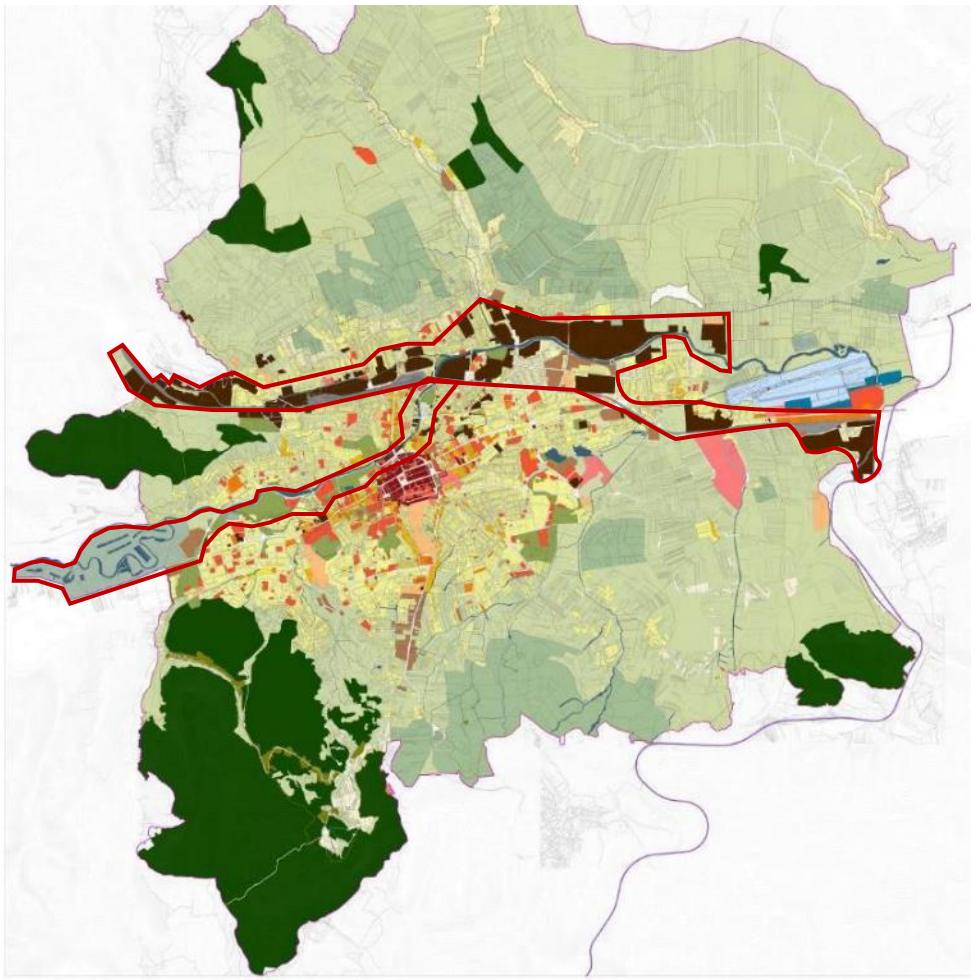


Figure 15 – The three potential Regeneration Areas (marked in red) in the Cluj-Napoca Municipality. Source: GUP Cluj-Napoca

3.5.2. Context and description

The Cluj Metropolitan Area (CMA) is located in the Northwestern Region of Romania, in the Cluj County, as a cooperative territory between the Cluj-Napoca Municipality and 18 communes surrounding it, formalized as an Intercommunity Development Association (ADI) for metropolitan cooperation. The area of the CMA accounts for 24% of Cluj County territory but concentrates 60% of its population, and 80% of the economic activities.

The Municipality of Cluj-Napoca (322,572 inhabitants) is the second largest city in Romania. Built upon the success of its university tradition and its strong urban development ambitions, the city has seen a continuous transformation process towards development of a new urban identity in the past decade, at the regional and national level, as a city of innovation, business development, youth and culture.

The Cluj-Napoca city faces three significant challenges, due to three structural development zones, of which two bisect the city in the East-West direction:

1. Firstly, the City is crossed by the **industrial and rail axis** with large brownfield sites, comprising highly degraded areas, abandoned railway structures and derelict industrial land. These now create a strong division within the urban fabric and form a barrier towards the North, creating housing enclaves which need improvement.

2. Secondly, the **blue-green axis of the Someș River** intersects the industrial and rail axis, creating challenges in terms of pollution hazards, low quality waterfront areas and difficulties for creating new public green areas towards the North of the City.

3. Thirdly, strong opportunities are provided by the wooded area of **the Făget Forest** located in the South Western part of the city, with large green areas extending along the entire Southern administrative border. The expansion of the built environment towards these natural areas creates challenges in terms of sustainable growth of the city.

3.5.3. Spatial analysis levels

In this report, the following investigation levels are used:

1. The **Metropolitan Area** (1,603 km²) – the level of the ADI;

2. The **Analysis Area** –represents the whole territory of the Municipality (179.5 km²).

For the **Regeneration Areas** – delineated provisionally in Figure 14 - micro-data is unavailable, and specific data will be collected through the co-design process of Task 2.3. An overall assessment leveraging on data from the municipality and existing plans (interpretation of spatial data) was however still possible, for some of the components, albeit statistical data collection at the Regeneration Area was not possible

Strategic interventions will be planned for the regeneration areas, through an integrated approach in which the municipality's GI provides the backbone for testing new models of urban regeneration using NBS. Developing an integrated municipal system of GI represents an important planning task for Cluj-Napoca, which aims at working towards the conservation, development and connection of existing and planned GI (i.e. a green ecological corridor in the Southern part of the city, integrating the large forests and green spaces and the development of bike routes which interconnect major green areas). Secondly, the vacant and derelict industrial areas are now the subject of future regeneration schemes, aimed towards their redevelopment with the help of new forms of economic activity along the waterfront of Someș River; thus consolidating it and allowing the connection of the city with its wider metropolitan area via NBS.

In Cluj-Napoca, the following main three NBS are of particular interest and will potentially be pursued in the development of the Urban Regeneration Plan:

CLUJ-NAPOCA POTENTIAL PROGIREG NATURE-BASED SOLUTIONS

- NBS 3: community-based urban gardening and farming on post-industrial sites
- NBS 5: capillary GI on walls and roofs
- NBS 6: making post-industrial sites and renatured river corridors accessible for local residents

3.6. Follower City Piraeus (GR)

3.6.1. City Identification Fiche

PIRAEUS IDENTIFICATION FICHE		
Localization of City	Region / NUTS 2*	EL30 (Attiki)
	Province / NUTS 3*	EL307 (Peiraias, Nisoi)
	Coordinates	37° 56' 50.82" N, 23° 38' 13.49" E
Information about the city	Population (2011)	163,688 inh.
	Surface Area	11.193 km²
	Density	14,624.14 inh./km²
	Average elevation	12 m
	Climate	Csa – Hot summer Mediterranean climate (Köppen Climate Classification)
	Average temperature in winter	Avg. High °C 14.3
		Avg. Low °C 7.6
	Average temperature in summer	Avg. High °C 30.7
		Avg. Low °C 21.9
Contact and information from the municipality	Municipal website	http://piraeus.gov.gr/
	Data sources	Hellenic Statistical Authority Municipality of Piraeus Hellenic National Meteorological Service
Description of context	Objective(s) for proGIreg Urban Regeneration Plan	Introduce NBS at selected locations within the Municipality of Piraeus

City plan (map) with districts and regeneration areas, delineated

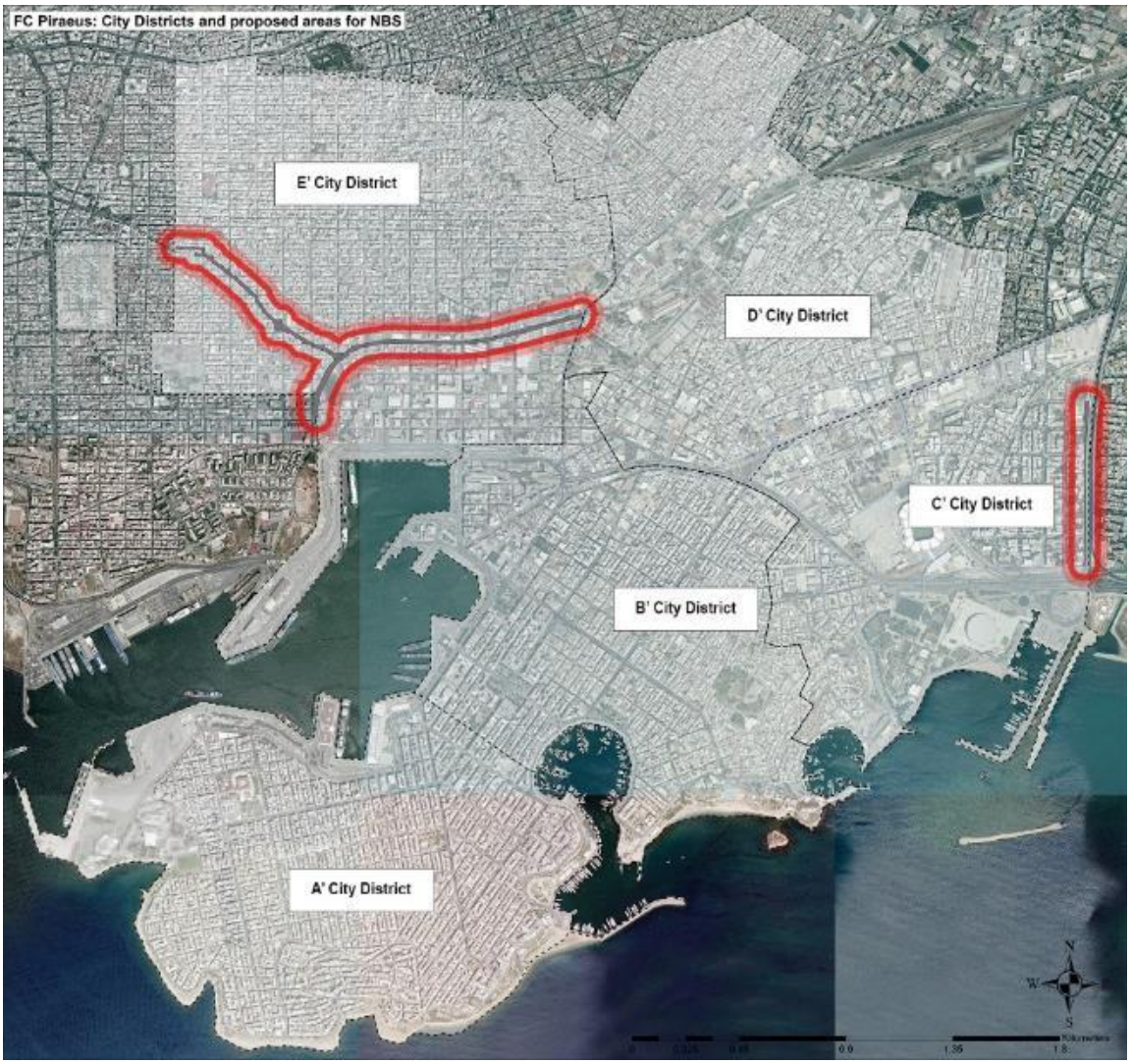


Figure 16 - City Plan of Piraeus and its 5 districts; delineation of the potential regeneration areas. Source: Municipality of Piraeus, Urbasofia.

Orthoimagery Source: Mapping & Cadastral Organisation of Greece (OKXE)

3.6.2. Context and description

Piraeus, with a population of 163,688 and surface area of about 11 km² (Hellenic Statistical Authority, 2011a), constitutes the third largest city and municipality of Greece located 12 km southwest from the centre of the capital city Athens (Municipality of Piraeus, 2018). The city has a rich history tracing back to 2,600 B.C, and since the first half of the 19th century, has benefitted from the relocation of the capital of Greece to Athens. The economic development of Piraeus and the development of the Athens-Piraeus railway line in 1869 lead to a rapid population increase after the mid-1960s. The development of the railway link between Piraeus and the Peloponnese and northern Greece, as well as the development of the Corinth Canal in 1893 contributed in increasing the Piraeus port traffic and initiated industrial development (Malikouti, 2004a).

Today, the port of Piraeus constitutes the most significant port in Greece as well one of the most significant in the east Mediterranean region (Municipality of Piraeus, 2018). However, in recent decades Piraeus, like many other influential metropolitan areas in Europe, has been subjected to de-industrialisation and shrinking of the trade activity, forcing many wholesale companies to close and unemployment to increase even before the beginning of the financial crisis.

The estimated population in Piraeus shows approximately 20% reduction in the last three decades, while at the same time it remains one of the most densely populated municipalities in Europe. The urbanisation process of the last decades in Piraeus shaped the conditions for the environmental degradation of the city. The lack of open green spaces and parks, the presence of a high density of buildings, the lack of infrastructure and air pollution (mainly due to the emissions of ships) are all considered to be the major environmental challenges for Piraeus today. The economic activity of the city shows strong recessional tendencies, following the recent general course of the Greek economy. The decrease in the volume of passengers using the port, the shrinking of production, the steep fall in construction activity and a wave of commercial store shutdowns are aspects of the economic degradation that the city has faced in recent years. However, the port remains the major economic factor for Piraeus. The passenger port of Piraeus is among the five biggest in Europe. It received approximately 10 million passengers and 711 cruise ships in 2014 (cruise statistics, GreekCruise.gr). Piraeus, like any other urban region in Greece, experiences severe social problems due to the ongoing economic crisis. The social cohesion of Piraeus has been negatively impacted from high unemployment rate, increased economically non-active population, reduced household and individual incomes and lack of substantial welfare structures.

3.6.3. Spatial analysis levels

Piraeus is a very dense but relatively homogenous municipality, and there is currently no data available at sub-municipal level, so the indicator collection process for the quantitative Spatial Analysis of the city has been realized at municipal level.

The Municipality of Piraeus is divided into administrative sub-units – five city districts (see Figure 16):

- **The A' City District** (2.35 km²) is surrounded mainly by sea, containing a small section of the city centre along the north coast. It is mainly characterised by residential areas (the most affluent ones in Piraeus, along the coast) and small neighbourhood commercial areas;
- **The B' City District** (2.06 km²) comprises of Piraeus' city centre (approx. half of the surface of the district) and concentrates the characteristic administrative, cultural and commercial activities, alongside a residential area.
- The **C' City District** (1.77 km²) is mainly residential with small local neighbourhood commercial areas. The east boundary runs along Kifissos river (ground level) and Kifissos highway (above). The latter has been identified as a **potential site for the Urban Regeneration Plan of Piraeus**.

- The **D' City District** (2.21 km²) comprises residential and small local neighborhood commercial areas, small industrial areas;
- **The E' City District** is the largest district area of the Municipality of Piraeus (2.8 km²). With the exception of the passenger port, located on the south boundary, the remaining district is located on the mainland. The facilities of the former Papastratos industry are located within the district and the area is scheduled for regeneration. The former Dilaveri Clay brick factory is also located within the district, which has been converted into a park where the main features of the industry such as the chimneys and clay brick machine Hoffman oven have been preserved as landmarks and some of the buildings have been allocated new use. The district is mainly residential with small local neighbourhood commercial areas. This district has also been identified as the second **potential site for the Urban Regeneration Plan of Piraeus.**

In the Municipality of Piraeus, the following NBS are of particular interest and will be pursued in the development of the Urban Regeneration Plan, within the areas of District C' and E':

PIRAEUS POTENTIAL PROGIREG NATURE-BASED SOLUTIONS

- NBS 5: capillary GI on walls and roofs
- NBS 6: making post-industrial sites and renatured river corridors accessible for local residents

3.7. Follower City Zenica (BA)

3.7.1. City Identification Fiche

ZENICA IDENTIFICATION FICHE		
Localization of City	Region/NUTS2*	FBiH – Federation of Bosnia and Herzegovina
	Province/NUTS3*	Zenica – Doboj Canton
	Coordinates	44°12′12.8″N, 17°54′28.2″E
Information about the city	Population	110,663 inh.
	Surface Area	550.3 km²
	Density	198.1 persons/ km²
	Average elevation	316 m
	Climate	Cfb – Temperate oceanic climate (Köppen and Geiger classification)
	Average temperature in winter	Avg. High °C 3.8
		Avg. Low °C -3.0
	Average temperature in summer	Avg. High °C 27.8
		Avg. Low °C 14.5
Contact and information from the municipality	Municipal website	http://www.zenica.ba/
	Data sources	http://www.zenzen.ba/ Zeničkodobojskikanton u brojkama
Description of context	Objective(s) for proGIreg Urban Regeneration Plan	Mitigating the historic pollution and recovering the LL area

City plan (map)

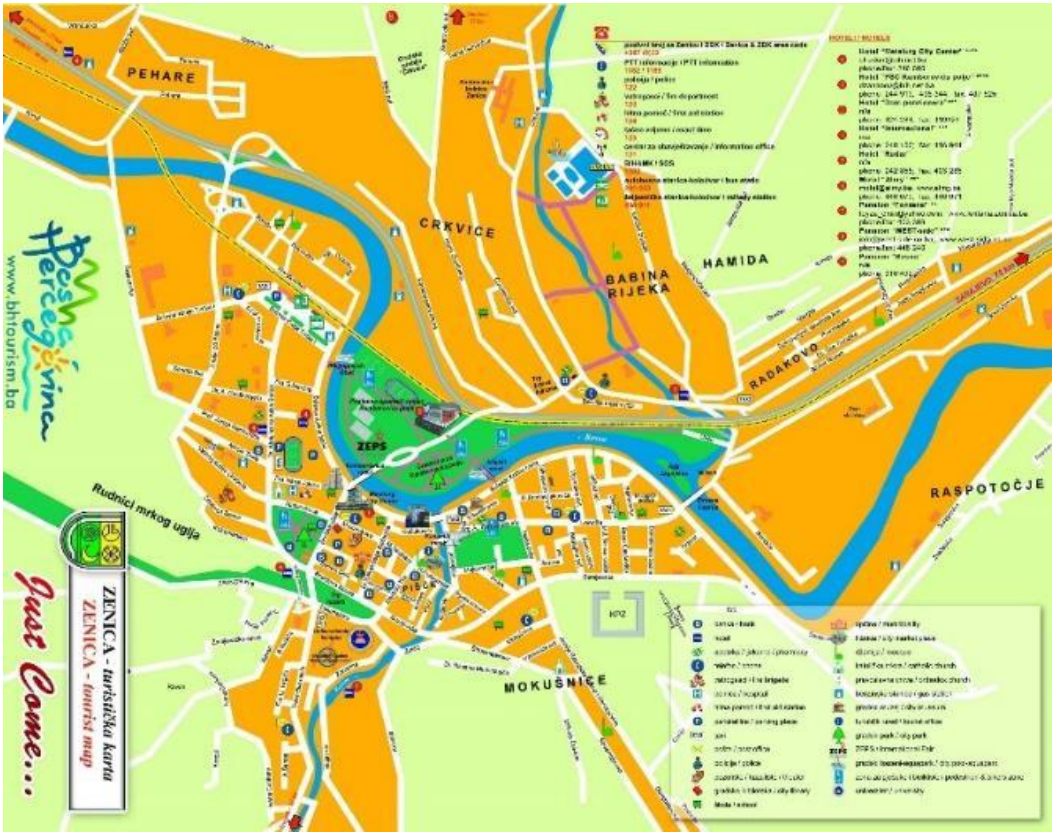


Figure 17 - Zenica city map. Source: www.zenica.ba

Regeneration Area (map)

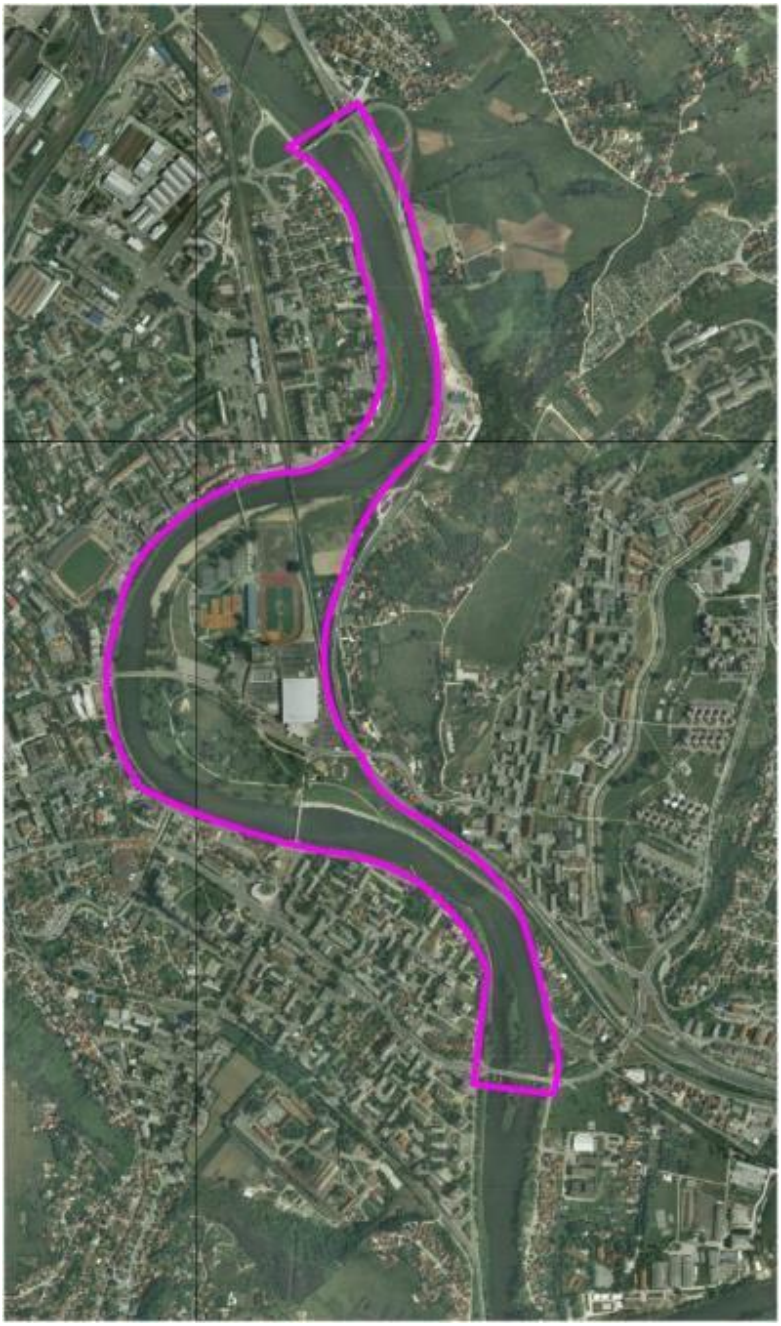


Figure 18 – Delineation of the Regeneration Area of Zenica.
Source: Zenica Municipality, on orthophotoplan

3.7.2. Context and description

The city of Zenica takes up the area of 558.5 km². It is located in the River Bosna valley at the altitude of 316 m. Its mountains reach the height of 1,304 m with Tvrtkovac as the highest mountain peak. Zenica is situated 70 km north from Sarajevo.

The city is an administrative, political, economic, cultural and sports seat of Zenica-Doboj Canton, composed of 12 municipalities. It is estimated that around 115,000 people live in the city at present. The population is composed of various ethnic groups, cultures, faiths and traditions interwoven with the long-standing tradition of a community spirit in former Yugoslavia.

Zenica was called a steel metropolis, the capital of mining and metal processing industry. Steel and coal, as well as metal processing still remain its main industries, though significantly accommodated to the present market conditions. The steel production is organized as a manufacturing unit of the world largest steel producer ArcelorMittal.

Other industries are increasingly visible as a result of the process of setting up a number of small and medium-sized companies.

The city is located in a basin of river Bosna and surrounded by hills and small mountains. Configuration of the land does not go into the favour of the city expansion. Zenica has very limited land resources for any major makeovers. On top of that, the city is a home to world's largest producer ArcelorMittal, which takes 184 ha of the city's territory. The main business zone is located only a few kilometres from the center and takes up 33.64 ha of land. The garrison takes up 16.24 ha of land, and the prison about 17 ha of land, respectively.

Presence of heavy industry, which continuously pollutes the city and limited availability of the land represent major urban regeneration challenges.

3.7.3. Spatial analysis levels. Potential approach for the Urban Regeneration Plan

Leveraging on the Integrated Development Strategy of Zenica and Regulation Plans, the area of intervention is focusing on the river Bosna banks. As a potential focus area for the regeneration plan, the Kamberovica field has been identified.

In this report, the following investigation levels are used:

1. The **City of Zenica Area** (550.3 km²) – the entire territory of the city, including 83 settled areas, which is also the Analysis Area for what concerns the indicator data collection and SWOT analysis given unavailability of indicators at lower scales than the city;

2. The **Regeneration Area** (34 hectares) – for which specific data will be collected through the co-design process of Task 2.3 (Urban Planning in Follower Cities).

The City of Zenica is still an industrial city with a high level of pollution and entire urban are can be considered as an industrial site. Kamberovića field occupies 34 ha of land, out of which railroad takes up 2.5 ha, a shopping center with the city Arena occupies 2.36 ha, parking around the shopping center occupies 2.1 ha, parks cover a surface 9.0 ha and finally, outfield courts take up 8.0 ha, with possibility to expand on other 1.9 ha of land.

Kamberovića field represents the largest and most central of Zenica's green infrastructure, landscaped as a park with sports facilities, and providing facilities for jogging and cycling paths that partly follow the river line. Therefore, this area is strictly regulated and defined as a protected urban area. However,

one side of the river bank is not protected neither renatured or accessible for local residents. The right side of the river needs intervention to allow urban regeneration through construction of cycling and walking paths. The area considered for the Urban Regeneration Plan follows the flow of the river throughout the city (urban area) and includes Kamberovića field.

For the municipality of Zenica, the following NBS are of particular interest and will be pursued in the development of the Urban Regeneration Plan:

ZENICA POTENTIAL PROGIREG NATURE-BASED SOLUTIONS

- NBS 4: aquaponics as soil-less agriculture for polluted sites in proximity of the ArcelorMittal site
- NBS 5: capillary GI on walls and roofs
- NBS 6: making post-industrial sites and renatured river corridors accessible for local residents

4. Plan and policy frameworks in proGIreg cities

One of the aims of proGIreg is to streamline adoption, integration and embedding of NBS in local policy development processes. In spite of a growing awareness and recognition for the potential of NBS, operationalizing them into policy and plans requires specific, additional efforts to translate scientific and then piloting evidence into policy and actions. Through the project, FRC will be involved in actual NBS testing within the real-life scenarios of the LLs, while FC will co-create new NBS development scenarios with stakeholder inputs, embedding these in the local frameworks through Urban Regeneration Plans.

A successful implementation of the eight NBS requires a strong integration with the cities' existing governance practices, institutional and regulatory frameworks. These dimensions are critical to the success of the Living Labs, and are oftentimes cited as the most frequent barriers to the implementing of NBS (Brink et al., 2016; Sekulova and Anguelovski, 2017).

The planning and policy framework analysis provides the strategic and governance context, setting the normative framework for NBS implementation. The analysis of local enforced normative plans, as well as strategies / development concepts, programmes and policies in place provides an overview of the partners' current planning tools of relevance for proGIreg activities. Plans and policies from different territorial governance levels and across topics related to proGIreg are considered:

1) **Horizontal,** namely the extent to which the proposed NBS implementation actions are compatible with other plans or regulations on topics in synergy with the project (urban development and regeneration; social inclusion and social innovation; green infrastructure and environmental restoration; sustainable / green economy; participation and good governance);

2) **Vertical,** namely the extent to which the proGIreg implementation actions are consistent with plans, strategies or policies at higher government levels (metropolitan, regional and national).

Table 2 - Topics and administrative levels of the Plan and Policy Analysis

Key topics of interest for NBS implementation	Regional / Upper territorial levels	Local level of the city and (for FRC) the LL	Other city investments / actions
TOPICS: **Urban development** **Green infrastructure** **Urban Regeneration** **Participation** **Social inclusion** **Other topics of interest**	Contextualisation: Vision and strategic objectives to which NBS development should subscribe: available strategies, masterplans, either integrated or sectorial for the key topics of interest Synergies: Existing regional / higher-scale initiatives and projects pertaining to GI / NBS Opportunities: Support for NBS implementation (i.e. Operational Programmes)	Contextualization: provisions of masterplans, sectoral plans and strategies on the key topics of interest for NBS implementation Constraints: provisions of normative plans, specifically for the LL / urban regeneration areas Opportunities: policies, instruments and facilities useful for NBS implementation	Synergies with other actions / projects of the cities, being implemented in parallel Specifically for FC: planning documents at local level foreseen to be developed or currently under development

proGIreg is implemented in seven different countries across the EU and in China (albeit the Spatial Analysis for Ningbo will be delivered at a later stage). At the level of Member States Germany, Italy, Croatia, Portugal, Romania and Greece, as well as IPA (Instrument for Pre-accession Assistance) country Bosnia and Herzegovina, there are concrete differences in the system of distribution for formal and informal competencies in spatial planning. For instance, in Croatia and Romania the planning system comprises of 3 levels of government, while in Germany and Italy there are 4 levels, and in Portugal, 5 levels of directly elected bodies with decision making power. Policy-making competences are managed at upper administrative levels (state, region, federal states), where general development concepts and visions are established, with more operational visions as well as regulative instruments being usually developed at lower territorial levels.

Pertaining to their general character, spatial planning instruments of relevance to proGIreg can be (ESPON / COMPASS, 2018):

- **Visionary**: Setting out an agenda of principles or goals for a desirable future (uncommon at local level, and more prominent at national level);
- **Strategic**: Providing an evidence-based integrated and long-term frame of reference for coordinated action and decision making across jurisdictions and sectors (Strategic Agendas, Integrated Development Strategies, Regional Development Strategies, etc);
- **Framework-setting:** Establishing policies, proposals and other criteria for a territory that provide a non-binding reference for other plans and decision-making;
- **Regulative:** Legally binding commitments or decisions concerning land use change and development (comprising the bulk of the spatial planning instruments at local level).

Within the Spatial Analysis, each of the cities (FC and FRC alike) have identified the existing local planning frameworks (i.e. urban and territorial planning documents, strategic documents etc.), programmes and actions which are already foreseen for the development / implementation of NBS at local level. Furthermore, cities have compiled a list of NBS-focused or otherwise relevant programmes, actions and projects either foreseen, under development or under implementation

(within the framework of proGIreg or as parallel initiatives), which are going to be considered further within the project.

In the following tables, only those plans which hold requirements that are important for the implementation of NBS are presented. Where further details have been considered necessary by the FRC and FC, these are provided as a separate Annex.

4.1. Local plan and policy framework for Dortmund

Key topics	Regional level	Local level Formal Plans (Dortmund, LL Area)	Local level informal plans, investments and actions
Urban development	**International Garden Exhibition Ruhr 2027** (IGA Ruhr 2027) Specific concepts for the International Garden Exhibition (IGA) Ruhr 2027 are in an early preparation phase. Nevertheless, the planning results of Emscher nordwärts Dortmund have been an important and convincing basis for the IGA application process. Dortmund will be one of the five cities of the Ruhr region with future gardens as main attractions of the IGA, supplemented by Dortmund´s other large IGA garden "Parkkreuz PHOENIX" which is located in Dortmund´s south connecting and further enhancing the green spaces of PHOENIX lake, PHOENIX West, Westfalenpark and Rombergpark **Position Emscher Landschaftspark 2020+** (2013) ELP continues a two-decade process of developing GI and focuses among others on climate protection, urban agriculture, green infrastructure and the economic power of the park supporting structural change	**Flächennutzungsplan der Stadt Dortmund** (Formal Zoning Plan, City of Dortmund) was adopted in 2004 by Dortmund's city council, it indicates development goals for land use in Dortmund and foresees the area north of former Hansa coking plant to be planned as an economic site. **Formal Development Plans (Bebauungspläne)** - Bebauungsplan InW 217 Rheinische Straße, Teilbereich West (2009) - Bebauungsplan InW 210 Unterdorstfeld (1997) - Bebauungsplan InN 204 verlängerte Mallinckrodtstraße/ Hafenbrücke (1989) - Bebauungsplan Hu 124 Huckarder Straße, 1. Änderung (1990) - Bebauungsplan Hu 126/1 Gewerbepark Hansa - Bebauungsplan „Kokerei Hansa Nord" (Planned 2019)	**nordwärts/ "going north" (2015-2025)** In 2015, the city council approved "nordwärts", covering seven northern districts of Dortmund and aiming to harmonize quality of life across Dortmund in a participatory manner. The following LL area projects are listed among the total 234 projects: - Vision: Creation of a beacon on Deusenberg (n. 032) - Hansa Brückenzug: integration in local path network (n. 521) - Restoration of Hansa coking plant´s Salzlager (n. 713) - Integrated Action Plan Huckarde-Nord (n. 752) - Development of HSP-site/ Rheinische Straße (n. 497, 843) - **Emscher nordwärts/ IGA Ruhr 2027 (n. 928)** **Emscher nordwärts Dortmund** covers the same scale and area as proGIreg LL, and establishes goals for three subdivisions: 1) Subarea North (Hansa coking plant, Deusenberg, Mooskamp); 2) Central Subarea (Emscher, Hansa Brückenzug); 3) Subarea South (Union quarter, HSP-site) Pertaining to Urban Regeneration, **Stadtumbaugebiet „Huckarde-Nord"** (2016) is an urban renewal project substantiated by an **Integrated Action Plan (Integriertes Handlungskonzept IHK)** focusing attention on aspects also of importance for proGIreg (provisions for connection improvement between Huckarde and „Hansa Revier Huckarde" (Hansa coking plant, Deusenberg, light train museum Mooskamp) and for the development of the latter).
Green Infrastructure			
Urban Regeneration			
Participation, social inclusion			

A detailed description of plans and policies is available as a separate Annex.

4.2. Local plan and policy framework for Turin

Key topics	Regional level	Local level	Local level investments and actions
Green Infrastructure	**Torino Metropoli 2025 (The Metropolitan Torino 2025 Strategic Plan) - Environmental sustainability** The strategic plan for Turin 2025 underlines strategic trajectories in which future development should be conveyed. It recognizes the necessity of a diffuse dimension of sustainability and addresses it with a set of specific governance actions. One action, in particular, can be of use for this project: **Agenzia Metropolitana Corona Verde** defines the vision of the urban metropolitan green as a diffuse system with cultural, environmental and economic dimensions; accessible and opened to forms of cooperation between formal and informal actors. It is further developed in the Stakeholder Analysis. **POR FESR 2014/2020** (See "Asse VI": “Sviluppo Urbano Sostenibile” (in English: Sustainable Urban Development)	**Torino città d'acque – Turin, city of waters** Torino Città d'Acque is the project approved in 1993 by the City of Turin and currentl under implementation which provides for the recovery of the banks of rivers in a single river park of 70 km, with an area of 17 million square meters. The project links the four rivers of Turin (Po, Dora Riparia, Stura, Sangone) to create a continuous system of river parks connected by networks of pedestrian, cycling, naturalistic and educational routes. (**Museo Torino**) **Piano Gestione MAB Po Collina –** Management Plan for the Man and Biosphere reserve of the territory of „CollinaPo”. For the reserve, an Application Dossier was submitted to the UNESCO MaB Commission in 2015 **Progetto TOCC – Torino Città da Coltivare** (Torino, city to be cultivated) – represents a project approved in 2012 with the aims to promote the development of agriculture in the urban area: sustainable crops and addressed to the concept of "short chain", social agriculture, individual or collective horticulture, agritourism, urban forestation. **Piano strategico metropolitano 2018 - 2020 (cfr. P5: Una Città Sostenibile e Resiliente)** – The Strategic Metropolitan Plan of Turin 2018-2020 (PSMTo), The PSMTo identifies a vision of unitary development for the entire territory of the medium to long term CMTo, and is divided into 5 project platforms, 20 strategies and 63 actions / projects; the PSMTo identifies the action priorities for the reference period and the dedicated resources within the Annual Operational Agenda. The GI component is addressed in **P5: A sustainable and resilient metropolitan city**.	

Key topics	Regional level	Local level	Local level investments and actions
Urban Development and Urban Regeneration	**Torino Metropoli 2025: Urban Regeneration** The strategic plan looks at regeneration considering its diffuse dimension. Regeneration is taken into account in the form of innovative programs that need to coordinate new forms of social inclusion of the community and stakeholders to activate public and private resources. The basis of this form of regeneration is to be found in past Turinese experiences in urban regeneration which were able to mobilize the social dimension as well as the institutional one. Regeneration is seen as a multi-dimensional concept containing economic development, employment opportunities, services effectiveness, cultural and social regeneration, inclusion. This can be useful to recognize the resources that can be moved or activated on the field, and the possible actors that can help in rendering the project future proof and economically independent and sustainable.	**PRG Torino (Plano Regolatore Generale, 1995) – Turin Urban General Plan,** which went through a general revision in order to be transformed into an urban instrument accessible with more simplicity and transparency - **http://www.torinosiprogetta.it/** **AxTo - Azioni per le periferie torinesi** (Actions for the Suburbs of Turin**)** This project analyses and proposes area-based actions and urban acupuncture operations for the peripheral neighbourhoods in Turin, concerning housing, schools, infrastructure, GI, support of micro-enterprises, cultural production and social planning of the urban community. **Piano Strategico Metropolitano 2018-2020** (cfr. P3: Una Città Metropolitana innovativa e attrativa nei confronti di imprese e talenti) – Priority „An innovative and attractive metropolitan city for enterprises and talents”	**Programmi urbani complessi di Torino** (“Complex Urban Programmes”) - tools for intervention in critical urban areas, with different purposes, but with similar characteristics **PRIU** - Programmi di Riqualificazione Urbana (“Urban Requalification Programmes”) are complex urban projects traditionally of an infrastructure-focused nature, but being implemented in Torino under the provisions for an integrated and participatory approach similar to CLLD **Torino Metropoli 2025: "Quindici progetti pilota di qualità urbana".** The strategic plan has proposed 15 pilot projects for urban quality. These projects are aimed at places which are sparsely defined or have high urban development potential. These projects must follow a specific approach (placemaking) in order to resew the urban fabric with a mix of uses and to promote the community to take in charge the management of these public spaces. It can be useful to analyse these projects in order to understand what the outcomes where.
Participation, social inclusion	**Torino Metropoli 2025: Social Inclusion dimensions.** The strategic plan makes of social inclusion a founding concept for its development.	**AxTo - Azione per le periferie torinesi** (see above); **Piano Strategico Metropolitano 2018-2020** (cfr. P4: Una	**AxTO Mirafiori Sud,** with currently three projects underway for the redevelopment of green areas (Emilio

Key topics	Regional level	Local level	Local level investments and actions
	Point 5.3 - Strategy 2. *Abilitating the socio economic context*, identifies horizontal "abilitating factors" for the development of the entire economic, territorial and social system. Social inclusion here is based on local economic base rehabilitation. The basic idea is to enable resources that are not only public to offer a set of new services that can improve quality of life in the city and thus actively involve the social dimension in the process. Social inclusion in the strategic plan is a broad term, and it involves many dimensions, from economics to transport, to sustainability. Point B.13 - "*Social Innovation*" points to the renewal of the welfare state system with the involvement of non-formal and non-public actors in the system. This interest and sensibility can be useful to the Progireg project, as it can help in sustaining projects of social innovation and renovation, mixing technology and territorial innovation, and using them to enable projects of social inclusion and participation.	Città Intelligente e Inclusiva) – Priority „An Intelligent and Incusive city	Pugno garden, Nino Farina gardens, Camilla Ravera) **UIA Co-City Project**
Other connected topics of interest	**Torino Metropoli 2025: Environmental sustainability** - A.5 "Manager for the Sustainable metropolitan city". This action has to do with the economical dimension of sustainability. It aims to reach opportunities offered by innovation through a more efficient use of resources creating socio-economic value with minimum impact on natural systems. This manager figure should promote coordinated actions on efficiency of use of natural resources, but also landscape restoring and rehabilitation and sustainable economy models. It has also to do with diffusion and experimentation of new action plans for the territory that concern environmental sustainability.		

4.3. Local plan and policy framework for Zagreb

Key topics	Regional level	Local level	Local level investments and actions
Urban development	**City of Zagreb Development Strategy 2020 (2017)** represents the basic framework for all project initiatives and proposals at the level of the city, which must be coordinated with its aims: - sustainable development, protection of nature and improvement of the quality of environment - sustainable energy management - balanced and systematic physical development through sustainable use of the entire City space, improving inhabited City areas, development of the city projects system, improving traffic systems, improving infrastructural systems and improving regional traffic connections - improving the quality of housing - improving social infrastructure The Action Plan, a separate implementing document, shows funds planned to be disbursed for the implementation of specific measures in the three-year period 2017–2019.	**The Master Plan for the City of Zagreb (2015)** defines the use and purpose of areas, a network of economic and social activities, transport and utility infrastructure and conditions for the use, development and protection of the area (urban policies, procedures for urban spatial planning, protected natural areas and immovable cultural property). It is both a strategic and an implementation document determining the future shape of the city through regulations, the requirements of buildings and defining urban rules (Prelogović, Pintarić and Njegač, 2016)	
	Urban agglomeration Development Strategy Zagreb 2020 (2017) - improving quality of life, public and social infrastructure and human resources - improving environmental, nature and space management - network projects like increasing public passenger transport efficiency, cycling and pedestrian infrastructure, development of public spaces and facilities etc.	**The Master Plan Sesvete (2015)** prescribes the use and purpose of the areas in Sesvete, ensuring**:** - new public facilities - quality economic structure development, removal of pollutants - consolidation of the urban structure of Sesvete	
	Spatial Plan City of Zagreb (2016) defines conditions for the development of the City, and establishes the following guiding actions of relevance for proGIreg:	**Landscape study Sesvete* (2016):** - encouraging sustainable transport and decrease in car usage	

	- stressing the importance of sustainable development - limiting urban sprawl - improving the life standard of suburban and rural settlements	- encouraging compact city development - infrastructure network expansion with maximum use of existing capacities **Archaeological sites in a tourist offer Sesvete*** **Green and Blue Sesvete (2016)*** - a project put forward by an association with the same name envisioning the redevelopm4ent of the former Sljeme factory (proGIreg LL area) and the Divjača forest (80 ha) among others. Proposal (in Croatian) **Both the Master Plan City of Zagreb (2015) and Sesvete (2015)** contain two graphical representations concerning green infrastructure: Land use and Protected and registered natural heritage and immovable cultural heritage. The former represents, among others, public green spaces (parks, urban forests, theme parks), sports and recreation areas, as well areas prohibiting construction, stream corridors and other water surfaces. The latter defines special green area use and preservation regimes. Mandatory percentages of natural terrain of development areas are provided in the regulation part of the plan.	
Green Infrastructure	**Spatial Plan City of Zagreb (2016)** The Plan, specifically graphical representations Land use and Terms of use, development and preservation of space define the main green massives Natural Park Medvednica and Sesvetsko Prigorje in the north, Vukomeričke Gorice in the southwest, Sava park along the main river corridor of Sava.		**Bicycle lane from Sesvete to Vugrovec** (5 km, 2016)
Regeneration		**Master Plan City of Zagreb (2015), and Master Plan Sesvete (2015**) which aims at: - preventing spontaneous development of industrial complexes and agricultural farms - the use of urban potential through city projects and urban development plans - all future development directed towards the reuse of land for facilities and programmes for urban transformation and creation of public spaces of urban character **Landscape study Sesvete*:** - project propositions for reconstruction, recomposition and improvement of the rural and agricultural landscape of Sesvetsko prigorje; - preservation and improvement of cultural heritage.	

Participation, social inclusion	**Law on the Right of Acces to Information (2015)**		
	Public discussion as part of the procedure for adopting a plan		
Other connected topics of interest	**OTHER CITY INVESTMENTS:** NBS implementation: Urban gardens in Zagreb Environment management and sustainable development: Sustainable Energy Action Plan Zagreb – SEAP (2010) Urban regeneration projects: Gredelj, Blok Badel, Zagreb Fair		

** document not accepted by the City Assembly*

4.4. Local plan and policy framework for Cascais

Key topics	Regional level	Local level – City and Brejos (Regeneration Area)	Other city investments / actions
Urban development	**PROT-OVT - West and Tagus Valley Regional Land Use Plan (2009)** has a regional scale and encompasses the west centre of Portugal, including the metropolitan area of Lisbon. As a regional spatial planning program, it defines the regional strategy for territorial development, integrating the options established at national level and considering sub-regional and local strategies for local development, providing the framework for the elaboration of programs and inter-municipal plans and of municipal plans. The **PROT-AML** for the Metropolitan area of Lisbon (2002, renewed 2011) adapts the rules and guidelines determined by the PROT-OVT, at the metropolitan area scale	**Cascais Master Plan (2015)** has been developed according to the guidelines established in the PROT-AML, detailing these rules and applying them to the city scale. This is the main document that reflects all the guidelines for territorial interventions in Cascais. The Masterplan shows a list of categories and territorial planning status in the area of Brejos, with the following provisions for the categories of interest in proGIreg: - The Urban Regeneration Area is characterised as urban soil - All urban interventions must promote new landscapes, connect pre-existing urbanized areas, and promote the use and recovery of abandoned areas; - Most of the area represents production and leisure green areas, part of the urban ecological structure (protected / preservation status) - Other green areas: Conservation and protection areas (flood area, river banks and slopes – protected) and GI protection on highway sideways and water pipeline (protected, non-aedificandi) - Equipment areas (some public and private parcels which may be converted to social equipment) **Plan for Development of Pedestrian accessibility in Cascais**	
Green Infrastructure	The **Natural Park of Sintra-Cascais** - occupies 1/3 of Cascais territory with very specific regulations. The urban regeneration area is not included in the Natural Park, and thus not relevant for proGIreg.	**Municipal Regulation for Green-Areas and Tree protection** - sets a special status of protection to some species in the municipality, like *Pinus pinea* and *Olea europaea*, for example. Before any intervention all pre-existing trees must be evaluated; they can only be cut down with municipal authorization. Climate Change Adaptation Action Plan (PECAC, 2016, on the basis of 2010 Strategic Plan)promotes resilience against climate change, yet its provisions do not include urban agriculture as a target. Instead, Action 5 concerns green river corridors (outside Urban Regeneration area) and action 12 aims for new Urban	

	Natura 2000 is present mainly in the Natural Park and coastal area, following European legislation. **Environmental Fund** (Fundo Ambiental)	Parks as naturalized areas for water infiltration. The general principles of PECAC will be considered in proGIreg,	
Regeneration		"**Terras de Cascais**" strategy is an agriculture programme with several projects (since 2009) concerning vegetable community gardens, associative gardens, school home gardens and daycare center gardens. A Market study (GFK, 2017) about consumption of produce in Cascais, by private and public sectors, indicated preference and gave support for the Terras de Cascais strategy. **PEDU – Urban Development Strategic Plan (2015)** supports the implementation of Article 7 ERDF (Sustainable Urban Development) and concerns actions to improve the urban environment, revitalization, and support for the physical, economic and social regeneration of communities north (Tires) and south (Zambujal) of the Urban Regeneration Area, mainly concerning the built areas and public spaces.	**Local Programme for public participation, the Municipal Participatory budget** is executed every year. Anyone can apply with a project that costs less than 300,000€ within the scope of Municipal activities (Orçamento Participativo). **Cascais Social Net (Rede Social de Cascais)** created by law 115/2006 is a contact network and participatory forum involving several local actors to work on social issues. It has a local council of social action (CLAS).
Participation, social inclusion		"**Terras de Cascais**" strategy actions involve the communities, families and schools to pursue new synergies around community gardens, association gardens, school gardens, vegetable garden nurseries, etc.	

4.5. Local plan and policy framework for Cluj-Napoca

Key topics	Regional / Metropolitan Level	Local Level (Cluj-Napoca Municipality)	Other city investments / actions
Urban development	**Regional Development Plan for the North-West Region** (2014-2020) is the main regional planning document and presents relevant development policies at regional level, in the context of the area's specific needs. It is not binding for lower levels, as NUTS 2 regions in Romania are statistical; but one of the flagship projects of the RDP is the Somes river waterfront development (part of the Regeneration Plan area). **Integrated Development Strategy of the Cluj Metropolitan Area (2017)**, creates the strategic framework for the Metropolitan Area (2030) and pro-vides the Action Plan for the current programming period (2014-2020, implementation until 2023). **County/ Metropolitan Territorial Development Plan**, to be realized by the Cluj County Council and the Metropolitan Association, with expertise from the World Bank Romania office, starting in 2019 – a key document which can up-scale and mainstream the proGIreg approach in Cluj	**Cluj-Napoca Urban General Plan (2015)** – provides the general development framework of the city and includes medium and long-term provisions for areas where urban regeneration is expected, specifically along the corridors of the Somes river and railway, the areas considered for the Urban Regeneration Plan in proGIreg. **Cluj-Napoca Municipality Integrated Development Strategy 2014-2020** (2013) – is built on three pillars: Innovation, University and Participation. The strategic priority `Green Cluj` proposes several operational programmes and projects mainly aimed at creating framework conditions for GI (plans, studies), but also the development of a forest park in the Faget area, and development of mini-parks / `EcoMiniRelax` within the urban tissue. **Sustainable Urban Mobility Plan** (SUMP) Cluj-Napoca 2014-2020 (2030) – provisions for re-configuration of the city's transport network, pedestrianization, measures for enhancing sustainability and lowering the environmental impact of mobility in the city	**Metropolitan Train** project (under development) **Metropolitan Bypass** (under development)
Green Infrastructure			**Rethinking Somes design** contest (2017) and the subsequent winning proposal for the redevelopment of the Somesul Mic river banks within Cluj-Napoca city. **ROP 2014-2020** 4th Axis Projects: Between Lakes recreation area and Tineretului Park **Natura 2000 site ROSCI0074** Făgetul Clujului – Valea Morii **H2020 "Stardust" Project** offers a holistic approach in transforming the carbon-based cities to smart, highly efficient, intelligent and citizen-oriented cities, or "Innovation Islands". As a Replicator City, Cluj-Napoca has the opportunity to cross-fertilize between the project and proGIreg, specifically in what concerns innovative instruments and solutions for improving the energy efficiency of buildings and microclimate (such as capillary GI, green facades and roofs). Interreg Danube Programme – **URBforDAN** - Management and Utilization of Urban Forests as Natural Heritage in Danube Cities
Regeneration			**URBACT III REFILL Project** (2015-2018) - Reuse of vacant spaces as driving force for Innovation on Local level **Cluj Participatory Budgeting**

			Several Zoning Plans approved by the City Council in the former Industrial Areas (Record, Sobarilor etc)
Participation, social inclusion		**Cluj-Napoca Municipality Integrated Development Strategy 2014-2020** – the `Social Inclusion` sub-strategy (2010)	Interreg Danube Programme - **NewGenerationSkills Project** - Unlocking the potentials for business and social innovation in the Danube Region by equipping young people with new generation skills **EUCANET**- EUropean City Agencies NETwork for citizenship, inclusion, involvement and empowerment of communities through the urban transformation process Housing Project for the most deprived – financed through the Poverty Alleviation Programme - Norway Grants

4.6. Local plan and policy framework for Piraeus

Key topics	Regional Level	Local Level (City)	Other city investments / actions (current)
Urban development **Green Infrastructure** **Regeneration**	**Regulatory Plan "Athens-Attica 2021"** (2011) **–** strategic development plan for the spatial organisation of the city and entire Attica region. Key concepts of relevance: - Stimulation of the cohesive city; - Urban regeneration through recycling the city stock in land and building; - Building restriction in non-urbanized areas - Environmental protection and a set of environmental policy directions - Restructuring of the productive fabric (incl. agricultural production) - Restructuring of the city centres of Athens and Piraeus	**Piraeus Strategic Plan**, developed with the scope of making the city of Piraeus an international business, touristic, cultural, maritime and commercial destination, leveraging on the following concepts: - Blue" city: maritime cluster for the port of Piraeus; - "Green" city: using green energy in public infrastructure, promoting energy upgrading; - "Smart" city: new digital technologies and support for youth who wish to create start-up companies. - "Sustainable" city: combined implementation of environmental, traffic and social interventions for the revival of deprived urban areas. - "Open" city: optimize the permeability of the urban areas through upgrading motorways and establishing functional connections between the city and the passenger port and the cruise ship areas. **Piraeus Blue Growth Strategy 2018-2024** – specifically, provisions under PA-4: Urban Interventions and Smart Infrastructures for Blue Growth: - Measure 4.1 Integrated Spatial Planning - Measure 4.2 Interventions for urban revitalization **Piraeus Port Masterplan** (2018) – developed by COSCO for the Piraeus Port Authority aims to enhance the port's growth prospects through an expansion of activities are not are directly linked with port operations, which are still under debate (e.g. a new mall). The plan is still pending approval.	**MOBILITAS** – MOBIlity for NearLy-zEro CO2 in MedITerranean Tourism DestinAtionS, INTERREG-MED 2014-2020 programme (2016-2019) Aim: Elaborate different scenarios that enable policy makers and stakeholders to better understand effects of different choices on improving environmental quality. **Interventions for Urban Regeneration of degraded areas of the Municipality of Piraeus – Green Fund** (2012-2015) Aim: To regenerate degraded areas within the Municipality of Piraeus to improve both the city's attractiveness and bioclimatic design, by funding interventions such as provision of soil conditioners, soil works, landscaping. **SUPAIR** – SUstainable Ports in the Adriatic Ionian Region project, INTERREG-ADRION 2014-2020 programme (2017-2019) Aim: Reduce of emissions from shipping and on-shore port operations with an integrated approach, enhance port authorities' capacity to plan and implement low-carbon and multimodal transport and mobility solutions and further empower decision-making of the main related political, technical and trade stakeholders and partners. **BLUE GROWTH INITIATIVE**, URBACT programme (2017-2020) Aim: Encourage entrepreneurship and the promotion of innovative business ideas related to maritime economy and the values of sustainable entrepreneurship, contributing to the improvement of business culture and strengthening of business activities with significant socio-economic benefits for Piraeus.

Participation, social inclusion		**MIVA -** Integration through Volunteering Activities, Asylum, Migration & Integration Fund (AMIF) programme (2018-2021) Aim: The implementation of interactive activities to increase Third Country Nationals' participation in socio-cultural life and the volunteering sector and to foster building capacity for diversity addressed at host communities for successful migrant integration. The above will be achieved through the organisation of cross-cultural, the deployment of the INDIGO solidarity platform and app, and the implementation of workshops. **VAI** – Volunteering Among Immigrants project, AMIF programme Aim: Explore innovative actions to the topic of the "social integration" and "active participation" of Third Country Nationals focusing on volunteering as a tool. **BLUACT project**, URBACT Transfer **Network** (2018) Aim: Implement a Call for innovations to enhance traditional financial activities through innovative business ideas in relation to shipping and the blue economy and create 25 Good Practice Transfer Networks, focusing on the adaptation and transfer of established good practices to other EU city partners faced with similar challenges. **BLUES** – BLUe growth connects European Seas project, ERASMUS+ programme (2017-2019) Aim: Design and develop a new dynamic training material in order to retrain and upskill "blue" professionals (workers, unemployed people) to upgrade their knowledge and competences allowing them to progress in their career or move to other promising job opportunities in the Blue Economy (Coastal - Maritime Tourism and Shipping). **Seminars and Lectures for Citizens** from the Department of Lifelong Living of the Directorate of Education of the Municipality of Piraeus (2018-2019).
Other (completed) initiatives		**CYCLECITIES project** – European cities for integrating cycling within sustainable mobility management schemes, INTERREG IVC (2012-2014): Municipality of Piraeus was the Lead Partner and developed, among others, a good practice guide on land use planning, on cities' mobility management strategies, on citizens' participation practices and on cycling architectural infrastructure; and a Regional implementation plan. **TRACE Project** – Transnational cooperation for the improvement of buildings energy performance and efficiency, South-East Europe (SEE) (2012-2014): Municipality of Piraeus was the Lead Partner (LP); the project focused on deploying transfer and training activities (workshops, seminars, meetings, stud visits, trainings) on the topic of energy efficiency, and findings were incorporated into operational plans for each of the partners. **SMILE Project** – SMart green Innovative urban Logistics for Energy efficient Mediterranean cities, MED PROGRAMME (2013-2015) produced, under LP Piraeus, a benchmark of MED cities in Urban Logistics energy gaps, and then implemented logistics pilots; based on their assessment, the project final developed a reference guide for energy efficiency in urban logistics. **REPUBLIC-MED – REtrofitting PUBLic spaces in Intelligent MEDiterrannean Cities, MED PROGRAMME (2013-2015) developed** a holistic methodology to perform complete techno-economic studies for the energy upgrade of public buildings to mitigate the Urban Heat Island (UHI) in public open spaces. **NEETs ON BOARD project**, EASI (2017-2018) created PPPs in the field of blue growth and social economy in order to mobilize and involve NEETs aged 15-24 within the Piraeus, Saronic Islands and east Peloponnese areas. Municipality of Piraeus makes efforts raise money to **expropriate former industrial and derelict sites** that are abandoned and contribute to the degradation of the surrounding areas to allow for the development of new green spaces for the benefit of the general public.

4.7. Local plan and policy framework for Zenica

Key topics	Regional level	Local level Formal Plans (Zenica City, Regeneration Area)	Other Local level actions
Urban Development and Urban Regeneration	**Environmental Fund of Federation of Bosnia and Herzegovina** – supporting environmental policies for sustainable development. It is guided by international rules and objectives towards climate change adaptation, water protection, nature and biodiversity. **Zenica-Doboj cantonal Urban plan (2009-2029)** – This Plan mainly concerns the built areas, and public urban spaces and applies to vacant land, including in the Urban Regeneration area. *It is to note that the Master Plan of Federation of Bosnia and Herzegovina (2008-2028) is currently not yet adopted, while the Draft of the Plan needs to be taken into consideration by the House of Peoples of Bosnia and Herzegovina (Bijelić, Đorđević, 2018)*	**Master Plan for the City of Zenica** (2016-2036, adopted 2017) has been developed in conformity with the Cantonal and Federal plans and provides the framework for local development – including the further definition of specific land use, neighbourhood, infrastructural and investment plans for future trade and economic zones (Municipality of Zenica, 2018) **Traffic study of City of Zenica** – defines pedestrian, public transport, pedestrian transport and transport in general. It also sets the pedestrian paths and cycling profiles to be adapted in the Urban Regeneration area.	Currently, the department for urban planning is working on **two Regulation plans** in the inner city (urban area) and working on best possible solutions in accordance with suggestions on public hearings and demands of citizens.
Green Infrastructure			The City is also currently in the process of developing a **Green City Action Plan**, in which creating green belts around industrial parts of the city is foreseen.
Participation, social inclusion			The **open air market,** which works every day selling fruits and vegetables, with a Saturday market for clothing, shoes and household linen.

4.8. Conclusions of the plan and policy analyses

NBS implementation in **FRC Dortmund** can build on a very well-articulated planning framework and a supportive environment of several running renewal actions and programmes. Dortmund´s Landschaftsplan focuses on qualitative improvements of nature. Activities in the LL need to be aligned with these initiatives and, in particular, the International Garden Exhibition (IGA) Ruhr 2027. While these parallel processes pose some challenges on how to ensure coordination among them, they stimulate urban transformation in the LL area and allow synergies with the foreseen NBS 1, 3, 4, 6 and 8.

NBS planning and implementation in **FRC Turin** subscribes to the Turin Metropolis 2025 Strategic Plan (specifically on the components Green Infrastructure, Urban Regeneration, Social Inclusion, Environmental Sustainability), which provides the framework of action for all dimensions tackled through the Living Lab: socio-cultural inclusiveness, human health and wellbeing, ecological and environmental restoration, economic and labour market benefits. Furthermore, at local level, regulatory plans (General Urban Plans) set up the conditions for implementation, and other strategies and urban programmes help frame the priorities of proGIreg NBS testing.

FRC Zagreb benefits from a structured plan and policy framework at contextual level, comprising of spatial plans / masterplans for the Zagreb Urban Agglomeration, Zagreb City and Sesvete district, the development strategy for Zagreb City, and further studies and documentations focusing on landscape and the blue-green network. The city implements NBS 3-7 with the purpose of re-converting an existing brownfield (former meat processing factory Sljeme) and providing new public spaces and facilities for enhancing urban resilience, wellbeing, community sense; as such, it is contextualizing the proGIreg Living Lab and adapts the NBS to the local priorities of ensuring new public facilities, densification, preserving and further developing green infrastructure, improving the quality of the environment, housing, and limiting urban sprawl (via densification).

FC Cascais has had experience in the past with urban agriculture and its embedding into the local plan and policy context. NBS 3, 6 and 8 are of core interest for Cascais, and an area for Regeneration Plan has been identified, contextualizing the intervention within the very dynamic urban processes of the last years and the acute urbanisation and densification happening in Brejos district. Project implementation within the city builds on, and benefits from other actions in synergy (Terras de Cascais), facilities and assets, including local cooperative programmes, financing mechanisms, participatory and community actions.

FC Metropolitan Area of Cluj has a well-consolidated plan and policy framework, with a metropolitan / county development plan in the making, which could accommodate provisions derived from the experience of proGIreg. The strategic context gives weight to GI, and Cluj-Napoca city has taken steps so far with several projects and international contests to ensure the crystallization of a vision for the blue-green Săsar River corridor. Synergies with like-minded initiatives (e.g. The URBforDAN project, tackling urban forest management, or the STARDUST project, implementing innovative Energy Efficiency solutions) can be ensured.

FC Piraeus, albeit not having focused on the prescriptions of the spatial plans approved at municipal level, presents a vast previous experience in coordinating transnational cooperation actions which relate to blue growth, energy efficiency, mobility and public space regeneration, with the latter playing into the capacity of the partner to produce an Urban Regeneration Plan encompassing provisions for green spaces such as roofs (NBS 5) and corridors (NBS 6); there is local experience in implementing sustainability- and regeneration-oriented actions by the city municipality, within EU projects, which focus prominently on policy-making, transnational exchange and citizen involvement.

Lastly, **FC Zenica's** main spatial planning documentation is the Master Plan for the city (2036), with both regulatory / land use and strategic components, which supports the redevelopment of the Kamberovića Regeneration Area. The Green City Action Plan in development offers the possibility of embedding NBS and their transversal nature (impacting both the environment as well as social, wellbeing, residential, economic and cultural aspects of urban life) within the city's planning framework, in support to future implementation of the Urban Regeneration Plan, to be developed through the project.

Overall, proGIreg can bank on existing plans and policies (such as landscape programmes / strategies, or provisions of normative plans leveraging conservation of green space / nature). However, the traditional approach in normative spatial planning regarding GI is to protect and develop public green spaces, while productive and co-designed NBS require shared competencies and resources across sectors. In this respect, approaches and experiences from informal planning and other activities such participatory budgets, transdisciplinary research projects and socially-inclusive urban regeneration projects can provide a supportive framework for NBS.

5. NBS stakeholders in proGIreg cities

ProGIreg follows a quadruple helix-approach to foster and sustain NBS innovations, in order to ensure the sound scientific grounding of the solutions implemented, the adaptation and fit within the legal frameworks of the FRC and the wider governmental actions, as well as the public acceptance and uptake, economic viability and sustainability. Consequently, in all stages of the project four types of stakeholders are of interest: local governments, SME/industry, academia and civil society. These stakeholders will be engaged in the testing of NBS (FRC) and the development of Urban Regeneration Plans (FC).

Broad cooperation in NBS innovation through the project allows a shift towards a systemic, open and user (beneficiary) centric innovation policy for the testing of eight NBS in the Living Labs of FRC, as well as their embedding in the four FRC Urban Regeneration Plans for future implementation. The first step for this cooperation is identifying the relevant stakeholders from each of the quadruple helix domains.

Defining a stakeholder base at the very beginning of the project also allows to have a wider and more comprehensive idea of local problems and consent to design “local rooted” solutions, fostering a high degree of sustainability for the proGIreg actions. Involvement of stakeholders through a quadruple helix approach in the NBS implementation and Urban Regeneration Plan development processes is crucial from several points of view, allowing for:

- **Integration** (of information systems, institutions, resources);
- **Cooperation** (vertical, horizontal and transversal);
- **Continuity** (transcending political mandates);
- **Transparency** (open, public and understandable);
- **Accountability** (visibility of the shared policy process).
- **Sustainability** of the whole process.

All the above listed elements are the pillars for designing effective and efficient policies, or plans, having effectiveness and efficiency both in terms of territorial/urban governance and in results delivered to the affected/involved community.

Because this Spatial Analysis will support both FRC and FC with a basis for their participatory processes, a preliminary (general) analysis of main stakeholder groups is important at this stage in order to gauge the level of interest and importance of the local actors and target beneficiaries of proGIreg. It also assists shaping and orienting future project discourse at local level, in all cities, by allowing proGIreg partners to have an overview of the different stakeholder types in FRC and FC, the best channels for engagement for each of them, as well as the possibilities to build on pre-existing relationships and groups in the LL (FRC) or Urban Regeneration areas (FC).

Stakeholders can be divided according to their interests and influences into **primary and secondary stakeholders** (Clarkson, 1995). Primary stakeholders have a high level of interactivity and are vital for the success of a project. Secondary stakeholders affect or are affected by the project and its results but are not essential for its success.

A general starting point for the stakeholder identification and analysis in FRC and FC derives from the target groups, representing the quadruple helix, identified in the Application Form of proGIreg:

- **Academia**: universities and research institutions
- **Government institutions**: local government and municipalities
- **Civil society**: NGOs on different levels and individual citizens

- **Industry**: SMEs and entrepreneurs in developing, testing and replicating NBS

In the next chapters, each of the cities' stakeholder landscapes are being presented, starting from the internal (i.e. project partner) key actors, to the external primary, and secondary ones.

Primary stakeholders in proGIreg represent the groups and actors who will be affected and/or involved directly in either the LL implementation activities (FRC) or the co-creation of the Urban Regeneration Plans (FC). These groups include academia, SMEs, education and social protection agencies and other actors directly linked to the selected NBS and their desired outcomes at local level, but also the key actors which have the political responsibility, financial resources, authority, skills and expertise in green infrastructure planning and management, urban regeneration and urban development, social inclusion, job creation.

Secondary stakeholders, for the purpose of the project, are groups and individuals identified by the partners which have an indirect relationship to the LL implementation (FRC) or can influence the process of the Urban Regeneration Plan design (FC). Secondary stakeholders may not be directly engaged in the implementation or co-design processes but can still provide significant assistance to impact-creation of the project at local level (such as for example, local parishes).

In the Methodology for Spatial Analysis in front runner and follower cities, the stakeholders have been categorized as follows:

Figure 19 - Stakeholder types in proGIreg by role in the process of LL implementation or Urban Regeneration Plan co-development

Based on the categorization above, the following lists of stakeholders have been compiled cooperatively by the partner groups involved in the implementation of each FRC LL and each FC Urban Regeneration Plan (with the exception of Cascais Ambiente, who is the sole representative of FC Cascais in the partnership).

5.1. Stakeholder overview for Dortmund

The stakeholder overview has been compiled from the individual stakeholder lists per NBS type, and illustrates that there is a wide variety of local actors, to be included in the proGIreg NBS implementation processes.

The internal stakeholders in Dortmund have specific responsible partner for each NBS type; with the exception of NBS 4, which is going to be led by the NGO die Urbanisten together with two SMEs (Hei-tro Gmbh and aquaponik manufaktur GmbH). Further implementation of actions will be led either by the municipality or by the university partners, as is illustrated below:

INTERNAL STAKEHOLDERS INVOLVED IN THE NBS IMPLEMENTATION

- NBS 1: City of Dortmund, Department of Urban Renewal
- NBS 3: University of Applied Sciences, Soest (FH Soest)
- NBS 4: Urbanisten; also Hei-tro and FH Soest
- NBS 6: City of Dortmund, Department of City Renewal
- NBS 8: University of Applied Sciences, Soest

Overview of primary stakeholders – All NBS

Role	Type	Name
Users / Beneficiaries	**Citizens**	Inhabitants of Huckarde using the Deusenberg for leisure activities (NBS 1) Citizens involved in planning / implementing / running food forest/ permaculture orchard (NBS 3) Residents of Huckarde resp. Dortmund, refugees, long-term unemployed people (NBS4)
	Civil society associations/ multipliers	Nature conservation associations/ organizations (BUND, NABU, etc.) – NBS 3, 4, 8 Lernort Bauernhof, Stadt und Land NRW, Aufbruch am Arrenberg e.V., QueerBeet Hörde, (NBS 3, 4) KITZ.do (NBS 3, 4, 8)
	SMEs	Aquaponik Manufaktur (NBS 4) Werkhof Projekt gGmbH (NBS 4)

		Grünbau (long-term unemployed persons) – NBS 8
	Academia	University of Applied Sciences South-Westphalia (NBS 4)
Governance	**City of Dortmund**	Department of Urban Planning and Building Regulation (StA 61) – NBS 1, 3, 4, 6 Department of Urban Renewal (StA 67) – NBS 1, 3, 4, 6 Department of Youth Welfare (StA 51) – NBS 1 nordwärts (StA 1) Department of Public Order (Veterinary, StA 32/2) – NBS 4, 6 Department of the Environment (StA 60) – NBS 8 Department of Civil Engineering (StA 66) – NBS 6 International Garden Exhibition Ruhr 2027: planning committee (all NBS)
	Local politicians	District mayor Local policy parties' representatives (All NBS)
Providers	**Owners of land**	EDG – Entsorgung Dortmund GmbH– owner of landfill (NBS 1, 6) Not known yet (NBS 3, 4) Thelen Holding GmbH Stiftung Industriedenkmalpflege und Geschichtskultur RAG Montan Immobilien (NBS 4)
	Service provider / industry representatives / SMEs	NBS 1: Owner and operator of solar factory - Entegro NBS 3: Possible start-ups, companies up-/downstream value chain (e.g. -plant providers and nurseries, processing fruits/ products, etc.), Lernbauernhof Schulte-Tigges, Werkhof Projekt gGmbH NBS 4: Building contractor DSW21 (water, energy, internet supplier) Companies up-/ downstream value chain Exner Grüne Technik GmbH Ratz Aqua & Polymertechnik GmbH & Co.KG Fischgut Ulrich Schulte Fischgut primus NBS 8: Pollinator service provider, APM, Werkhof Projekt GmbH
Influencers	**Civil society associations/ multipliers**	UmweltKulturPark Dortmund (NBS 3) IHV Interessensverein Huckarder Vereine (NBS 3, 4) Westfälische Almetalbahn (WAB) e.V. (NBS 3, 4) Huckarder Pfadfinderkreis e.V. (NBS 3, 4) SJD Die Falken (NBS 3, 4) Gartenverein Glückauf Hansa (NBS 4) Huckarde für Huckarde e.V. (NBS 3, 4) Dortmunder Netzwerk Geflüchtete (NBS 3, 4) Lokal Willkommen (NBS 3, 4) Citizens forum (NBS 3, 4)

		Educational institutions, Huckarde kindergartens and schools[1] (NBS 3, 4, 8) Kokerei Hansa (educational programmes for kids/teenagers), Bee keeping associations,
	Deconcentrated institutions / initiatives	stakeholders involved in the EU COST-Action proposal „Urban Food Forests“ (submitted) – NBS3 Actors involved in the CoproGrün Project (NBS 8) The international trade fair for plants - IPM Conference, Essen (each January) – NBS3

Overview of secondary stakeholders

Role	Type	Name
Users/ Beneficiaries	**Civil society associations** **Citizens in general**	ADFC Dortmund – NBS 1 VeloCityRuhr – NBS 1 Citizens of Huckarde – General (NBS 6)
Governance	**-**	-
Providers	**Civil Society**	Förderverein Permakultur Dortmund e.V. – NBS 3 Permakulturverein Dortmund – NBS 3 ADFC Dortmund – NBS 6 Kreisimkerverein Dortmund – NBS 8 Imker Familie Lückemann – NBS 8 Imkerverein Castrop-Rauxel – NBS 8 Imkerverein Dortmund-Hörde – NBS 8 Bio-Imkerei Vera und Hartmut Thiel – NBS 8 Menschen an der Emscher e.V. – NBS 6
Influencers	**Institutions and government agencies**	Wald und Holz NRW – NBS 3
	Media and press	For all NBS 3, 4, 8: RuhrNachrichten, Westfälische Rundschau WDR FarbFilmFreun.de GmbH Co.KG

[1] Kindertagesstätte Abenteuerland, Katholischer Kindergarten Sankt Josef, Gustav-Heinemann-Gesamtschule, Geschwister-Scholl-Gesamtschule, Hansa Grundschule, Urbanusgrundschule, Grafenschule, Gemeinschaftliche Widey-Schule, Westricher Schule as well as other schools of surrounding settlements

		Radionrw, Radio 91,2, ElDoRadio Wochenkurier Coolibri Heinz-Magazin Bodo Westanzeiger Dortmund Cityanzeiger Dortmund Ruhr-guide Revier-magazin.de Nordstadtblogger.de Urbanisten Blog blog www.speiseraeume.de Facebook, Instagram

5.2. Stakeholder overview for Turin

The Turin Living Lab will be implemented in a formerly-industrial neighborhood at the Southern periphery of the city (Mirafiori Sud), currently characterised by social, economic and built urban environment challenges which strongly orient actions towards the need to regenerate, secure and integrate spaces and communities.

In this sense, the internal stakeholder group in proGIreg is represented by the collaboration of the municipality with local universities (Università degli Studi Di Torino, Politecnico di Torino), with citizen associations and NGOs already working in the area (MIRAFIORI, ORTIALTI), SMEs and industry (DUAL, ENVIPARK):

INTERNAL STAKEHOLDERS INVOLVED IN THE NBS IMPLEMENTATION

- COTO – Comune di Torino
- UNITO – Università degli Studi Di Torino
- POLITO – Politecnico di Torino
- MIRAFIORI – Fondazione della comunità di Mirafiori
- ENVIPARK – Parco Scientifico E Technologico Per L'Ambiente – Environment Park SPA
- DUAL s.r.l.
- Orti Alti

Due to the nature of the Mirafiori Sud district, an important part of the stakeholders identified by FRC Turin represent civil society actors – associations of parents, NGOs protecting the interests of vulnerable groups (the homeless, Roma, Sinti, asylum seekers).

Overview of primary stakeholders

Role	Type	Name
Users / beneficiaries	**Civil society**	social housing residents
	Education	Istituto Comprensivo Cairoli (Comprehensive School “A. Cairoli”) Istituto Comprensivo Salvemini (Comprehensive School “Salvemini”)
	Civil society	Associazione genitori Cairoli (Parents association)
		Associazione Genitori Castello di Mirafiori (Parents association)
		Association for homeless men - Coop. Stranidea / Serivizio Adulti in difficoltà, Comune di Torino
		Association for homeless women - Coop. Animazione Valdocco / Serivizio Adulti in difficoltà, Comune di Torino

		Association for migrants - Coop. Progetto Tenda on the behalf of Consorzio Kairos / Ufficio Stranieri Comune di Torino
		Associazione CEPIM – Torino (Center for persons with Down Syndrome)
Governance	**Local organisations**	Comitato Borgata Mirafiori (Township committee)
	District government	Circoscrizione 2 (2nd Neighbourhood)
	City administration and agencies	Città di Torino - Servizio Verde pubblico (Green spaces public service) Città di Torino - Servizio Grandi Opere del Verde (Large green infrastructure public service)
		The Metropolitan Green Agency - future unique reference point for institutions, citizens and visitors in relation to the green dimension.
	Environmental protection	ARPA Piemonte (Regional Environmental Protection Agency)
	Local health authority	ASL Città di Torino (Local Health Authority)
Providers	**Social Housing agency**	ATC (Territorial Agency for Housing)
Influencers	**Network of associations**	Mirafiori Social Green
	Enterprises and industry	TNE, FCA
	Non-profit projects	Essere anziani a Mirafiori Sud (NGO “Being elderly in Mirafiori Sud”)”), Casa Farinelli

Overview of secondary stakeholders

Role	Type	Name
Governance	**Local administration**	servizi sociali ex circoscrizione 10 (10th Circumscription Social Services)
Secondary / beneficiaries	**Local health provider**	Asl Città di Torino – Neuropsichiatria (Local Health Authority – Neuropsychiatric)
		Asl Città di Torino - Servizio dipendenze (Local Health Authority – dependencies service)
	Education	IIS Primo Levi
		ENGIM San Luca
	Civil society organisation	"+1 nel mondo"
		Benvenuti in Italia
		Casa del Mondo
	Civil society	Daycare Centers for Elderly: Centro Anziani Via Candiolo, Centro Anziani Via Morandi
	Civil society: shop owners' associations	UNIONE MIRAFLORES
		VIA PLAVA e VIE LIMITROFE
		A.MI.CO. 10
		A.COM.ART
Governance	**Metropolitan area administration**	Città Metropolitana di Torino
	Regional administration	Regione Piemonte

Providers (Services and Data)	**Cleansing department**	Amiat
	Integrated water services	SMAT
	Research institution	Inrim – Istituto Nazionale di Ricerca Metrologica
Potential secondary influencers	**Non-profit organisations and trade associations**	OrMe - Orti Metropolitani Torinesi
		Associazione Italiana Persone Senza Dimora / homeless people Italian Association
		Coldiretti
		I passi
		cpg strada delle cacce
		Mirafleming
	Church communities	Santi Apostoli, San Luca, Beati Parroci, San Barnaba

5.3. Stakeholder overview for Zagreb

The Zagreb LL has also been shaped as a quadruple helix, comprising of the City of Zagreb and the Bureau of Physical Planning (public authority), the University of Zagreb (academia), “Green and Blue Sesvete” Association/ZIPS (NGO), and an SME which will explore business models for promoting and upscaling the NBS (Komfor Klima Gruppa d.o.o.):

INTERNAL STAKEHOLDERS INVOLVED IN THE NBS IMPLEMENTATION

- ZAGREB – Municipality of Zagreb (involved in all NBS)
- AF Zagreb – University of Zagreb
- ZZPUGZ – City of Zagreb Bureau for Physical Planning (Involved in NBS 7)
- ZIPS – Udruga Zelene i Plave Sesvete (NGO) (Involved in NBS 3)
- KKG – Komfor Klima Grupa d.o.o. (Involved in NBS 4, 5)

Given the challenges of the Sesvete area, in which the LL will be implemented (lack of amenities and of a common identity in spite of a very young population, accessibility and urban quality issues), the stakeholders identified by the FRC which are central to the project represent mainly the civil society (social inclusion and entrepreneurship), as well as education stakeholders and service providers.

Overview of primary stakeholders

Role	Type	Name
Users / beneficiaries	**Civil society**	NGO NOVI JELKOVEC -The residents of Novi Jelkovec
		NGO Bosnian Roma Association - Roma people in the Sesvete area
		ISKRA NGO– Social entrepreneurship and new technologies
		KRILA NGO– Therapy horseback riding
	Education	SESVETE Gymnasium
		SESVETE technical school
		Music school
		People's University of Sesvete

		Zagreb Polytechnics
		Faculty of Agriculture
	SME	Tokić d.o.o car dealer
Governance	**Local government unit**	SESVETE District Council
		CENTAR Local Committee
		SESVETSKA SOPNICA Local Committee
		NOVI JELKOVEC Local Committee
Providers	**Public amenities**	Museum of Prigorje
Influencers	**Local prominent figures**	Ivan Miličević – local athlete

Overview of secondary stakeholders

Role	Type	Name
Users / beneficiaries	**Education**	The Faculty of Agriculture
		elementary schools
		Faculty of Kinesiology
	Civil society	the Lipa Mountaineering Association
		local sports clubs
	SME	the iGrow Indoor Gardening Shop
Governan	**Representation**	Crafts Chamber

ce	**institutions**	
Providers	**Public service providers**	Libraries of the City of Zagreb
		National Hydrometeorological Institute
		Social Welfare Center of Zagreb, Sesvete Branch
		the Sesvete Parish

5.4. Stakeholder overview for Cascais

The Cascais Urban Regeneration Plan will be coordinated by **Cascais Ambiente** as the main project partner. Cascais Ambiente is the Environmental Municipal Enterprise responsible for waste collection and also for municipal management of urban greenspace, natural spaces, and the coastline, as well as environmental education and awareness.

For the purpose of better framing the Urban Regeneration planning process, Cascais Ambiente has identified and will involve the following key actors at local level:

Overview of primary stakeholders

Role	Type	Name
Users / beneficiaries	**Civil society**	Residents
Governance	**Policy makers and politicians**	São Domingos de Rana Parish Cascais Municipality
Providers	**Public service providers**	Cascais Municipality Social intervention office (Gabinete + Perto) that develops activities with the residents, and gives them training and support for several social issues Private land owners
Influencers	**Civil society organisations**	Local association ARESC - Association for social and educational responses, in charge of the local FEBA (Food Bank) and educational and social support activities (http://www.aresc.pt/publico/)

Overview of secondary stakeholders

Role	Type	Name
Influencers	**Civil society organisations**	**IDEIA** - O Nosso sonho –is a cooperative for social solidarity and education, from Tires. **http://onossosonho.pt/wp/** **Scouts** – New headquarters in the Regeneration Area, 597 from Tires, catholic scouts from the CNE. Centro Comunitário de Tires – **Tires community center**, a catholic organization serving the local community. **http://www.cctires.org/**

Beyond these stakeholders, additional programmes and actors have been identified which could be involved in Task 2.3:

- **FACTOR C** Local Development Program Community was created to tackle the strong economic and social asymmetries between the coastal and rural areas in the municipality. The interior parishes of S. Domingos de Rana and Alcabideche are recognized as poorer and need investment for regeneration, and FACTOR C provides investment funds to support entrepreneurship and new jobs.
- **Local Health Academy** (Academia da Saúde): raised from the participatory budget, is a local office promoting health, information, challenges, lifestyle, connected to Cascais municipality services.
- **Agency DNA Cascais**: is a non-profit organization for Cascais, an Entrepreneurial Municipality. DNA Cascais's aim is to contribute especially to the promotion of social and young entrepreneurship in Cascais.

5.5. Stakeholder overview for Cluj Metropolitan Area

The Cluj-Napoca FC planning process will be coordinated by the **Cluj Metropolitan Area Intercommunity Development Association** and **Urbasofia,** as the main project partners involved in proGIreg:

INTERNAL STAKEHOLDERS INVOLVED IN CREATING THE URBAN REGENERATION PLAN:

- **Cluj Metropolitan Area Intercommunity Development Association:** partnership structure comprising of the municipality of Cluj-Napoca, second largest city in Romania, and 18 administrative-territorial units (communes) from its immediate vicinity. The General Assembly structure is composed of the mayors (elected local representatives) and local councillors of each of the previously mentioned administrative areas. The president of the Association is the Mayor of Cluj-Napoca.
- **URBASOFIA** is a town and regional planning company specialized in managing complex planning processes and EU projects, conducting high-level academic research around integrated, participatory, realistic and smart-oriented solutions to pressing urban problems, both socio-economic as well as environmental. Urbasofia have developed the Integrated Development Strategy for the Cluj Metropolitan Area (2015-2030).

Within proGIreg, Cluj-Napoca tackles challenges related to the re-consideration of post-industrial heritage, as well as the blue-green Sasar corridor. As such, it aims at reconciling vacant and underused spaces with the needs of the local citizens and the ever-increasing local initiatives (cultural, artistic and creative industries). Preliminarily, the stakeholder group to be involved within the co-design activities of Task 2.3 comprises of universities, policy makers and professional associations, environmental institutions and service providers, as well as local industry, SME, start-up and cultural / activist associations for the environment.

Overview of primary stakeholders

Role	Type	Name
Users / beneficiaries	**Civil society**	Residents
	Academia	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca (UASMV) Technical University Cluj-Napoca Babeș-Bolyai University (UBB) Cluj-Napoca
Governance	**Policy makers and politicians**	Cluj-Napoca Municipality Cluj County Council North-West Regional Development Agency of Romania Urbanists Register Romania

	Local and upper-scale institutions	Architects' Order Romania, N-W Regional Branch APM Cluj Divizia de Inovare CCC APM Cluj ROMSILVA CIIC
Providers	**Public service providers**	Compania de Apa Somes SA Administrația Bazinală Someș Tisa Potentially: CFR Călători and CFR Infrastructură
	Industry and SMEs	Cluj IT Cluster Consiliul Consultativ pentru Antreprenoriat si Inovare in IT Cluj Transylvania Energy Cluster-TREC ARIES - Romanian Association for Electronic Industry and Software
Influencers	**local organisations**	Local activists Iniative Groups Parcul Est Somes Delivery Urbannect

Secondary stakeholders

Secondary stakeholders will be identified during the preparatory phase to the Task 2.3, and will mainly comprise of organisations and non-profits (NGOs – eg. Visit Cluj, Grupul Pont), but also potentially new stakeholders or initiatives.

5.6. Stakeholder overview for Piraeus

On behalf of the FC Piraeus, the following organisations are involved as direct partners in Task 2.3 activities:

INTERNAL STAKEHOLDERS INVOLVED IN CREATING THE URBAN REGENERATION PLAN:

- **Municipality of Piraeus:** The concerning Directorates of the Municipality of Piraeus such as the Directorate of Environment and Green, Directorate of Architectural and other Technical Works, Directorate of Building Services and Urban Design, Directorate of Roads and Sewerage and the Directorate of Municipal Property and Cadastre would be addressed
- **KEAN - Cell of Alternative Youth Activities**: an NGO founded in 2004 in Athens, Greece. It constitutes an Open, Social Youth Community that promotes universal values, such as peace, human progress and well-being and the protection of our environment. The main objective of KEAN is to design and implement activities, which lead to the improvement of quality of life while focusing on the protection of environment, including the promotion of environmental education and ICT (Integrated Computer Technologies), and youth mobility and education.

As envisioned by the FC, primary Stakeholders constitute public and private high-level stakeholders that would participate in a stakeholder workshop, to communicate and discuss the proposed regeneration plan of post-industrial urban areas within Piraeus and invite their engagement.

Overview of primary stakeholders

Role	Type	Name
Users / beneficiaries	**Academia / Education**	Piraeus University of Applied Sciences (Technological Education Institute of Piraeus) University of Piraeus Agricultural University of Athens (AUA)
Governance	**Local and Regional Administration**	Attica Region Forest Service-Piraeus Branch Ministry of Culture and Sports Ministry of Culture and Sports Ministry of Environment, Energy and Climate Change Ministry of Tourism Decentralized Administration of Attica
Providers	**Public service providers**	Environmental Association of Municipalities of Athens and Piraeus – PESYDAP Hellenic ICOMOS

	Associations and interest groups	Hellenic Ornithological Society Hellenic Society for the Protection of Nature (HSPN) Institute of Geology and Mineral Exploration (IGME) Panhellenic Association of Landscape Architects (PHALA) WWF Greece
Influencers	**Local organisations**	Green Fund, 2018 Greek National Tourism Organisation (GNTO) Hellenic Chamber of Hotels KEAN - Cell of Alternative Youth Activities Piraeus Bank S.A. Piraeus Chamber of Commerce and Industry (PCCI) Piraeus Port Authority S.A. (PPA) SEV - Hellenic Federation of Enterprises

Overview of secondary stakeholders

The owners of private or public property (residential, commercial, industrial, post-industrial, land) as well as the lay public constitute the secondary stakeholders and may affect or even define the success and/or failure of future regeneration plans of post-industrial urban areas within Piraeus. Secondary stakeholders would participate in thematic focus group sessions and engagement activities to investigate their perceptions and attitudes or determine their responses to particular proposals for the regeneration of post-industrial urban areas within Piraeus.

Role	Type	Name
Users / beneficiaries	Civil society and the citizens	Owners of private or public property (residential, commercial, industrial, post-industrial, land) lay public

5.7. Stakeholder overview Zenica

The Zenica FC planning process will be coordinated by the **Municipality (COZ) and ZEDA,** as the main project partners involved in proGIreg:

INTERNAL STAKEHOLDERS INVOLVED IN CREATING THE URBAN REGENERATION PLAN:

- COZ: City of Zenica
- ZEDA: Zenica rezvojna agencija, a non-profit organization owned by the City. The Agency's mission is to contribute, using every adequate means, to the promotion, incentive and development of entrepreneurship in general, especially focusing on the promotion of social and young entrepreneurship in Zenica. Agency ZEDA acts mainly by developing skills and knowledge, and promoting and stimulating creativity and innovation, in an entrepreneurial environment as a start-up incubator.

In this phase, FC Zenica has identified the core group of local organisations which will be part of the Urban Regeneration planning process. Given the particular challenges to transforming brownfields into productive green areas, this group relies on the presence of upper-level authorities, universities, utility providers, but also the support of NGOs and – potentially – other public and private organisations, to be identified closer to the actual execution of Task 2.3:

Overview of primary stakeholders

Role	Type	Name
Users/ beneficiaries	**Civil Society**	Eko forum NGO Forum Građana Zenica NGO
	Academia	Faculty of Mechanical Engineering
	Providers	Alba Ltd (utility company)
Governance	**Administration**	Zenica-Doboj Canton – cantonal level Federal Governance – entity level
Providers	**Spatial planning**	Public company for spatial planning
Influencers	**Local organisations**	Local organisations will be identified at a later stage

5.8. Conclusions on the stakeholder landscape in proGIreg

Within proGIreg, the LLs are all implemented in fairly different socio-economic contexts, an aspect that is underlined by the data collected by the cities as well (see next chapters and Annex 1).

In **Dortmund**, the project actions subscribe to a much ampler, long-term ambition at Metropolitan level to recover, valorise and green post-industrial areas, and to further develop the Emscher Landschaftspark GI, and as such leverage on existing stakeholder configurations which have been already activated; including through involvement and liaising with other existing projects (e.g. COST actions). The advantage of fitting proGIreg into a well-consolidated GI development framework is evident also in the partner's extensive network of service providers, businesses, start-ups and SMEs fitting within the different NBS value chains, together with the private owners of the plots on which the LL implementation will take place.

Within **Turin's Mirafiori district**, the LL actions come to respond to specific local needs of the citizens, most prominently to provide green urban commons and use the NBS as tools for enhancing social cohesion, inclusion and entrepreneurship. Hence, Turin leverages on involving social NGOs and associations, which are already well-connected to the needs of the larger beneficiary base at local level.

Lastly, **Zagreb's Sesvete district** is confronted with the challenges of a strongly growing peripheral community, young, dynamic but lacking access to amenities, quality GI and generally missing a common identity. Here, proGIreg NBS should act as a catalyst for a new community and foster local rooting and a sense of ownership of Sesvete, and this intention is apparent in the choice of the main stakeholders (particularly actors supporting inclusion and social entrepreneurship).

In summary, within the three FRC, primary and secondary stakeholders are very accurately identified, and they correspond to the proGIreg quadruple helix approach, incorporating local governments, citizens and NGOs, SMEs, and academia as active partners of the NBS piloting. The Dortmund, Turin and Zagreb LLs intend involve key internal and external stakeholders from the co-design (WP2), to the implementation (WP3) and to supporting the evaluation phase (WP4), either directly (local governments), or indirectly (other local partners). The challenges will further reside in the capacity of involved partners to effectively manage ample, diverse constellations of stakeholders coming from multiple backgrounds, and to integrate their competencies and fields of expertise within the NBS co-design and implementation processes.

It is important to note the necessity of allotting sufficient time, effort and resources to creating an operational governance context, given the transversal nature of productive NBS and their ability to produce visible change in a very wide array of domains (e.g. land use, water management; employment, social welfare, health, air quality, all subscribing to the four key assessment domains). In this regard, the FRC have identified the respective urban planning, green spaces, social services and other departments / municipal services of relevance within the local government, but involving them concomitantly in a unified dialogue should be allotted proper effort and time, as it can normally be a challenge. Administration and decision-making actors have been identified across the board as key stakeholders, along with academia and NGOs, specifically those supporting social causes and social inclusion. A more diverse approach has been taken with respect to businesses and SMEs, with Dortmund leveraging on the existence of enterprises within the NBS value chain more than the other two cities. Generally, all three analysed FRC have included representatives from each of the quadruple helix sectors in their local LL stakeholder list, which ensures a holistic and inclusive implementation of the project in future.

Within FC, the process of identifying stakeholders is still incipient, and a more in-depth overview of the actors will become apparent as the cities observe proceedings of LL implementation in the FRC. For creating viable, sustainable and shared Urban Regeneration Plans, it is clear that FC need to involve just as much of an ample constellation of stakeholders within the co-design processes, leveraging on the local knowledge and capacities of both public and private actors from different backgrounds, in line with the NBS, which they choose to focus on. Thorough engagement is needed, because beyond simple contributions (data, information, approval or disproval of proposals), the Regeneration Plans need to ensure large-scale ownership, public acceptance and local rooting in order to be successfully implemented in the future. In this sense, FC could already start building on pre-existing relationships and groups in their cities, for example by involving well-established local associations (e.g., of homeowners in the Urban Regeneration Plan area) which can further disseminate the project proceedings and act as a collector of requirements and feedback from citizens. Some of the FC have not identified the latter as key stakeholders, but citizens are the ultimate beneficiaries of the Urban Regeneration Plans' future implementation.

In closure, all cities have provided evidence of a multi-stakeholder landscape for the governance of future NBS actions, aligned with the quadruple-helix approach and related to all four NBS assessment domains. In general, the identification of local actors indicates a complex network of public and private organisations, in line with the NBS selected either for piloting (FRC), or for the development of the Urban Regeneration Plans (FC). The different approaches between FRC can be linked to the local development context. For example, previous experiences in the area of Huckarde in Dortmund and Public-Private Partnership (PPP) collaboration have generated a list of stakeholders in which the private ones are very prominent, while the socio-economic challenges in Turin's area resulted in a list of stakeholders particularly focused on public actors and NGOs of social inclusion and innovation. The FC process of stakeholder identification is in its beginnings, albeit having started well, and it is expected that in the future the key stakeholder group will be enlarged as cities will further refine their ambitions with respect to including the proGIreg NBS in Urban Regeneration Plans.

The stakeholder identification is a first step for future stakeholder involvement. Co-creation and co-ownership of NBS by the local quadruple helixes, a core aim of proGIreg, will strongly depend on participation and cooperation in NBS planning and implementation. These actions will be further developed in FRC in Task 2.2 (Co-design processes in Front Runner Cities), and in FC in Task 2.3 (Urban Planning in Follower Cities).

6. Spatial data and indicators in proGIreg cities

6.1. The indicator framework

In order to assess benefits of the NBS to be implemented in FRC against a baseline, the Methodology for Spatial Analysis (D2.1) provided an initial list of analysis subdomains and afferent quantitative indicators, for each of the four key assessment domains of proGIreg: socio-cultural inclusiveness, human health and wellbeing, ecological and environmental restoration, and finally economy and labour market. This initial dataset relies solely on pre-existing data from European, national, regional or local databases of FRC and FC, and in FRC will be further completed with quantitative and qualitative data collected through the tasks of WP4. Indicators from the initial list delivered through the Methodology for Spatial Analysis relied on previous work carried out through the Horizon 2020 „EKLIPSE" Project (http://www.eklipse-mechanism.eu), and „CITYKEYS" Project (http://citykeys-project.eu). As most of the indicators within the two frameworks are key performance indicators aimed at assessing impacts of certain actions or projects, for the purpose of D2.2 and its contribution towards the proGIreg analysis baseline, those process indicators have been transformed into (initial) state indicators, as described in the D2.1.

The final list represents an integration between data requirements of both WP2 and WP4, and has been applied to both FRC as well as FC at two spatial scales, if applicable. As such, some differentiations have been made marked individually in the indicator list based on:

1) The scale at which information is required (City scale and / or LL area (FRC) / Urban Regeneration Plan area (FC)),

2) Whether the information is mandatory for all cities or just FRC.

Overall, datasets of 71 indicators have been requested from the FRC, and sets of 47 indicators from the FC, on the following subdomains of spatial assessment:

1. **Socio-cultural inclusiveness:**
    1.1. **Demographics**: general data on the population and its dynamics
    1.2. **Social and cultural inclusiveness**: employment, material deprivation, diversity statistics
    1.3. Education and access to social and cultural services and amenities
    1.4. Housing and the density of the built environment
2. **Human health and wellbeing:**
    2.1 **Health**: incidence of diseases, life expectancy
    2.2 **Wellbeing:** green space, urban safety
3. **Ecological and environmental restoration:**
    3.1 Land use and Vegetation: structure and qualities of green spaces, extent of brownfields
    3.2 Climate / Meteorological data
    3.3 **Air Quality:** concentrations of O3, PM2.5 and 10, VOC, GHG inventory
    3.4 Soil quality and concentrations
    3.5 Water quality
    3.6 **Urban environment – heat island effect**
4. **Economy and Labour market:**
    4.1 **Market labour and economy indicators:** GDP, structure of jobs, turnover in the green sector
    4.2 **Gentrification indicators**: employment and unemployment, revenues, property market values, services
    4.3 **Tourism and attractiveness indicators**: tourists, events, expenses in local retail
    4.4 Taxes, Investment & Financing: local taxes, green investment

While the list leverages on the most common statistics from municipalities or national / regional statistics offices, there have been differences in indicator definition and collection. In all cases, where there have been differences, those have been specified in the Annex 1 documents, together with indicator replacements (e.g. Building Coverage Ratio (%) has been replaced with total area covered with buildings (ha) in the case of FC Cluj; material deprivation rate has been replaced with total number of people receiving social assistance; etc.).

The aim of the indicator collection processes has been to provide a compact comparable base of spatial information between cities (FRC and FC), and between the start of the project and its end. In this sense, achieving cross-city comparability has been a challenge due to the heterogeneity of the available indicator sets. However, there is still significant critical mass for ensuring a starting point ("state of art") in the development level of FRC and FC, as well as – where available – their LL / Urban Regeneration areas.

6.2. Availability of indicator data in proGIreg cities

Based on the assessment framework co-developed between WP2 and WP4, the data requests were processed by the proGIreg cities, which have in turn delivered their indicator collection sheets, included in Annex 1 and available as editable excel files on the project intranet platform.

For the FRC, the indicator collection and subsequently the SWOT analysis have been carried out at city level and at Analysis Area level. For FC, these actions have been developed based on the resources and access to data, which each of the cities had:

- Cascais, having already identified the Urban Regeneration Plan area and having also access to microdata for the area, collected indicators and performed the SWOT analysis on both levels – city and regeneration area;
- The Cluj Metropolitan Area performed the SWOT analysis at metropolitan level and at Cluj-Napoca city level, given that the Urban Regeneration Area crosses the whole city east to west, and further territorial refinement was not possible from the point of view of data accessibility;
- Piraeus delivered indicators and the SWOT analysis at municipal level; further refinement of characteristics of the two districts, which have been identified as potential Urban Regeneration Plan areas, has been conducted via a more descriptive information, leveraging on available information from the municipal office.
- Finally, Zenica has had access to a limited indicator set, at municipal level, and consequently performed the SWOT analysis on a single level.

Please refer to Table 1 in Chapter 3 for a more detailed per-partner identification of the Analysis Areas at the level of which available data was collected.

An overview of indicator availability is presented below (where “LL” is the data pertaining to the Living Lab Analysis Area level, and “URA” is the data pertaining to the Urban Regeneration Area of FC. Green cells identify available data, and brown ones, unavailable):

Table 3 - proGIreg Spatial Analysis indicators and their availability in the FRC and FC

Legend	*Available*	*NOT available*	*Not requested*	*Upper scale*

		1.1 Dortmund	1.2 Dortmund LL	2.1 Turin	2.2 Turin LL	3.1 Zagreb	3.2 Zagreb LL	4.1 Cascais	4.2 Cascais URA	5.1 Cluj Metro	5.2 Cluj-Napoca city	6.1 Piraeus	7.1 Zenica
SUBDOMAIN	**INDICATOR**	**INDICATOR AVAILABILITY**											
		1. SOCIO-CULTURAL INCLUSIVENESS											
1.1 Demographics	1.1.1 Total population	*Available*											
	1.1.2 Population density												
	1.1.3 Population growth rate						*NOT available*						
	1.1.4 Migration rate												
1.2 Social and cultural inclusiveness	1.2.1 Material deprivation rate		*Not requested*							*Upper scale*			
	1.2.2 Work intensity												
	1.2.3 Diversity statistics												
1.3 Education and access to social and cultural services and amenities	1.3.1 Educational attainment												
	1.3.2 Recreational or cultural facilities												
	1.3.3 Accessibility of public urban green spaces												
1.4 Housing	1.4.1 Housing quality												
	1.4.2 Public housing												
	1.4.3 Housing affordability												
	1.4.4 Density of the built environment												
		2. HEALTH AND WELLBEING											
2.1 Health	2.1.1 Incidence of cardio and respiratory diseases												
	2.1.2 Incidence of allergic disease												
	2.1.3 Incidence of chronic stress/ mental diseases												
	2.1.4 Obesity rate												

		1.1 Dortmund	1.2 Dortmund LL	2.1 Turin	2.2 Turin LL	3.1 Zagreb	3.2 Zagreb LL	4.1 Cascais	4.2 Cascais URA	5.1 Cluj Metro	5.2 Cluj-Napoca city	6.1 Piraeus	7.1 Zenica
	2.1.5 Life expectancy at birth												
2.2 Wellbeing	2.2.1 Green space per capita												
	2.2.2 Urban safety – crime												
	2.2.3 Urban safety – accidents												
	3. ECOLOGICAL AND ENVIRONMENTAL RESTORATION												
3.1 Land use and Vegetation	3.1.1 % of green spaces												
	3.1.2 structure of green spaces (trees)												
	3.1.3 structure of green spaces (shrubs)												
	3.1.4 structure of green spaces (meadows)												
	3.1.5 % Surface of brownfields												
	3.1.6 % Surface of polluted brownfields												
	3.1.7 Canopy cover												
	3.1.6 Leaf Area Index												
	3.1.7 NDVI												
3.2 Climate / Meteorological data	3.2.1 Precipitation												
	3.2.2 Relative humidity												
	3.2.3 Air temperature												
	3.2.4 Wind strength												
	3.2.5 Wind direction												
3.3 Air Quality	3.3.1 Ozone concentration												
	3.3.2 NOx concentration												
	3.3.3 PM 2.5 concentration												
	3.3.4 PM10 concentration												
	3.3.5 VOC Concentration												
	3.3.6 GHG inventory												
3.4 Soil	3.4.1 Soil quality												
3.5 Water	3.5.1 Water quality												

		1.1 Dortmund	1.2 Dortmund LL	2.1 Turin	2.2 Turin LL	3.1 Zagreb	3.2 Zagreb LL	4.1 Cascais	4.2 Cascais URA	5.1 Cluj Metro	5.2 Cluj-Napoca city	6.1 Piraeus	7.1 Zenica
3.6 Urban environment	3.6.1 Heat island effect												
		4. ECONOMY AND LABOR MARKET											
4.1 Market labour and economy indicators	4.1.1 GDP per capita												
	4.1.2 Businesses in the area - Industrial												
	4.1.3 Businesses in the area – Commercial												
	4.1.4 Businesses in the area - Offices												
	4.1.5 Public jobs												
	4.1.6 Private jobs												
	4.1.7 Public green jobs												
	4.1.8 Private green jobs												
	4.1.9 Qualified jobs												
	4.1.10 Non-qualified jobs												
	4.1.11 Turnover in the green sector												
4.2 Gentrification indicators	4.2.1 Employment rate												
	4.2.2 Unemployment rate												
	4.2.3 Revenues by household												
	4.2.4a Sale value for residential use												
	4.2.4b Rental value for residential use												
	4.2.5a Value for commercial/ industrial/ office use												
	4.2.5a Rental value for commercial/ industrial/ office use												
	4.2.6 Free services												
	4.2.7 Basic utilities												
4.3 Tourism and attractiveness indicators	4.3.1 Current number of tourists												
	4.3.2 Number of temporary events												
	4.3.3 No. of foreign students												
	4.3.4 Local expenses												
	4.4.1 Local taxes												

		1.1 Dortmund	1.2 Dortmund LL	2.1 Turin	2.2 Turin LL	3.1 Zagreb	3.2 Zagreb LL	4.1 Cascais	4.2 Cascais URA	5.1 Cluj Metro	5.2 Cluj-Napoca city	6.1 Piraeus	7.1 Zenica
4.4 Taxes, Investment & Financing	**4.4.2 Green investment programs/funds**												

6.3. Per-partner indicator framework overview

FRC Dortmund

FRC Dortmund provided the Spatial Analysis Indicator Database in Annex 1.1, in which it has collected all requested available information. Except for seven indicators collected for a single year (2018, except educational attainment, which has been provided as 2011 census data), most indicators have been submitted with multi-annual values (at least 2013-2017), which allowed for comparability across recent times, and the assessment of trends.

Data availability is sufficient for establishing a good baseline especially for the key assessment domain “Socio-cultural inclusiveness”. The FRC lacks city-scale information pertaining to the work intensity, accessibility of green spaces, homeownership, as well as heath data (all together – a crosscutting issue for all cities), structure of green spaces, soil and water indicators, employment, as well as number of tourists and a few other secondary indicators. Data for the LL analysis area is slightly more limited, but nevertheless, enough to support an assessment on the state of the art of local development before NBS implementation.

FRC Turin

Within the Spatial Analysis Indicator Database in Annex 1.2, Turin provided the requested indicator list, and data availability has generally been good for all key assessment domains. Nine of the indicators have been collected for a single year, while the rest have been provided for a period (range 2008-2017), or for two non-consecutive years (in the case of property values, where single-surveys were used as sources). Like in Dortmund’s case, this provides comparability across a more recent period, and allows assessment of trends.

Barring housing indicators, data availability for the first three assessment domains is very good; Turin is the only city which had access to health indicators at LL level, and which also could provide detailed information on the climate, meteorological, air quality and soil data. The FRC lacks city-scale information pertaining to housing, accessibility of green spaces, canopy cover, leaf area index, NDVI, VOC concentration, data regarding the number of businesses and jobs, value of property (sale/rent) – yet the latter is provided specifically for Mirafiori district.

FRC Zagreb

The indicators of FRC Zagreb are enclosed in Annex 1.3. While it was still possible to gauge the local situation at city level based on the indicators provided (38 available out of 71), the availability of data at local Sesvete level is rather limited, with only 10 indicators being available out of the required 60. Apart from the unemployment rate, surface of brownfields and green space, density of the built environment, basic population indicators (total, density), cultural facilities and housing quality, there is no statistical information available for the LL area.

Consequently, the SWOT analysis of the LL level (and to some extent, the city level) has focused on a qualitative assessment on behalf of the partners involved in the task.

FC Cascais

As a Follower City, Cascais has had a generally very good availability of required indicators, which are enclosed in Annex 1.4, lacking only eight indicator values for the city level (incidence of chronic stress and mental diseases, surface of brownfields, PM2.PM2.5 concentration, structure of jobs, commercial / industrial property value for sale and rent). At potential Urban Regeneration Plan area, requirements

– for those cities already able to identify their areas – have been much lower in what concerns data specifically for the environment and economy, however Cascais was able to provide some very useful values, which have been further used in the SWOT analysis below.

It is to note that most indicators have been provided as single-values, relying on the data from the National Statistics authority, the Census of 2011. As such, this data is (at the time of delivery) almost 8 years old, and while it does help to gather a picture, it cannot provide insights into more recent developments in either the city or the potential Urban Regeneration area. The city provided multi-annual data, however, for the city, in what concerns the demographics and indicators of urban safety (crime, accidents).

FC Cluj-Napoca

The partner in proGIreg, Cluj Metropolitan Area, represents the interest and covers the expanse of the Cluj-Napoca city and surrounding communes. The GI, and possibilities to develop and upscale the Urban Regeneration Plan, are equally important to be considered in the metropolitan area. At the same time, for Cluj-Napoca, the potential Urban Regeneration Plan area crosses the whole city alongside two intersecting axes (railway and Somes River) and as such, affects the entire community. In this mind-set, the two-level analysis for the FC has focused on 1) the metropolitan level, and 2) the Cluj-Napoca city level. In the actual SWOT analysis, the latter also provides wherever possible an assessment of the Urban Regeneration area, via data from the city.

Some of the indicators for the Metropolitan Area (as a LAU2 association) have only been available at upper, county or regional scales: material deprivation rate, work intensity, incidence of diseases, life expectancy, precipitation, GDP per capita, job typologies, revenues and basic utilities costs. This is mostly due to the fact that the statistics for these domains are being gathered at the level of deconcentrated social, health, economy and environment institutions, at NUTS3 level (county). Nevertheless, an extrapolation is possible.

In what concerns data for the Cluj-Napoca city, there has been a very good availability of data pertaining to the socio-cultural inclusiveness (only two indicators missing) and the ecological and environmental restoration (only the PM10 concentration indicator missing). On the other hand, data regarding health and wellbeing is non-existent, and economic data is very limited.

FC Piraeus

Follower City Piraeus has performed the indicator collection process at Municipal level. The FC does not have data pertaining to the delineated Urban Regeneration Plan areas; instead, a quantitative and qualitative assessment of its districts C' and E', where the potential areas have been identified, is provided below on the four key assessment domains.

In general, the provided data are based on the Census surveys undertaken every 10 years, therefore some of the indicators listed within the proGIreg indicators are not available such as the population growth rate per year. Other data were not available at the Municipality level, such as material deprivation rate, recreational or cultural facilities the percentage of population having access to green space within 30 minutes walking distance or travel time by public transportation, and percentage of residents in public housing.

Health data, land use and vegetation, soil, water and heat island effect indicators, as well as some indicators pertaining to the local economy and labour market (property values) have not been available for the city.

In the Piraeus case, similarly to Cascais, most indicators have been provided as single-values, relying on the data from the national Census in 2011. The city provided multi-annual data, in what concerns indicators of urban safety (crime, accidents), air quality, market and labour economy indicators (albeit replaced from the original indicators with similar ones), tourism, foreign students and local taxes values.

6.4. Conclusions of the data collection

A few conclusions can be drawn based on the data collection process and its results:

- → In general, data availability is relatively similar in both FRC as well as FC, at least in what concerns providing values for single-year indicators; with the exception of Piraeus and Zenica, all cities provided information regarding the LL / regeneration areas;
- → Several indicators are only provided by the national statistics institutes / bureaus (or equivalent authorities), based on the census surveys undertaken every 10 years. The census surveys in Greece, Romania, Croatia and Portugal have been performed in 2011, and the one in Bosnia and Herzegovina in 2013; data is hence relatively outdated.
- → Neither the FRC, nor the FC have had access to information pertaining to the following:
    - Land use and vegetation: structure of green spaces - % of meadow surfaces, % of polluted brownfield areas, canopy cover, Leaf Area Index, NDVI;
    - Soil quality, except for Turin (any of the requested indicators);
    - Water quality (any of the requested indicators);
    - Market labour and economy indicators: private green jobs, qualified jobs.
- → Furthermore, data is scarce, generally, for the economy and labour market indicators overall (fourth key assessment domain);
- → Human health and wellbeing data is generally not produced or tracked at municipality level, at least in what concerns the incidence of certain diseases. Where possible and relevant (i.e. evolution of incidence), data has been collected at higher territorial levels (e.g. County, for Romania).
- → Some of the unavailable indicators can be replaced by similar ones, as specified in each Annex 1 sheet;
- → In spite of the high volume of data lacking, with the exception of subdomains 3.4-6, all cities provided at least one valid indicator value per sub-domain, which in turn supported the SWOT Spatial Analysis.

Due to the high variability of data, parallels between the cities are difficult to draw. However, corroborated with information from spatial datasets and a qualitative overview of the local state of art conducted by the cities, the indicators have been useful to shape an overview of the current general situation in FRC and FC. This overview will further be detailed within WP4 for FRC. It comprises part of the baseline analysis implemented through proGIreg.

7. Synthesis: SWOT analyses of proGIreg cities

The proGIreg FRC and FC have been requested, based on the indicators collected at local level and corroborated with the partners' own insights into qualitative aspects of development pertaining to the four key assessment domains, to structure SWOT analyses (Strengths, Weaknesses, Opportunities and Threats). These analyses have a synthetic quality, summarising findings for each of the two spatial levels of analysis, wherever possible.

In the following chapters, the SWOT analysis tables (textual) for the seven analysed proGIreg cities are presented. Based on this information, the cities have been requested to prepare thematic maps: visual representations, in the form of synthesis maps offering an easy-to-read conclusion to the indicator analysis process and reflecting the findings of the textual SWOT.

ProGIreg cities have developed a set of four thematic maps at two levels (city / metropolitan level and LL / Urban Regeneration Area level, wherever possible), summarizing the findings of the SWOT analysis for each of the key reference domains:

1. Socio-cultural inclusiveness (state of play at city and LL / Urban Regeneration area);
2. Human health and well-being,
3. Ecological and environmental restoration,
4. Economic and labour market.

The design of the thematic maps conforms to the visual communication guidelines of the project, and as a general principle, have been designed with simplicity and ease-of-understanding in mind, given that one of their use will be as a communication tool with the local stakeholders in the participatory processes in FRC and FC.

7.1. SWOT analysis for Dortmund

SWOT ANALYSIS DORTMUND – CITY LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	**Positive population dynamics**, with an increase of over 4% over the last 8 years (ca. 25,000 persons). **Diverse building and settlement typologies:** Many housing areas have been designed around coalmines and steel mills for workers, mainly around the year 1900. With decline of these industries and few investments to modernize workers housing some settlements were in a poor condition in the 1970´s. Large building complexes like the Clarenberg in Dortmund-Hörde replaced some of them, others were restored and are preserved as sites of historic interest like Kolonie Landwehr in Dortmund-Bövinghausen during the past decades and are popular residential areas. During World War II Dortmund was heavily bombed mainly within city centre and around steel mills and coalmines. Therefore, a large percentage of houses was built during the 1950´s.	**High rate of social welfare recipients:** With rates of ~ 14%, Dortmund has a relatively high rate of social welfare recipients compared to Germany (9.2% in 2017) and other proGIreg cities (e.g. Cascais, 6%). Partly, the high numbers result from the decline of the coal and steel industries and unemployment rates, which are twice as high as state average. **One in ten residents of Dortmund between 20-64 years old have not completed any level of education**: a very high percentage compared to the European levels, and over 5 times as much as Germany (1.8%, World Bank).	**Average net migration rate of 9.8 ‰** in the last 5 years indicates the city is attracting population and can further capitalize on its assets to grow. The growing diversity of the city inhabitants (from 14% foreign-born residents in 2013 to 17.7 in 2017 (supports this.	-
Human health and wellbeing	**High percentage of green infrastructure:** According to definitions of the zoning plan, about 50 % of Dortmund´s area is covered	**Life expectancy at birth in Dortmund is lower than the EU-28 average** (77.0 versus 78.2 years for	**Attractive green infrastructure of regional interest:** Dortmund provides	**Heat islands in large, dense settlements:** Dortmund´s inner city

	parks, sport areas etc. within settlements and meadows, forests etc. outside of settlements. GIS-data analysed show 34% green space, as it does not include the share of green spaces within built-up zones, which has different qualities and characteristics. **Citywide bike infrastructure:** In past decades, Dortmund has extended its bikeway system. In the meantime, most principle streets provide bike paths and are connected with a network of routes in minor streets. Nevertheless, there are still gaps in the system, which consequently will be closed in the future. **Downwards trend of reported crimes in the city**, in the last years (a decrease of almost a fourth in 2014 to 2017).	males and 81.8 vs 83.6 years for females, 2016 – EUROSTAT data) **Dortmund's green infrastructure is unequally distributed,** with neighbourhoods especially in the central and peri-central areas	green infrastructure of citywide, respectively regional importance (e.g. the Westfalenpark or Rombergpark) as popular inner-city park areas. In addition, there are linear green spaces, such as those along the Dortmund-Ems-Kanal, the Emscher river or paths on former train tracks. They form a citywide network for sport activities and recreation. The paths next to the Dortmund-Ems-Kanal and Emscher river are sections of regional cycle routes. Dortmund will be part of the first German bike-expressway, a 101 km long west-east connection between Duisburg and Hamm, which is currently in realisation. Easy-accessible offers like Metropolradruhr (region-wide public bike-renting initiative) are incentives to use emission-free transportation systems.	climate is characterised by heat islands due to an increased urban density, which disables air circulation. During summer nights temperature differences between cold air production areas outside settlements and the warmest inner city areas differ more than 9 degrees (see separate Annex, simulation of Regionalverband Ruhr: temperature range between 12 and >21°C). High temperatures cause stress on human health like circulation problems or headache. Especially children and elderly people are affected.[2] With climate change, the heat island effects will possibly become stronger.

[2] Currently a comprehensive analysis of the local climate is being compiled by the RVR (commissioned by the City of Dortmund) and is to be completed by the end of 2018.

Ecological and environmental situation	**Brownfield regeneration:** During the past 60 years, Dortmund has converted about 1,100 ha of former industrial sites into new urban areas. To convert about 10 % of Dortmund´s settlement area has been a challenge and a great opportunity for urban development at the same time. The effort to clean problem sites has been tremendous and has led to an overall improvement of environmental conditions. Today, some of these former brownfields are used as economic sites or residential areas, others for green infrastructure. The renaturation of former industrial sites also has helped to connect existing green infrastructure within the city. With Emscher renaturation retention ponds have been created, e.g. PHOENIX lake or RHB Mengede. Especially the 33 ha large retention pond in Mengede offers a variety of different habitats. Within only few years, it has become an important biotope especially for birds.	**Large portion of anthropogenically transformed soils:** Most soils within settlements are anthropogenically transformed. This also includes soils of nowadays GI as many of these areas were formerly used as industrial sites and may be contaminated. Therefore, soils need to be examined regarding contamination before using the respective sites. Contamination may require rehabilitation measures or restrictions for reuse. While air quality is generally good in Dortmund, there **are pollutant concentration surpassing** especially for PM2.5 (Dortmund-Eving) and PM10 (Dortmund Brackeler Straße station). Accumulated number of days in which the air quality is classified as very poor to moderate are of 33-35% in the last 100 days (EEA Air Quality Index, 2019)	**Emscher renaturation:** After 100 years in a concrete streambed transporting excrement of the whole Ruhr region (“Europe´s dirtiest river”) the Emscher has been renatured during the past 25 years, and it does not transport wastewater any longer. With renaturation, the former biologically dead water body was able to regenerate. The colonization process is ongoing, but creates opportunities - even rare species are returning.	-
Economy and labour market	**Structural change successfully managed:** Dortmund as a former city dominated by coal and steel production was forced to manage structural change during the past decades. Today, Dortmund´s economic strength is characterised by information and production technology and logistics.	**Unemployment still above average values for the region and country, albeit in a downward trend:** In August 2018, the unemployment rate was at 10.4%. In comparison this rate is represents one of the lowest number of the past years. In 2013, unemployment rate was at 13.2%	**Further decline of unemployment** as new economic opportunities stem from the valorisation of recovered ex-industrial sites **Comparably low prices for property (built and land, commercial and residential)[3]:**	A high relative unemployment rate in Dortmund compared to the rest of the region can be a determinant for outmigration and loss of attractiveness for

[3] The Standard Ground Value (Bodenrichtwert) provides a reference for the value of parcels including development charges etc. but not the value of buildings. It is assigned to areas of similar use and structure and is derived from average sales prices.

	The tertiary sector is the most important one with 80% of Dortmund´s workforce working there. 20% of the working population is occupied in the secondary sector with metal processing and production of new materials as important branches. Only 0.1% of the workforce is in agriculture and forestry. During the past years the sectoral distribution of the workforce has been relatively stable. The largest increase (+9,900 respectively +9.7%) between 2010 and 2016 occurred in public and private services (2010:102,100 in comparison to 2016: 112,000) as part of the tertiary sector. **Dortmund as an attractive city for tourists and business persons:** About 60 trade fairs are taking place per year in Dortmund Westfalenhallen which attract numerous people from the region and beyond. Moreover, Dortmund is an attractive city for culture and sports. In only 7 years, the number of overnight stays has increased by 45% from 861,185 in 2010 to 1,253,546 in 2017. Currently, several new hotels are under construction. Tourism has become an important economic branch for the city.	which was the highest within the state of North-Rhine Westphalia. Nevertheless, in comparison with average numbers of North-Rhine Westphalia (6.8 %) or Germany (5.2 %) Dortmund´s situation is still disadvantaged.	Dortmund, respectively the Ruhr area have low land values in comparison to other metropolitan areas in Germany, which can represent a competitive advantage for investment and living, if corroborated with other assets and values (e.g. extensive green space, work opportunities, infrastructures).	inhabitants, existing and potential.

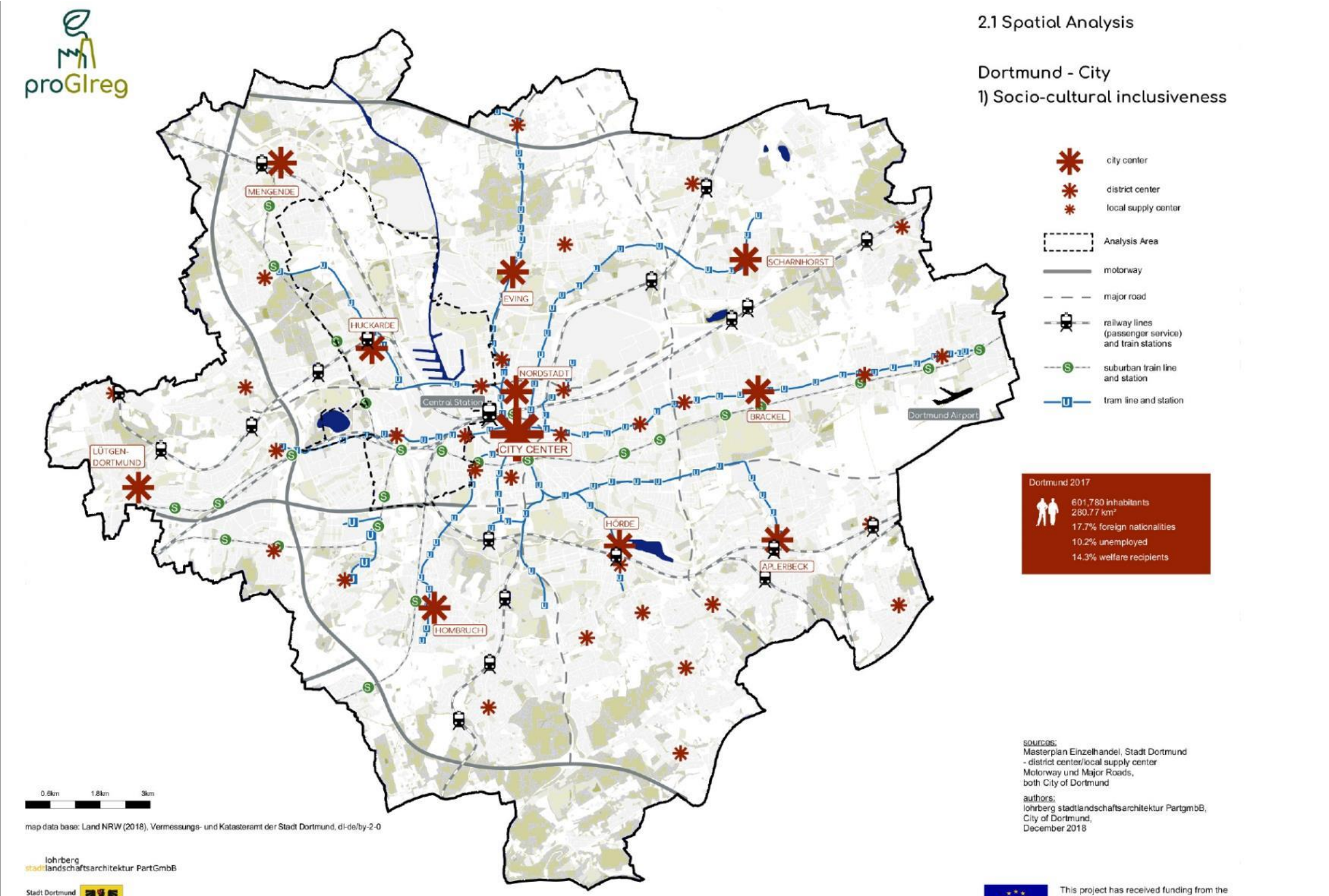


Figure 20 - FRC Dortmund: SWOT Summary on socio-cultural inclusion

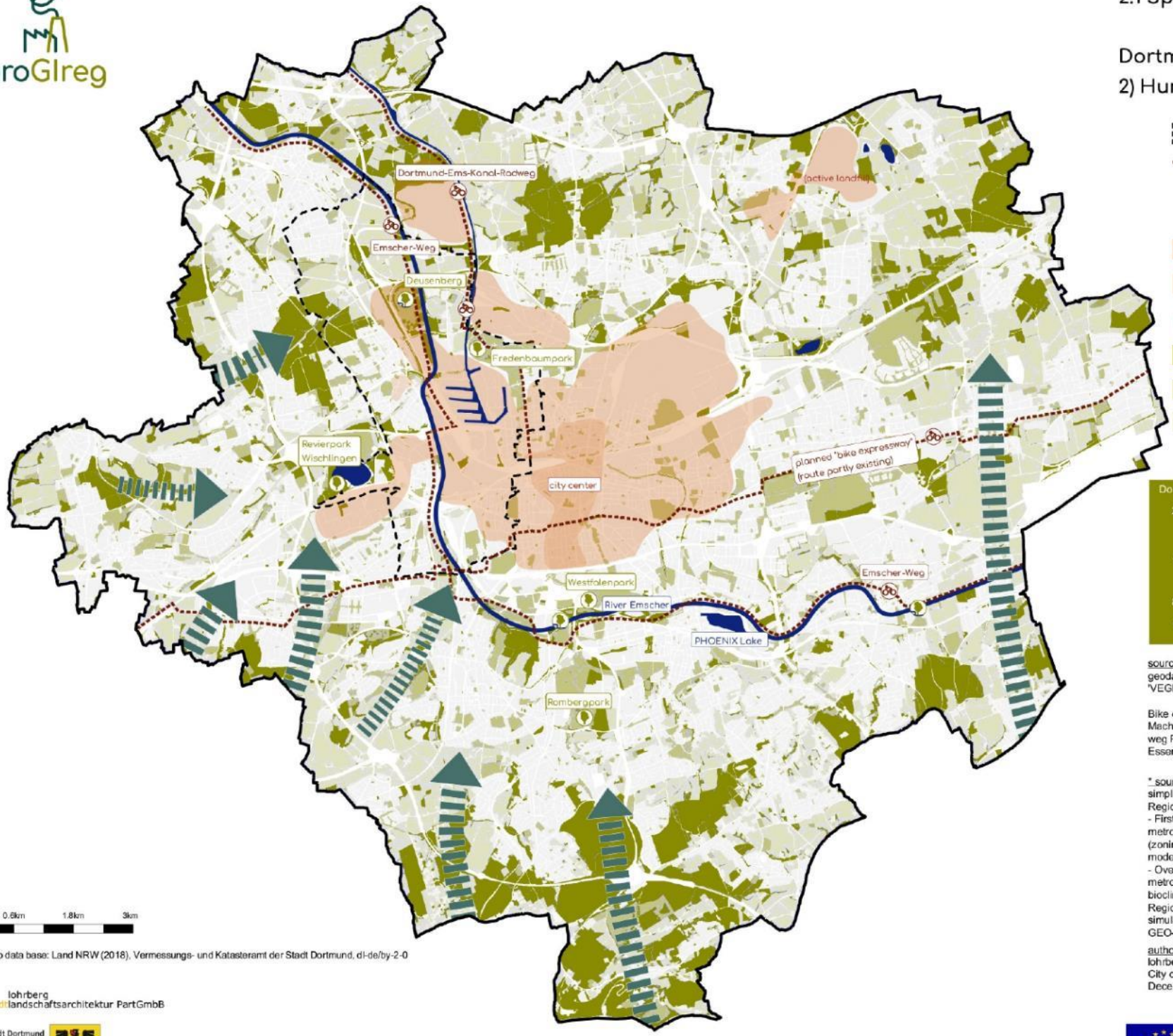
This project has received funding from the European Union's Horizon 2020 Innovation action programme under grant agreement no. 776528.

proGIreg

2.1 Spatial Analysis

Dortmund - City

2) Human health and wellbeing



Analysis Area

regional bicycle route

major public park

green infrastructure along riverside

zone of "inner city climate" *

zone of "city climate" and "industrial zone climate" *

main cool air inflow *

forests

parks, allotments, cemeteries leisure facilities

agricultural land, littoral vegetation fallow land

Dortmund 2017	
2.434 ha	urban green infrastructure (parks, cemeteries allotment gardens, outdoor leisure/sports facilities)
11,197 ha	other green infrastructure (agricultural use, forest, littoral vegetation, fallow land)
840 mm	precipitation
10.4 °C	annual mean temperature

sources:
geodata ALKIS, Objektdatenkatalog, Auswertung Kategorien 'VEGETATION', SIEDLUNG'

Bike expressway: pilot study - Machbarkeitsstudie RS-1, Radschnellweg Ruhr, Regionalverband Ruhr, Essen

* sources climate data:
simplified rendering of data provided by and © Regionalverband Ruhr, Essen, Oct. 2018
- First assessment of climatical conditions in the Ruhr metropolitan region based on existing geodata (zoning plans, aerial photographs, digital elevation models, urban climate analyses)
- Overview of climatic-ecological functions in the Ruhr metropolitan region (ventilation, cool air development, bioclimate) based on inquiries and recordings of the Regionalverband Ruhr (as of 2012) and wind field simulation (FITNAH-modelling, conducted by GEO-NET, Hannover)

authors:
lohrberg stadtlandschaftsarchitektur PartgmbB,
City of Dortmund,
December 2018

lohrberg stadtlandschaftsarchitektur PartGmbB

Stadt Dortmund

Figure 21 - FRC Dortmund: SWOT Summary on human health and wellbeing

This project has received funding from the European Union's Horizon 2020 Innovation action programme under grant agreement no. 776528.

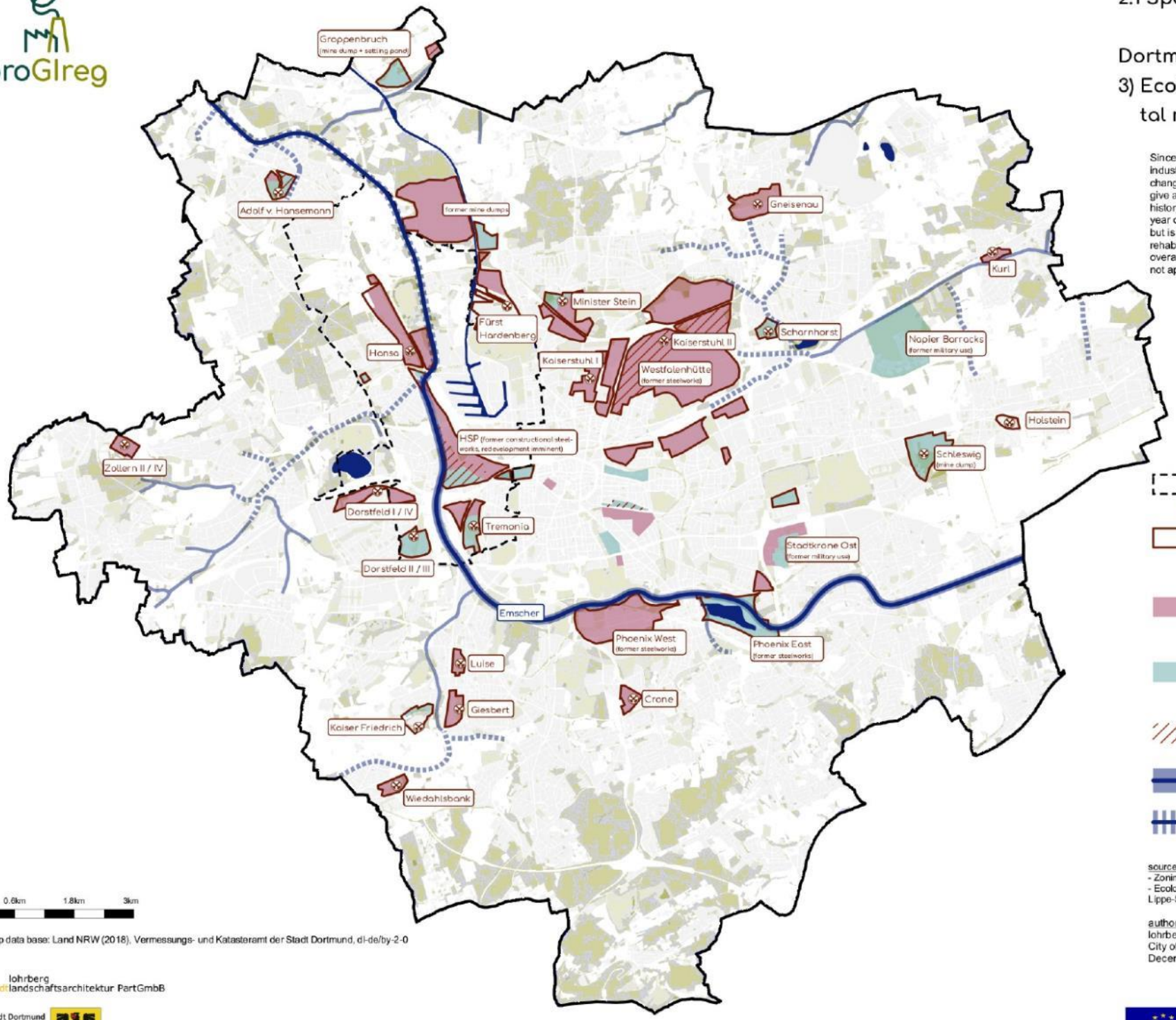
proGIreg

2.1 Spatial Analysis

Dortmund - City

3) Ecological and environmental restoration

Since the development of mining and other industry in Dortmund has always been subject to change, relocation and reuse, it is not possible to give a comprehensive overview of the industrial history in this map. The historic reference to the year of 1964 is rendered based on existing records but is possibly incomplete. The indications of rehabilitation measures are intended to show the overall purpose of reuse for each area and may not apply for the complete area in question.



0.6km 1.8km 3km

map data base: Land NRW (2018), Vermessungs- und Katasteramt der Stadt Dortmund, dl-de/by-2-0

Analysis Area

coal mine (closed)

mining / steel industry and other industrial use in 1964 (information provided by City of Dortmund)

rehabilitation measures consistant with reuse for business and industrial purposes

rehabilitation measures consistant with reuse as residential zone / public green space

rehabilitation incomplete / imminent

ecological restoration of river course completed (as of Dec. 2017)

ecological restoration of river course ongoing or at planning stage (as of Dec. 2017)

sources:
- Zoning Plan City of Dortmund 1964
- Ecological restoration of the Emscher- / Lippe-System, City of Dortmund (Dec. 2017)

authors:
lohrberg stadtlandschaftsarchitektur PartgmbB,
City of Dortmund,
December 2018

lohrberg
stadtlandschaftsarchitektur PartGmbB

Stadt Dortmund

Figure 22 - FRC Dortmund: SWOT Summary on ecological and environmental restoration

This project has received funding from the European Union's Horizon 2020 Innovation action programme under grant agreement no. 776528.

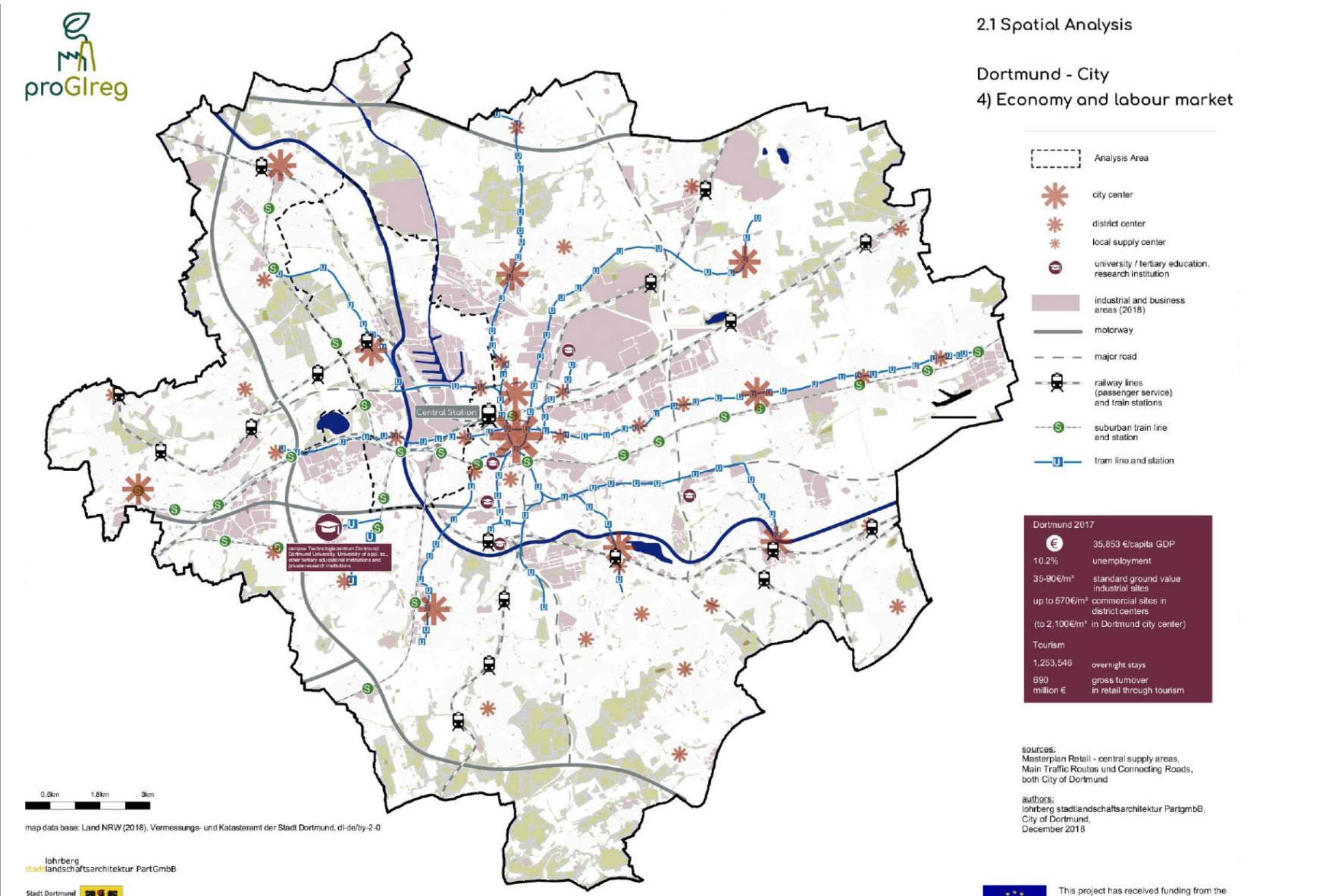


Figure 23 - FRC Dortmund: SWOT Summary on Economy and labour market

This project has received funding from the European Union's Horizon 2020 Innovation action programme under grant agreement no. 776528.

SWOT ANALYSIS DORTMUND – LL ANALYSIS AREA LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	**Education based on local needs:** In Huckarde-Nord more places in kindergartens than children are available, so that children from other districts are attending as well. There are kindergartens and schools with multi-lingual offers, contributing to the enhancement of tolerance and plurality, and others with focus on arts in cooperation with Hansa coking plant. Apart from teaching linguistic abilities, other schools focus on social development of children which provides assistance to children from vulnerable familial situations **High satisfaction with local living conditions:** Even though housing conditions are not the best in Huckarde-Nord, citizens are very content with their surroundings regarding its suitability for families and elderly people, cleanliness, tranquillity, and safety. In general, there is a high identification of Huckarde citizens with their settlement (Integriertes Handlungskonzept, Stadterneuerung Dortmund-Huckarde-Nord). Huckarde also has a small city center with facilities to serve daily needs. Strong presence and commitment of third sector organizations at local level	Huckarde-Nord, one of the neighbourhoods in the LL Analysis Area, and a settlement formerly inhabited by many workers of Hansa coking plant and Hansa coalmine, is currently confronted by a **high proportion of socially deprived people** with low educational level. Housing conditions often do not meet nowadays standards and favour socially poor renters. The lack of social mixture leads to a disproportionally high child poverty. Hence, public meeting points for children and teenagers are important. **High rate of social welfare recipients:** Almost every fourth person within the Analysis Area receives social welfare. These high numbers vary considerably between Deusen (6.6 %) and Hafen-Süd (32.5 %), but are generally higher than the citywide average (20.8 % in the LL Analysis Area versus 14.3 in Dortmund, 2017). **Below average living space per person in Analysis area** with 35.6 m²/person, which is about 4 m² less than in Dortmund (39.4 m²/person). **Declining rate of public housing units:** The overall number of public housing units has decreased from 4,683 in 2013 to 3,784 in 2017 which is a remarkable drop within 5	-	**Failure to generate significant impact in the improvement of urban quality in Huckarde of previous initiatives can indicate resistance to change in the area – and potential difficulties in achieving measurable impact of the interventions:** In former years next to many continuous efforts to stabilize the overall situation in Huckarde the urban renewal program “Stadterneuerung Ortskern Huckarde” (1992) as well restoration of Hansa coking plant which began in 2008 were realized. Unfortunately, the positive developments have not been strong enough to improve the situation of all adjacent settlement areas. Huckarde still has a negative image even though there are also neighbourhoods, which are of high quality and socially stable.

		years (-899 units, whereas within the whole city the numbers decreased by 4,289). In 2017, within Analysis Area, about 17 % of Dortmund´s public housing units are located, serving 9.4 % the total population. This underlines a disproportional need for public housing in the Analysis Area. **Unequal distribution of foreign population:** Close to the LL and within areas of urban renewal programmes there are statistical districts with an outstandingly high portion of foreign population, e.g. Union district with 50,6 %, Hafen district with 42,3 % and Hafen-Süd with 41,8 %. This often reflects areas with poorer housing conditions. In 2017, in Huckarde-Nord (=statistical districts of Mailoh and Huckarde) about every fifth person is a foreigner (City of Dortmund: 16,3 %). **Streets as urban barriers:** The Emscherallee as an important north-south-bound street within Dortmund street network. It represents the western frontier of Dorstfeld settlement and is a cut within Huckarde settlement as it is hard to cross. Even though there are some traffic lights, which allow to cross the Emscherallee, it reduces path connections towards Hansa coking plant/ the Emscher river/ the Deusenberg in Huckarde-Nord and towards Dortmund city centre in Dorstfeld.		

Human health and wellbeing	**Deusenberg as an attractive recreation area:** On top of Deusenberg, the EDG Mountain bike-Arena opened in 2008. Along some slopes, small trails have been created. On the southern part of the top, a popular track with curves, obstacles etc. has been installed and attracts mainly teenagers and young adults. Moreover, the Deusenberg has a 6 km pathway system and viewpoints on top. This infrastructure has helped to establish the Deusenberg as a local attraction point. **Germany´s largest climbing wall located at Hansa coking plant:** In 2008 in a former 20 m high building of Hansa coking plant climbing gym “Kletterhalle Bergwerk” opened. The 5,000 m² climbing wall is Germany´s largest indoor facility. In 2015, 124,000 persons visited, many of them came from outside Dortmund. There are plans to enlarge the sports facility, which has a good reputation and improves Huckarde-Nord´s image. The Analysis Area offers a high value of **urban green space** (excluding agricultural and forest areas) **per capita** – ca. 38 m²/person.	No weaknesses have been identified (no data on health at Analysis Area level)	**Green infrastructure for local recreation:** forests and fields surround To the North and West Huckarde-Nord, which offer attractive possibilities for local recreation. Moreover, small parks and allotments are within or close distance to the settlement.	**Limited access to Deusenberg from Huckarde-Nord:** Even though the local recreation areas like Deusenberg or Emscher pathway are close by, they are hard to access due to the separation effect of the congested Emscherallee and missing path connections from Hansa coking plant. As children and teenagers only have few places to meet outside school areas in Huckarde-Nord, access to Deusenberg may help to improve the current situation. **Limited access from Dorstfeld towards Dortmund city:** Dorstfeld settlement is at its eastern edge limited by the noise protection wall of the Emscherallee. There are only few crossings at the Emscherallee, which allow pedestrians or bikers to cross the busy street and to move westward, especially as the Emscher river only can be crossed at even fewer points. The unattractive connections keep some citizens from hiking or biking citiwards to downtown Dortmund.

Ecological and environmental situation	**Availability of natural brown soils:** Northwest of Hansa coking plant the only large area with natural brown soils is located. Currently, the area is still used as a field. In the future, the site will be turned into an economic site. **Cold air source areas:** Especially the agricultural areas north of Huckarde-Nord and the Deusenberg are important cold air source areas (See separate Annex). They provide Huckarde-Nord with colder air during nights with cold air production thus improving the local climate. Cold air from the north flows into the urban areas up to the bridge of the Mallinckrodt-street crossing the Emscher. In the southern part of the Living Lab, the southwestern vegetated part of the HSP-site is a larger cold air production site. Nevertheless, it hardly provides adjacent settlements with cold air.	**High portion of anthropogenically influenced soils:** Due to its industrial history, the soils within Living Lab are likely to be transformed. Partly, they were contaminated and in many cases already have been rehabilitated. For example, northeast of Hansa coking plant contaminated soils have been collected and secured in a so-called "Landschaftsbauwerk". The former landfill Deusenberg is situated on natural soils; nevertheless, soils on its surface are as well allochthonous. On anthropogenically influenced soils, thorough analyses are important before reusing them.		
Economy and labour market	**Economic site "Gewerbepark Hansa": the** 10.4 ha large economic site was one of the IBA-projects (1989-1999) on the former Hansa coal mine. The existing old winding tower is reminding of its former use. During the past 20 years, companies, which serve local and regional markets, have settled on about 9 hectares. Only few lots are still on sale. Gewerbepark Hansa is an important place for SME within Huckarde and so far the only economic site within Huckarde. **Employment training initiative Bahnhof Mooskamp gGmbH:** Bahnbetriebswerk	**Unemployment rate is above city average:** Huckarde is Dortmund´s city district with the lowest improvements regarding its employment rate respectively its unemployment rate. Therefore, initiatives like Bahnhof Mooskamp gGmbH are of high local importance. In most statistical units of the Analysis Area, average unemployment rates are above city average, in some statistical units almost twice as high. **C**omparatively lower rents in the Analysis Area indicate a **lower housing standard**	**Future economic site "Gewerbegebiet Kokerei Hansa Nord":** development of this 7 ha site is an important contribution to further economically strengthen Huckarde-Nord. The future use is not substantiated yet. The development plan process will start in 2019, so far	-

	Mooskamp is not only a museum for old trains but also a place where up to 28 long-term unemployed people are trained for the job market. Regarding this, the museum has a high importance for the labour market and as a socially stabilizing initiative. **Low standard ground values compared to the rest of the city**: In Huckarde-Nord the standard property values for housing range between 190 and 235 €/m². They are within Dortmund´s last third of the price range.Within Analysis Area standard ground values for Rheinische Straße differ between 130 €/m² at (future urban development area) and 390 €/m² (urban development area of the past years). Standard ground values for economic sites vary between 50 and 70 €/m², comparable with Dortmund average values. **Wide range of standard property values:** Property values for residential areas vary between 665 and 2,245 €/m². These numbers reflect the quality range of housing conditions - Huckarde-Nord's standard property values are at the lower level of the range, (780 €/m²) whereas in the Southern part of the Analysis Area, due to more recently constructed residential areas, standard property values are up to 2,245 €/m². **Comparably low monthly rents:** In 11 of the 13 statistical units of the Analysis Area the monthly average rents varied between 5.23 and 6.73 €/m² (2016/2017) for new	**of mostly older buildings within these statistical units.**	preparation studies are worked out.	

	renting contracts. Huckarde-Nord is at the upper level of this range. Two out of the 13 statistical units have a relatively large portion of newly constructed buildings. Therefore, average monthly rents are higher (7.10 €/m² respectively 9.01 €/m²).			

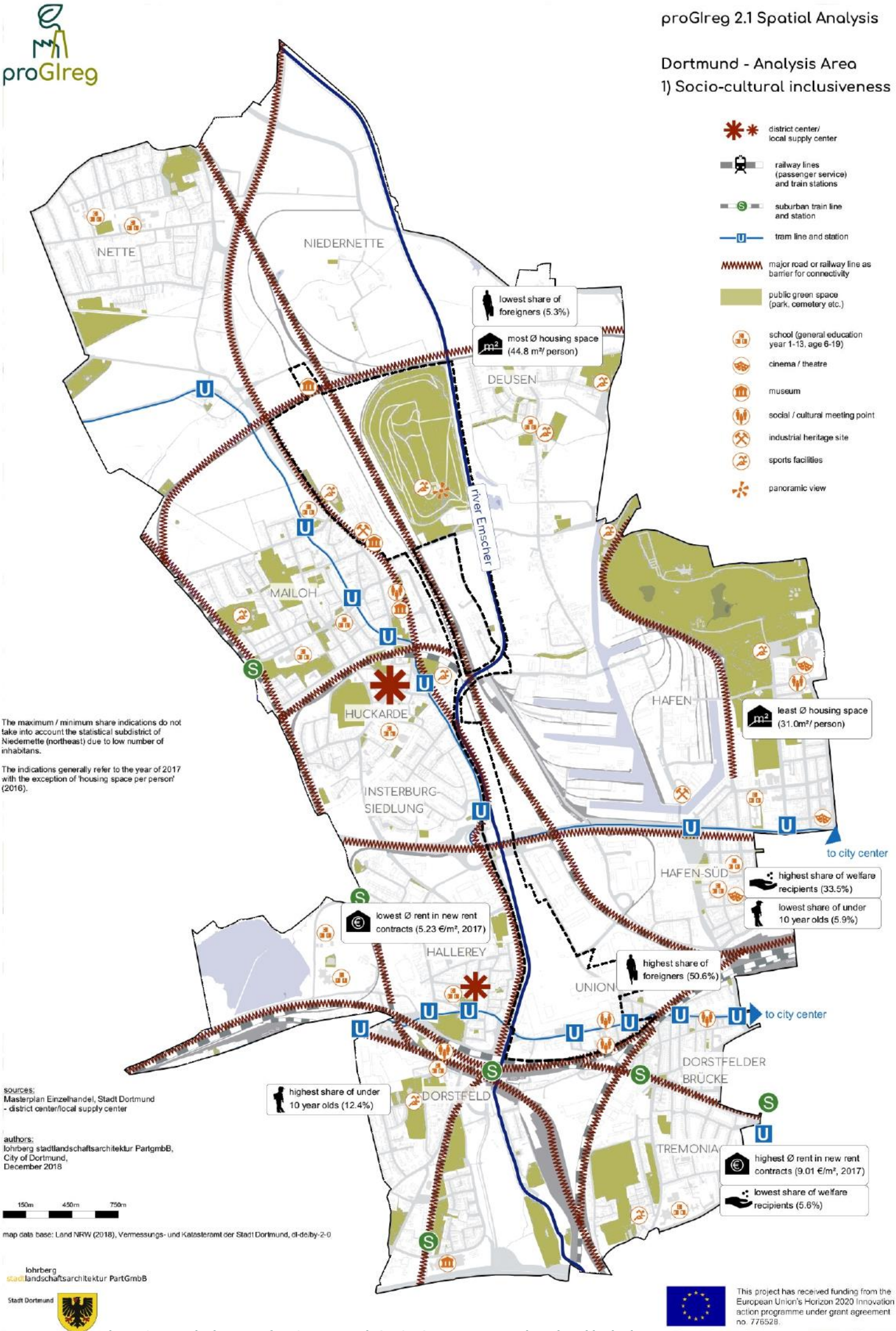


Figure 24 - Analysis Area of FRC Dortmund: SWOT Summary on socio-cultural inclusion

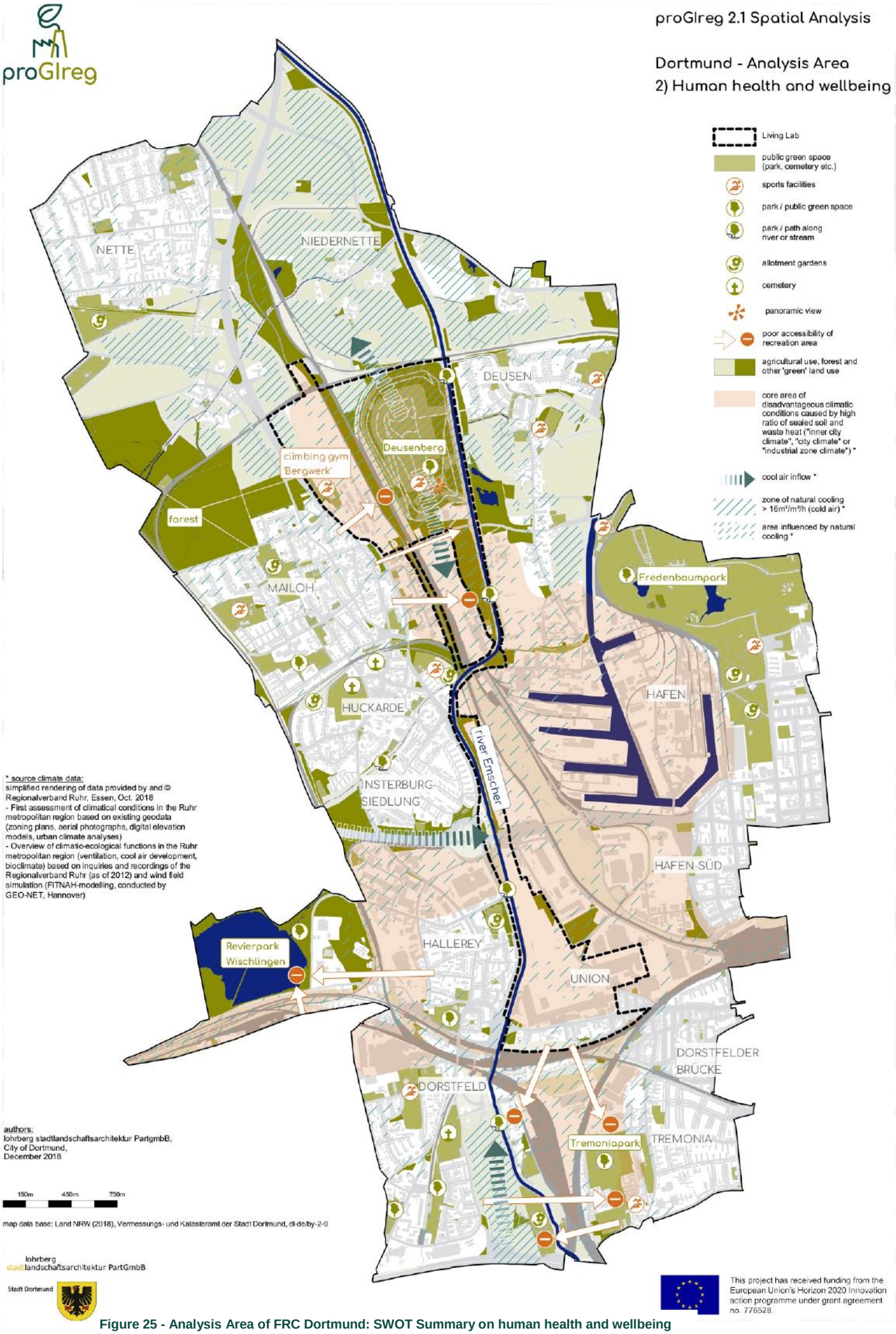


Figure 25 - Analysis Area of FRC Dortmund: SWOT Summary on human health and wellbeing

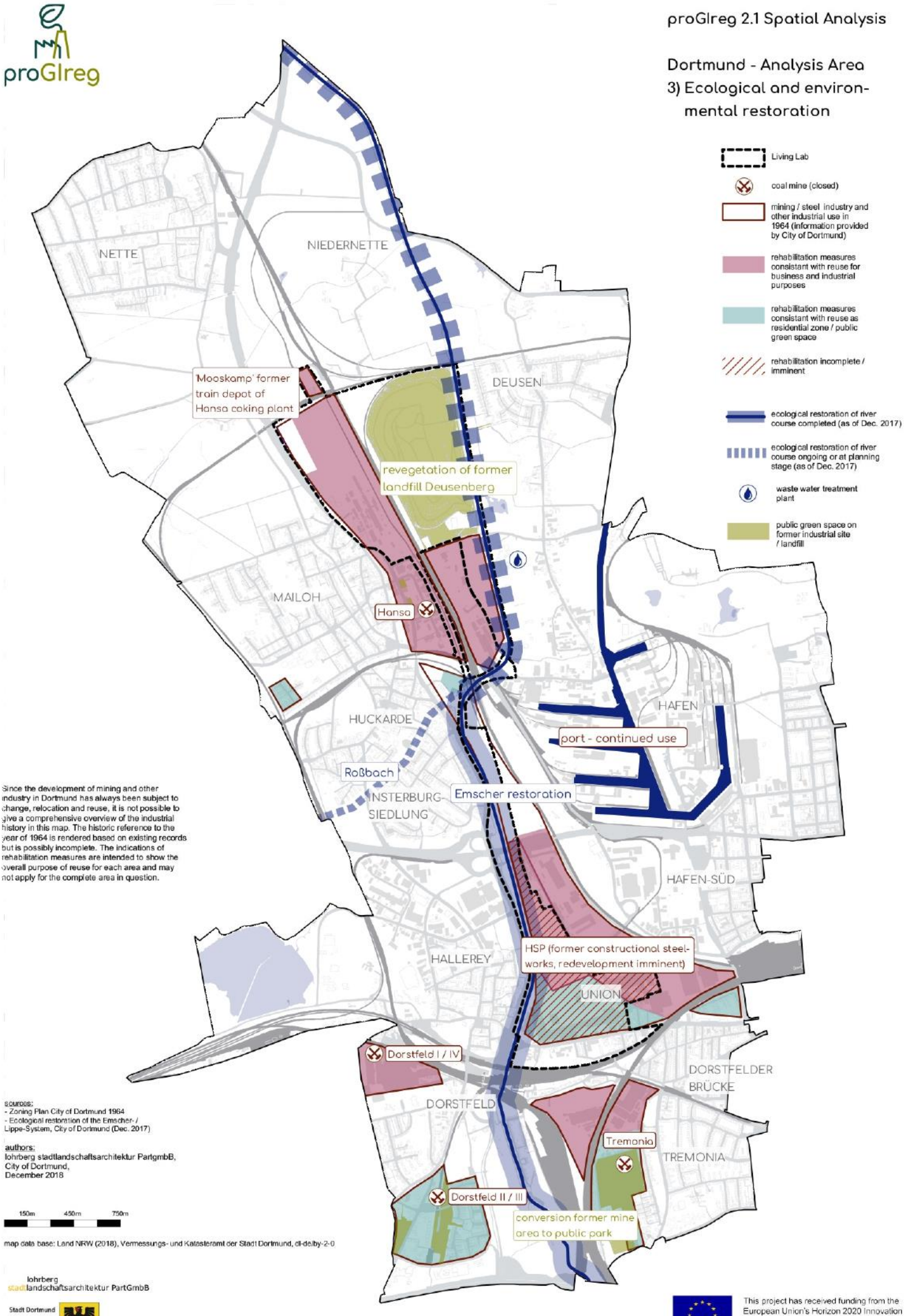


Figure 26 - Analysis Area of FRC Dortmund: SWOT Summary on ecology and environment

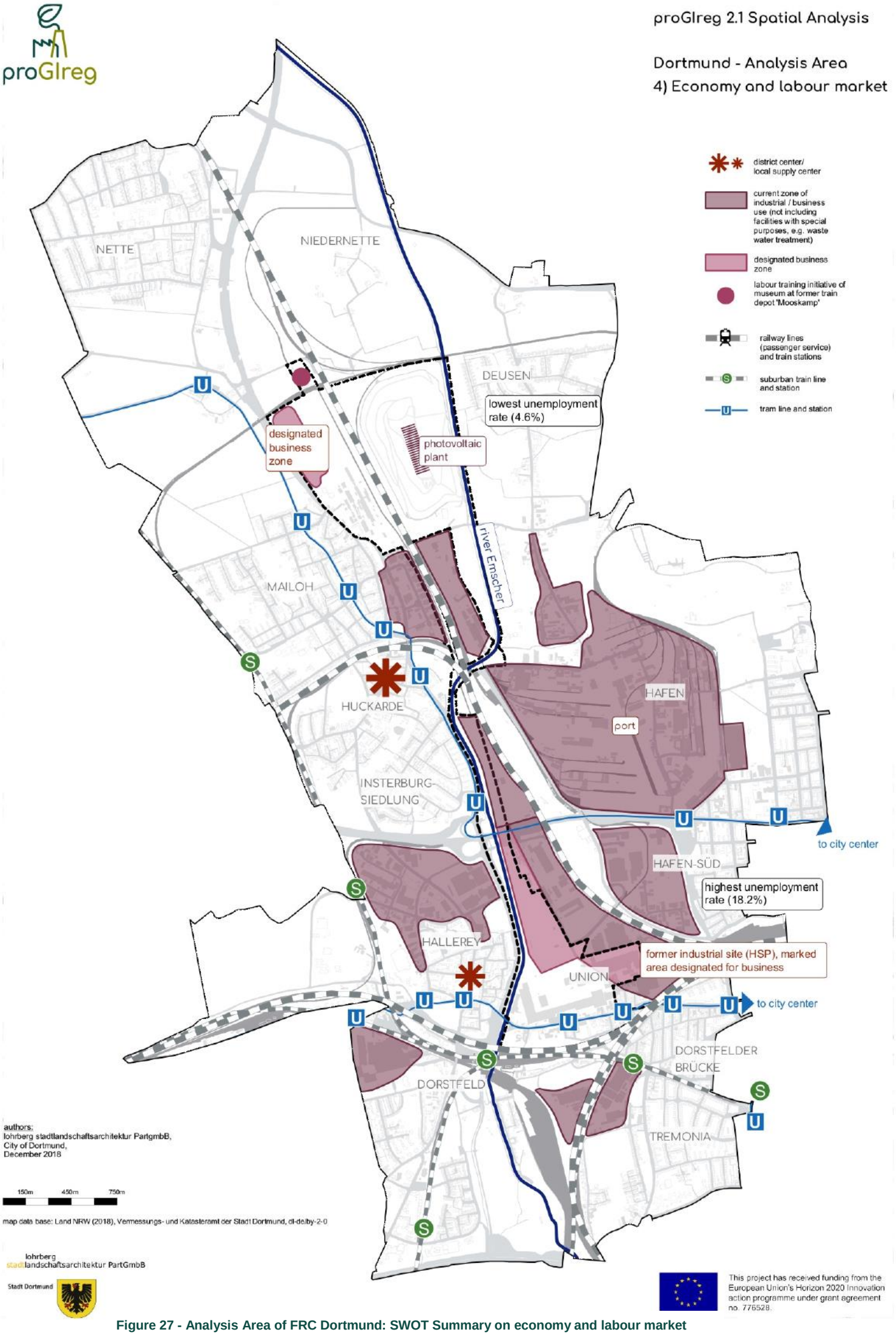


Figure 27 - Analysis Area of FRC Dortmund: SWOT Summary on economy and labour market

7.2. SWOT analysis for Turin

SWOT ANALYSIS TURIN – CITY LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Strong presence and commitment of third sector organizations - Presence of tools for inclusion and for civic participation in urban governance: Common Assets Regulation as a model of shared administration of urban common goods (e.g.eg public green and neighbourhood) - Low material deprivation rate (1.25% in 2016)	- Strong and progressive ageing of the population, apparent in the downward population trend (-2.71% in the last 10 years) and the negative migration rate in the city for last 5 years. - Weak economic development perspective, especially in neighbourhoods with socio-economic difficulties (path dependency) - Local public transport system that increases the central / periphery dichotomy - Increasing of the urban poverty rate - The geographical distribution of accessible public green areas does not correspond to the social distribution of the need (greater concentration of disadvantaged families in the North) - Public areas under agricultural use are privatized, which reduces availability of green areas for public use - Lack of connection between accessible green areas - Difficulty understanding the citizens' needs and demands – general lack of institutional culture about Civic Engagement (an	- Management and development of agricultural areas as potential urban common assets - Opportunity to extend the presence of territorial welfare structures linked to the third sector (example Case del Quartiere) to the management and enhancement of green areas - Actions of urban regeneration and social inclusion of the AxTo Peripheral National Plan - Shared management that stimulates socialization by increasing the sense of community	- Depopulation trend, with an out-migration towards the Turin green belt (suburbanisation), partly due to the advantage of a greater accessibility to quality green areas

		administrative capacity issue in spite of existing tools and instruments)		
Human health and wellbeing	- High degree of walkability, and of cycle and pedestrian mobility - Declining rates of new (or newly diagnosed) cases of cardio and respiratory diseases, and of allergic diseases, between the periods 2008-2011 and 2012-2015 - Very low obesity rate compared to national and European levels (average 5,7 in 2013, whereas national average was 21% in 2014 according to WHO) - Good availability of usable and accessible green, in terms of perceived safety and in terms of paths / access infrastructure - Culture and awareness of the food supply-chain, strengthened by the existence of Community Gardens and Urban agricultural areas - Availability of green and public spaces along the urban fluvial axis - The majority of the inhabitants of Turin have access to a green space (generic) within a radius of 300 m	- Non-homogeneity of the security perception - Unequal access to healthy facilities and surroundings (food / walkability)	- Sensitization projects towards physical activity (walking groups) - Strong interest of the CSR sector of companies in investing in the wellbeing of the workforce - Potential for enhancing the psycho-physical well-being of the individuals due to Community Gardening	- Abandonment and degradation (e.g. waste disposal practices with high impact on health) - Risk related to spontaneous horticultural activity, due to pollutants present in urban soils - Exposure to polluted air (smog) during physical activity (especially for children and the elderly) - Obesity trend in children
Ecological and environmental situation	- Wide spreading of green areas with high ecological quality (e.g. the Colline di Torino, Superga Hill Regional Park, etc.)	- Incomplete implementation of some soft mobility infrastructures (e.g. BiciPlan) - Environmental / social damage and urban degradation of non-reclaimed and non-recovered residual areas	- Plan tool that increases the offer of municipal services (25 m² of services / inhabitant, with a minimum of 12.5 m² being green areas)	- Fragmentation of the landscape - Events of floods and insufficient economic

	- Important work in recovering abandoned areas (about 4.7 million square meters) with consequent increasing of the real estate value in the surrounding area - Most of the surfaces recovered (80%) have been allocated for urban green areas - Good green endowment per inhabitant (55 m²/inhabitant at city level) - Good green and blue infrastructure in the city (78 km², with important effects on CO2 detention (496 km of tree-lined avenues) - The distribution of green areas in Turin ensures a good accessibility	- Difficulty to complete the valorisation of green / blue infrastructure (e.g project "Torino città d'acque") due to complex management of areas and costs - High costs of reconversion and reclamation - High level of smog, mainly due to private mobility - Predominance of conventional agriculture, which uses chemical-based agents (pesticides) - Abandonment and social degradation, security problems, unauthorized residences	- Internal and external connection with the green belt area to implement ecological corridors with increased biodiversity and tourist / recreational opportunities - Conversion of traditional agriculture into organic with a short supply chain - Improvement of environmental quality due to the increase in ecological corridors - Opening of new green areas of the city with positive effects on neighbouring districts - Project for the widespread networking of existing green systems - Promotion of soft mobility (less pollution and ease of access to green spaces) - Corona Verde Regional Plan - Potential in inter-municipal governance on inter-territorial planning - "Torino Città da Coltivare" project: 2,000,000 m² of available areas - Large public park regeneration projects (Parco Basse di Stura)	resources for land security - Reduction of resources and powers of the Metropolitan City in the enhancement of the green system

Economy and labour market	- Good presence of young students in the city, including foreign ones (107,000 in 2017) - Many workers in the service sector (Services account for 72% of total employment, according to EUROSTAT) - Many activities of research and development and the highest percentage of spending for R&D from the private sector - Culinary capital with a wide range of food and farmer's markets (including Mercato di Porta Palazzo, largest open market in Europe) - Many jobs in the green sector (15.070 employees) - Training and research institutes in the field of GI	- Non-accessibility of public areas for agricultural use and low impact of these areas on the labour market. - Increasing unemployment rate and poverty rate - High level of youth unemployment (25%) - Presence of agricultural areas with traditional models of production that do not relate to the city	- Co-City project for U.I.A. (Urban Innovative Actions) - The collaborative management of urban commons to counteract poverty and socio-spatial polarisation, as well as other EU projects supporting social innovation, inclusion, NBS and circular economy	- Residual agricultural areas at risk, due to a negative market trend (models that do not innovate) - Aggressiveness of urban built-up area expansion and of the real estate market, which reduce the functions of urban agriculture - Economic crisis and reduction of investments in the city

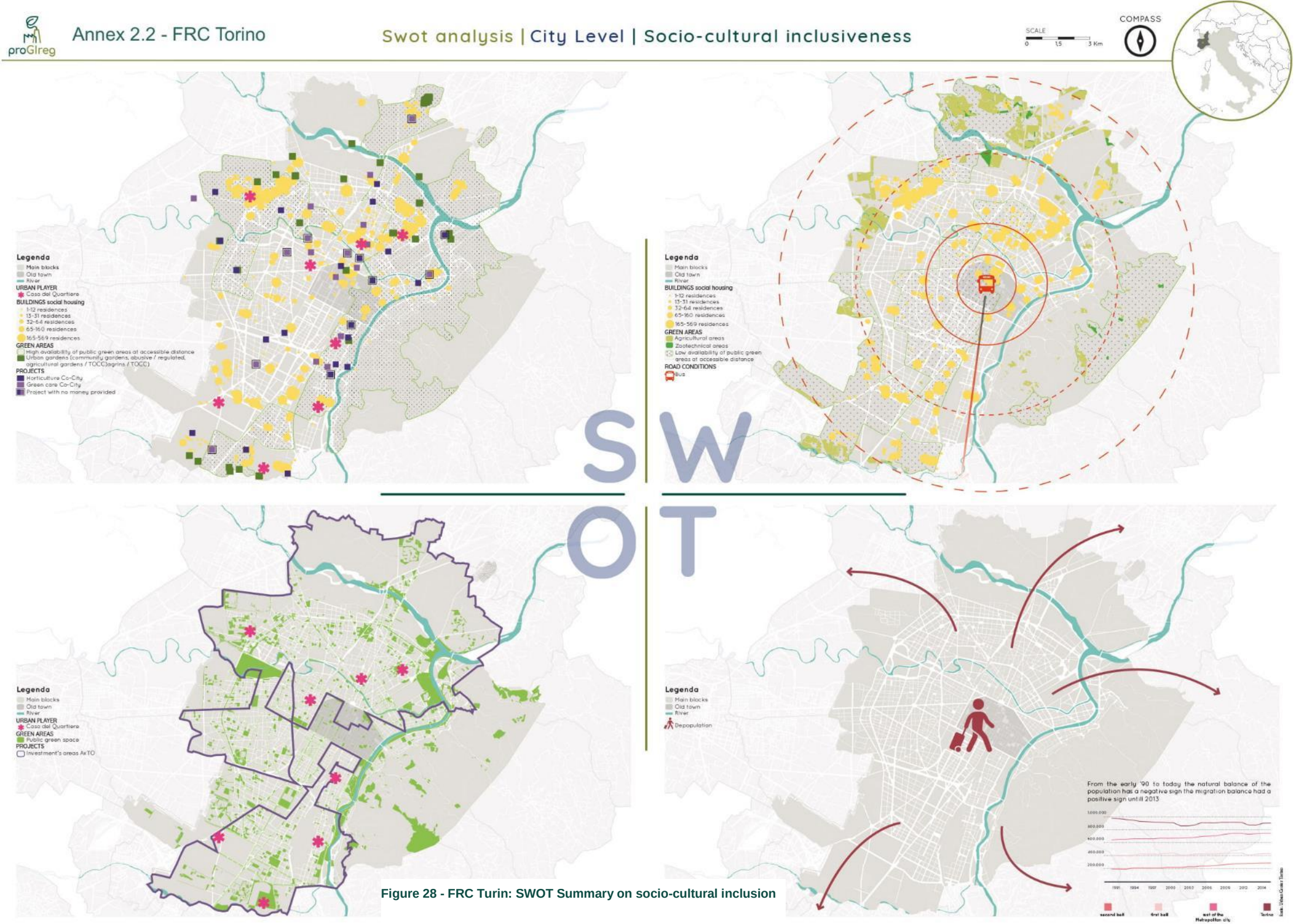


Figure 28 - FRC Turin: SWOT Summary on socio-cultural inclusion

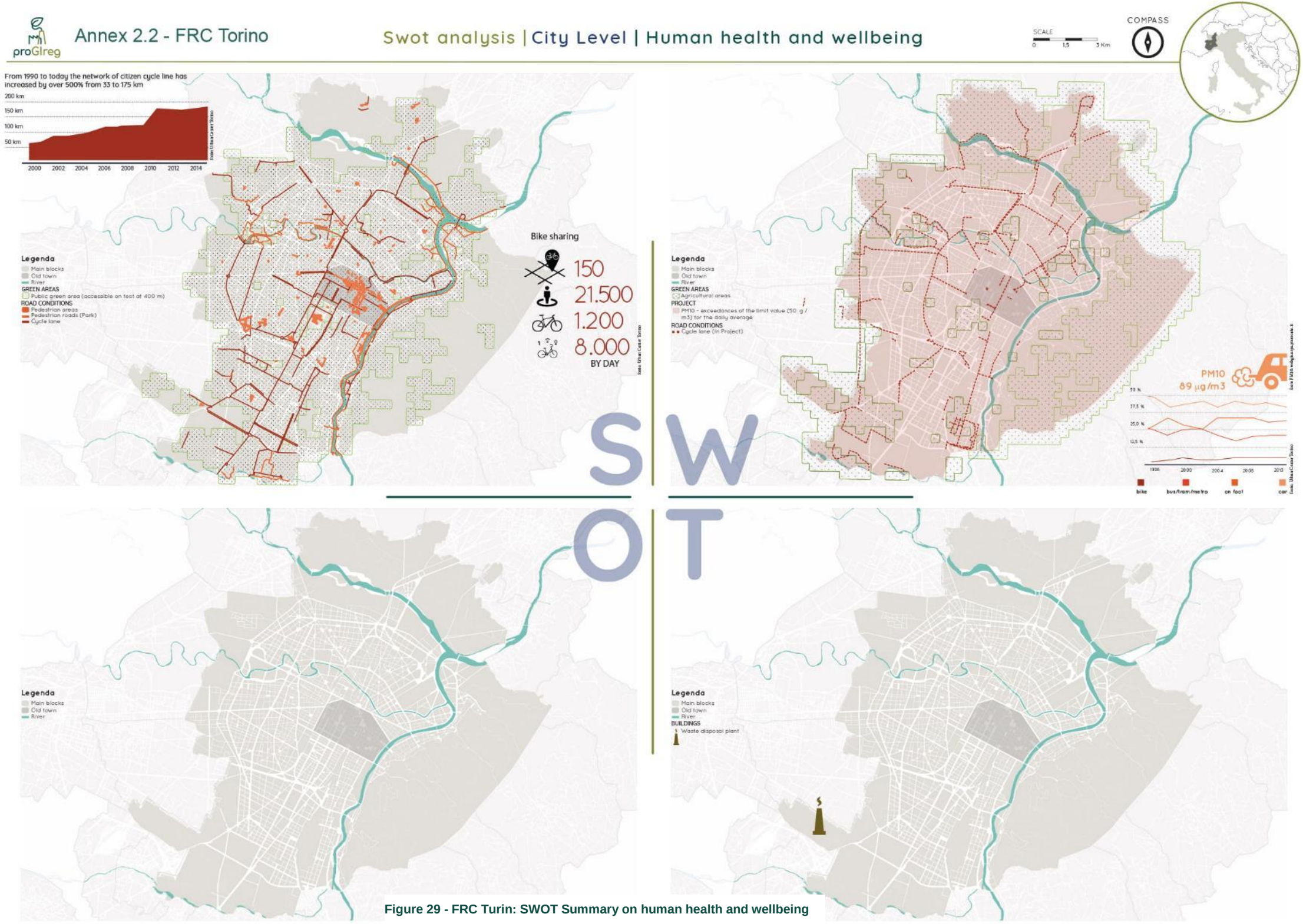


Figure 29 - FRC Turin: SWOT Summary on human health and wellbeing

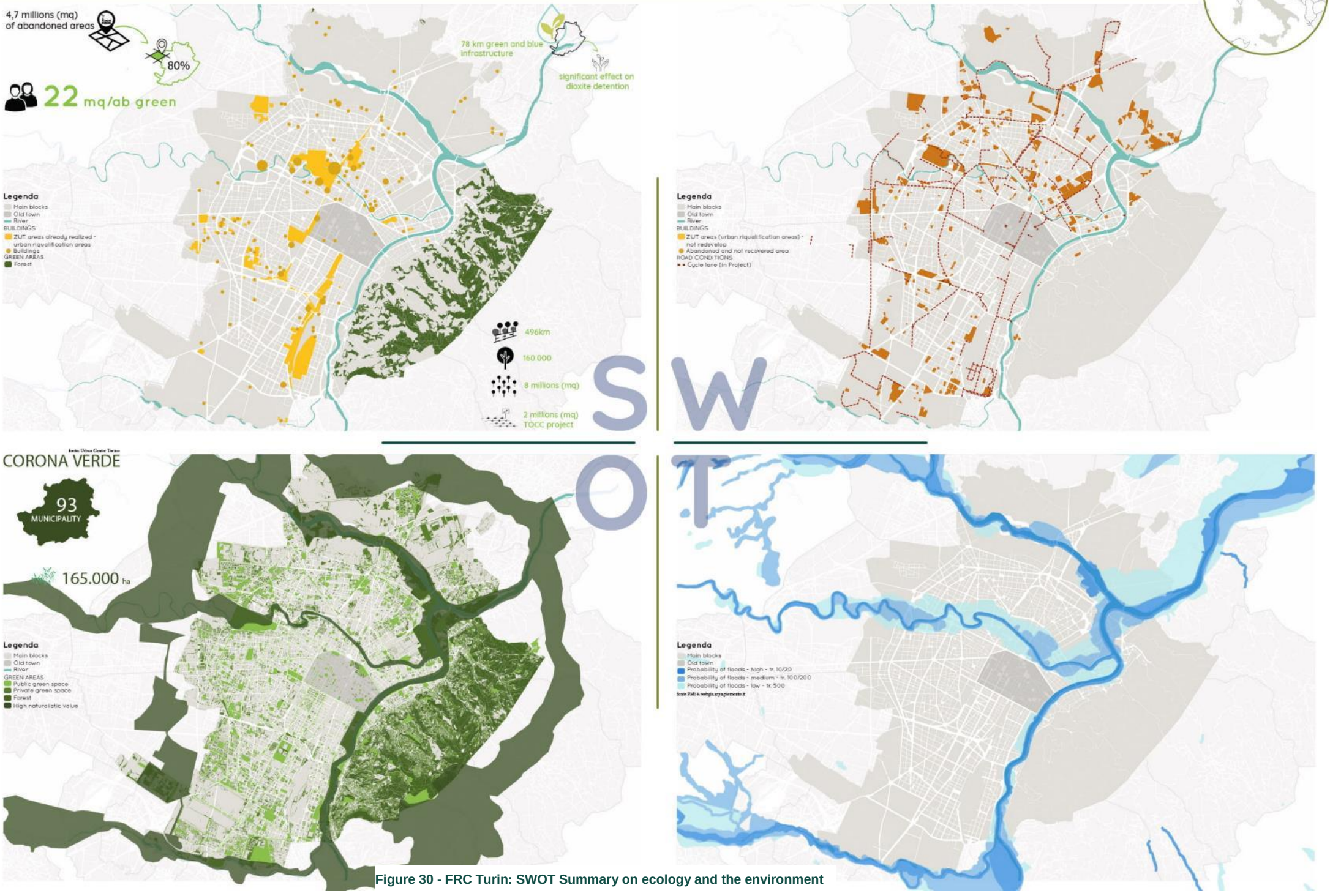


Figure 30 - FRC Turin: SWOT Summary on ecology and the environment

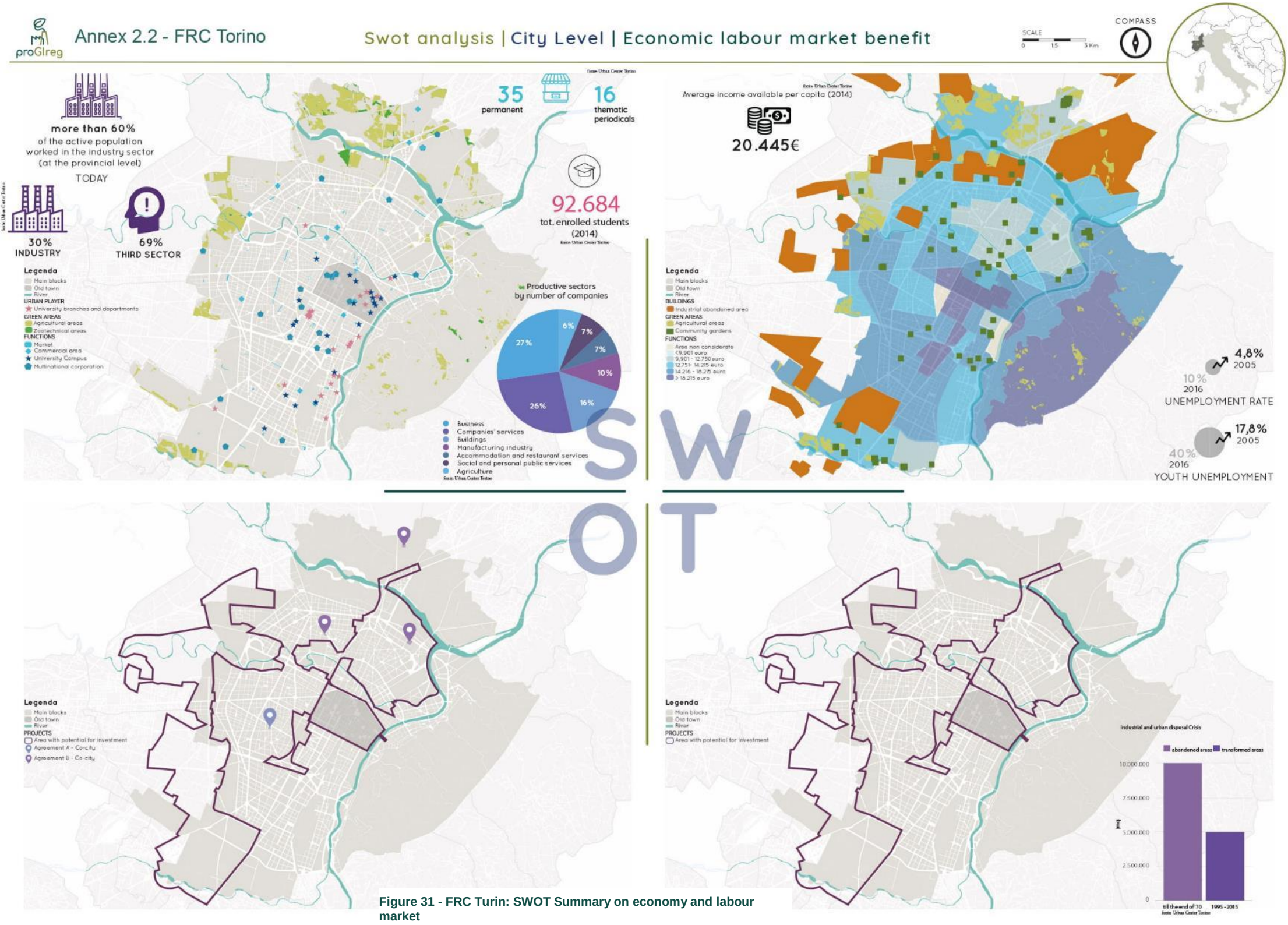
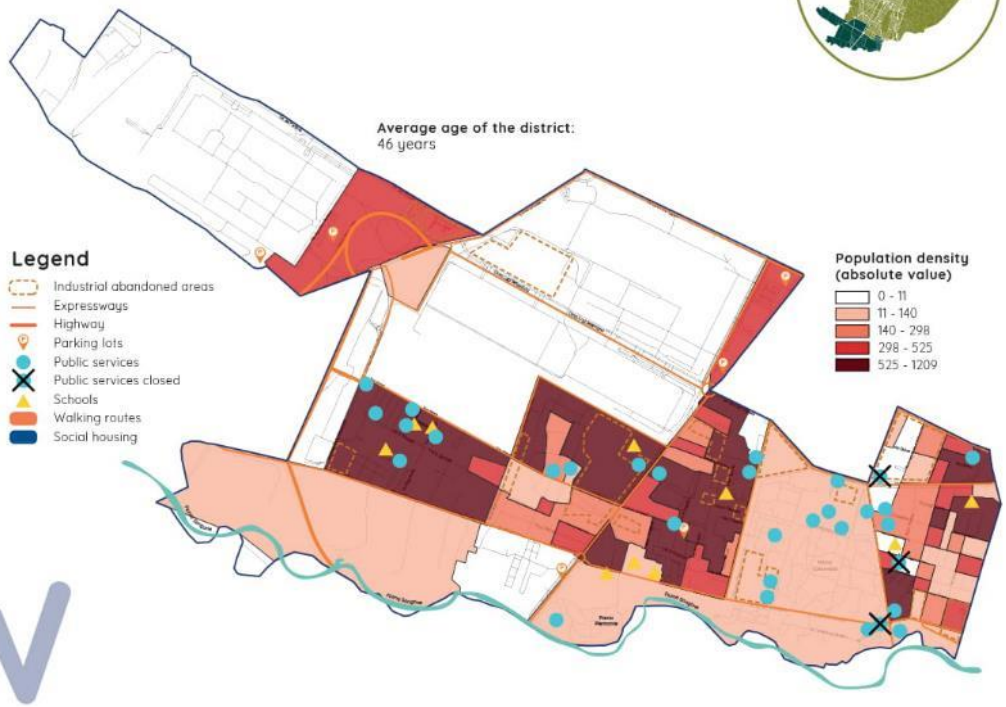


Figure 31 - FRC Turin: SWOT Summary on economy and labour market

SWOT ANALYSIS TURIN – MIRAFIORI DISTRICT LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Presence of community foundations and city networks have helped to avoid degradation at local level, in spite of the socio-economic decline in the district. - The district attracted new young residents with the project ALLOGGIAMI - Presence of sports activities related to green areas (CUS) - Good availability of social assistance services	- Abandoned industrial areas that prevent communications and internal connections within the neighbourhood - Loneliness, relational isolation, growth of mono-parental families - Downward population dynamics (albeit not that accentuated), with a 3.59% migration rate and an overall -0.86% population growth rate for 2017) - Decrease of generalized participation to social, religious and otherwise community events and gatherings - Closure of public services - Fragmentation of the social fabric and of the support network (third sector) - Lack of social control of public and green spaces - Absence of pedestrian areas, areas of safe access to the school and areas with limited traffic - High concentration of public housing (social housing) - Absence of public libraries - In spite of Mirafiori being a district with many residents, its density is relatively low – under half of that of Turin (3,086 inh/km² vs. 6,805). The low population density does not favour interaction: poor	- Empty industrial spaces: potential social spaces to be filled - Presence of the seat of the Politecnico design office, with the relative number of young people (2000 students) and teachers - Action to involve the CUS on the Colonnetti Park - Construction of a common identity in the neighbourhood – a “Mirafiori brand” with which inhabitants can identify - Refurbishment of farmhouses on the golf course area	- Absence of a public policy that puts local projects in place at city level - Economic crisis: participation becomes a luxury if you do not have a job and you are in layoffs - Confidence crisis towards intermediate subjects (representation crisis) - Thousands of square meters of empty / vacant spaces that can further enhance degradation at local level (lack of attractiveness for development, “broken windows theory”)

		interaction between inhabitants and users (Polito students / teachers, FCA workers, CUS users, etc.)		
Human health and wellbeing	- Presence of numerous green areas equipped for outdoor sports and of urban gardens - Wide availability of accessible public green – considerably higher surfaces of green space per capita compared to the city (91 vs. 55 m² / inhabitant) - Presence of cycle path along the Sangone river	- Higher incidence of cardio and respiratory diseases, allergic diseases, chronic stress, mental health diseases and NCDs compared to data at city level. Relevant presence of alone elderly with psychic discomfort - Insecurity perceived in the green area along the Sangone river - Presence of dangerous infrastructures such as unsecured electric pylons within equipped green areas - Low permeability between the various parts of the district - Continuous use of the private vehicle, a serious shortage of cycle paths and difficulties in expanding the infrastructure (e.g. the via Plava bike path has been financed but the construction does not start) - Shortage of park areas accessible to the West	- CSR companies to involve the employees of companies based in Mirafiori South in the care of the green - Presence of Eco design and chemistry faculty in the territory - opportunities for activities of education and sensitivity to environmental issues	- Extra-urban vehicular traffic at high distance which potentially threatens the health of the inhabitants through air pollution
Ecological and environmental situation	- District with good presence of green areas, especially available for residential building areas - Parks extended to the south with good ecological potential	- Urban soils with high levels of pollutants from industrial pollution and fuels used in past years - High levels of atmospheric pollution - Abandoned industrial areas - Presence of abusive gardens as degraded and often polluted areas	- Possible connection and enhancement of the peripheral parks within the Corona Verde program and the ongoing process to redevelop the shores of the Sangone river	- Significant pollution due to the presence and use of the waste incinerator - Little local public transport, can limit the transition to more

	- Large spaces that help to avoid traffic congestion with the associated peaks of air pollution - Low temperature, reduction of heat island effect due good connectivity to green areas and building density - Mirafiori Social Green Project - Mirafiori Chlorophyll Project - Presence of active associations in terms of environmental sustainability - Higher percentage of "green per capita" than the rest of the urban area - Presence of vast areas dedicated to community gardens - Presence of cycle paths that connect the district to the city centre	- Poor availability of cycle paths for local use, which connect the various areas of the neighbourhood	- Processes of social activism that allow the involvement of citizens in the care of green spaces (Co-City / Regulation of common goods) - Presence of flat roofs and residual urban spaces as potential green roofs of greening - Eco design and faculty of chemistry, education and sensitivity to environmental issues - Industrial brownfields as potential for new green spaces	sustainable transport models - Possible conflicts between anthropic uses of green areas and their ecological value and ecosystem services
Economy and labour market	- Presence of large multinational enterprises - High number of employees in the service sector - Low real estate values in the area, compared to the urban average - Wide availability of empty accommodation - Good solutions for temporary residents, at low cost	- Work activities are increasingly individual within the district - Youth unemployment over 50% in the LL Analysis Area – District Mirafiori - Average completed year of studies for Mirafiori citizens is the third year, indicating a generally low education level. - Few local shops compared to city average - Low number of local businesses - Declining outdoor market activity - Lower number of employees in the construction sector (due to the crisis)	- TNE (Torino Nuova Economia) development plans and the former Mirafiori factory (example, Competence Center) - Presence of innovative companies in the Ex-Iveco area - FCA CSR policies	- Low interaction between the development plans of the TNE area, the former Mirafiori factory and the local community - Crisis in the construction sector and in the industrial sector



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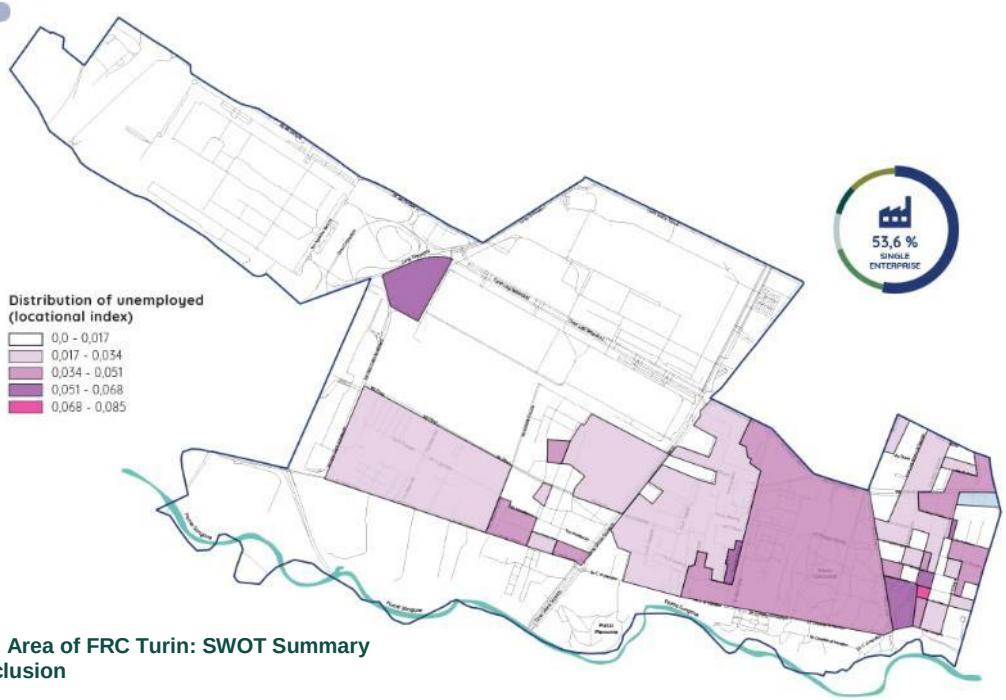
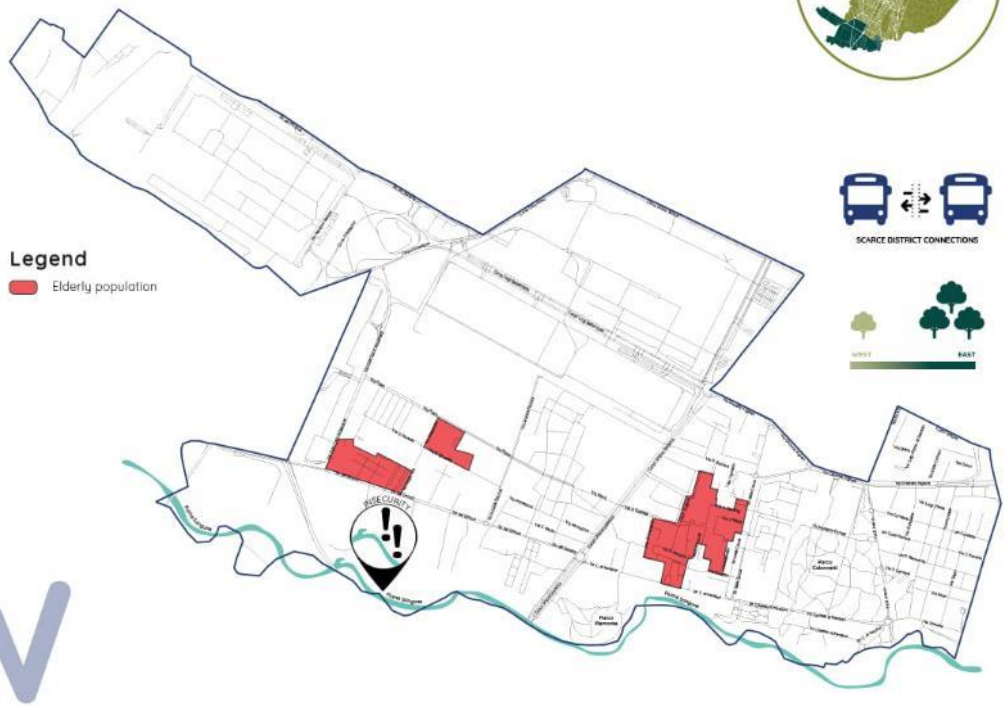


Figure 32 – Analysis Area of FRC Turin: SWOT Summary on socio-cultural inclusion



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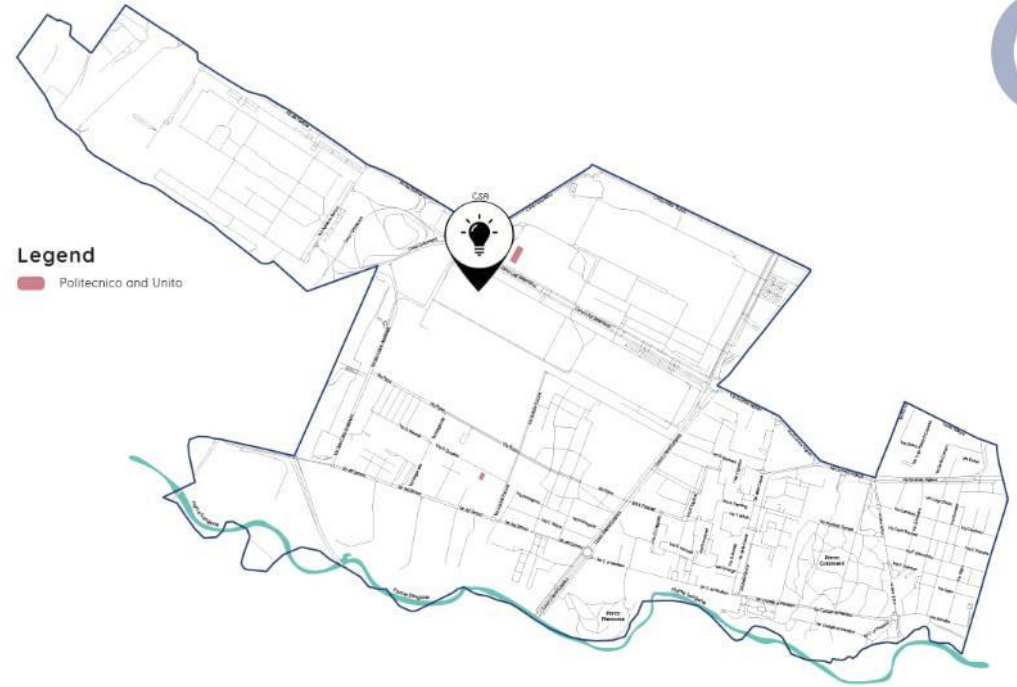


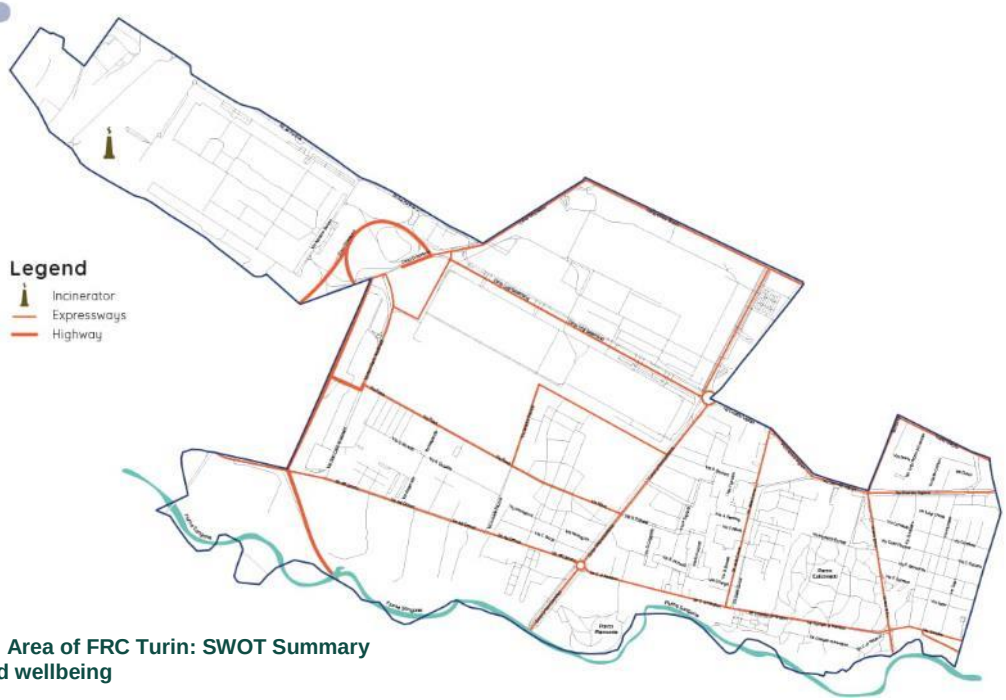
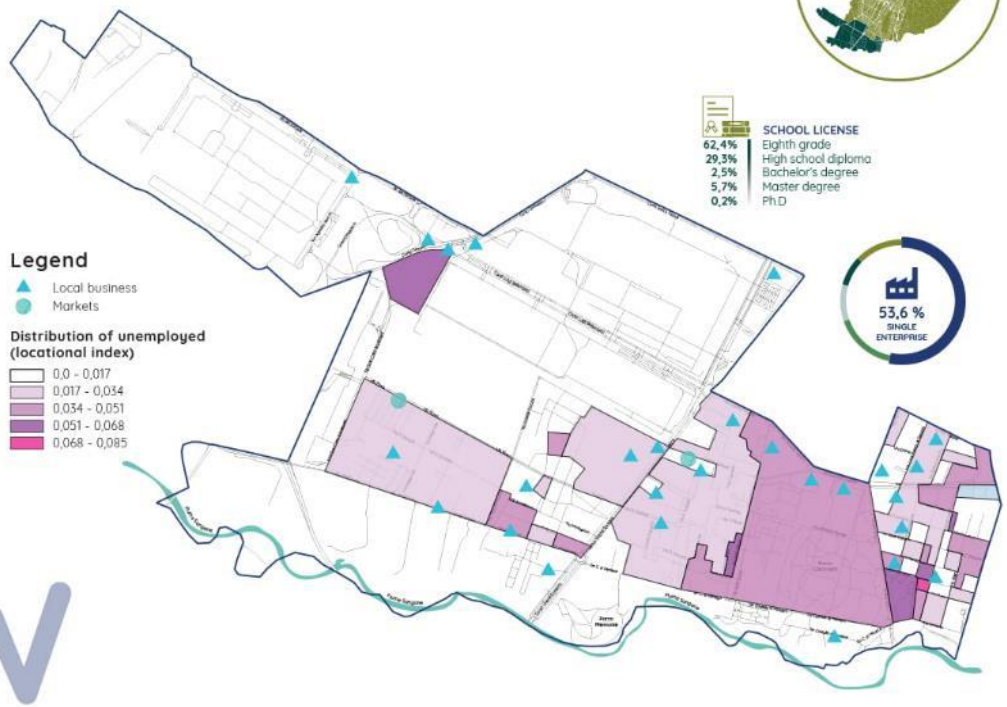


Figure 33 – Analysis Area of FRC Turin: SWOT Summary on human health and wellbeing



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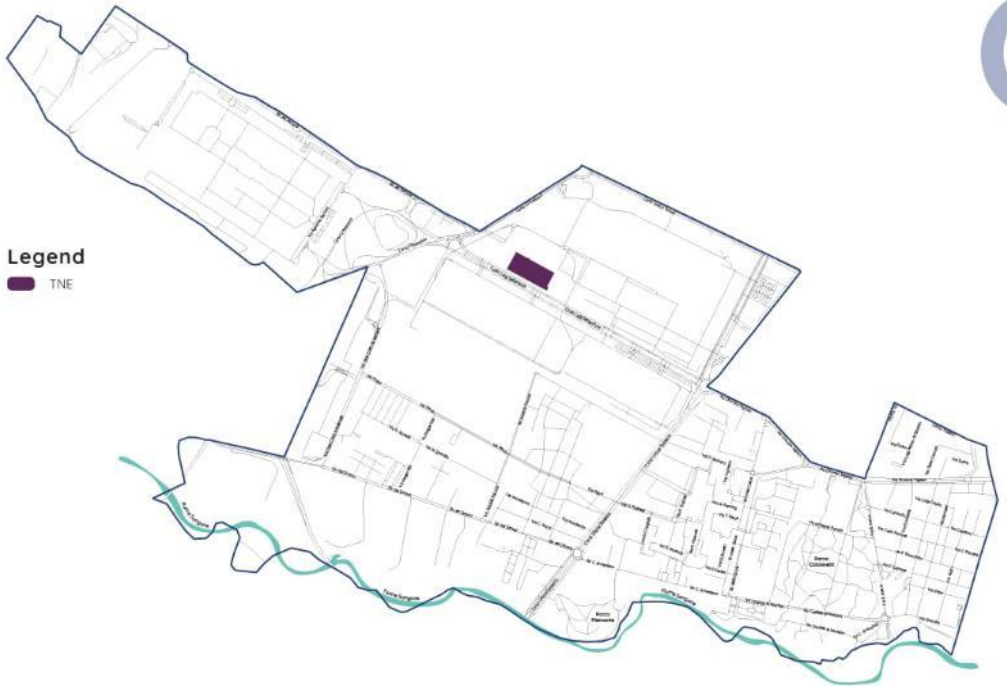

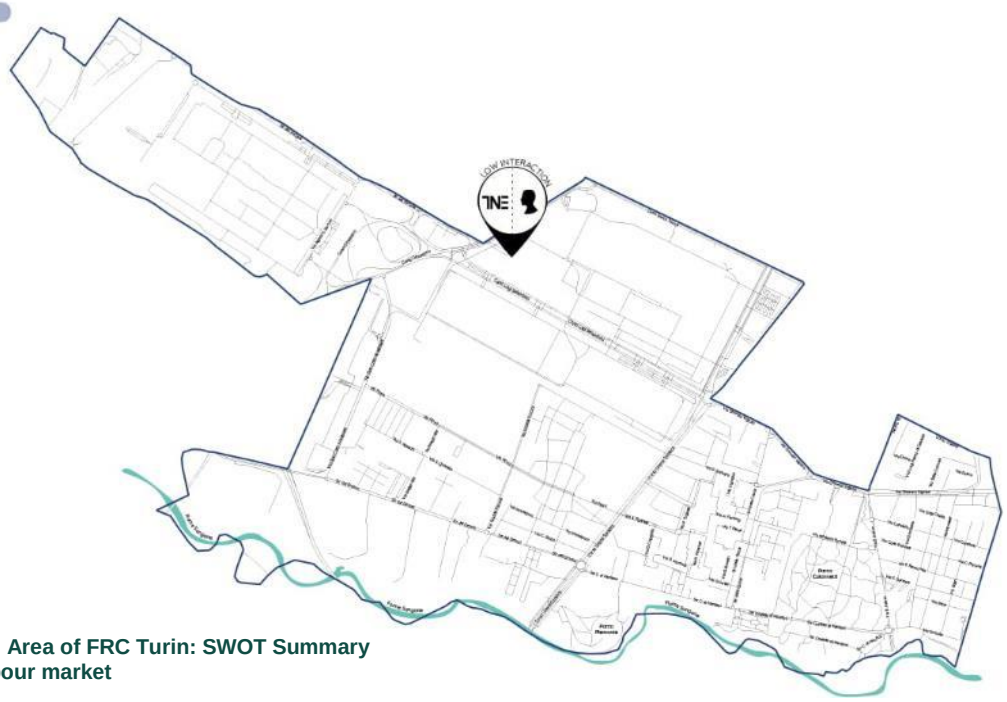

Figure 34 – Analysis Area of FRC Turin: SWOT Summary on economy and labour market

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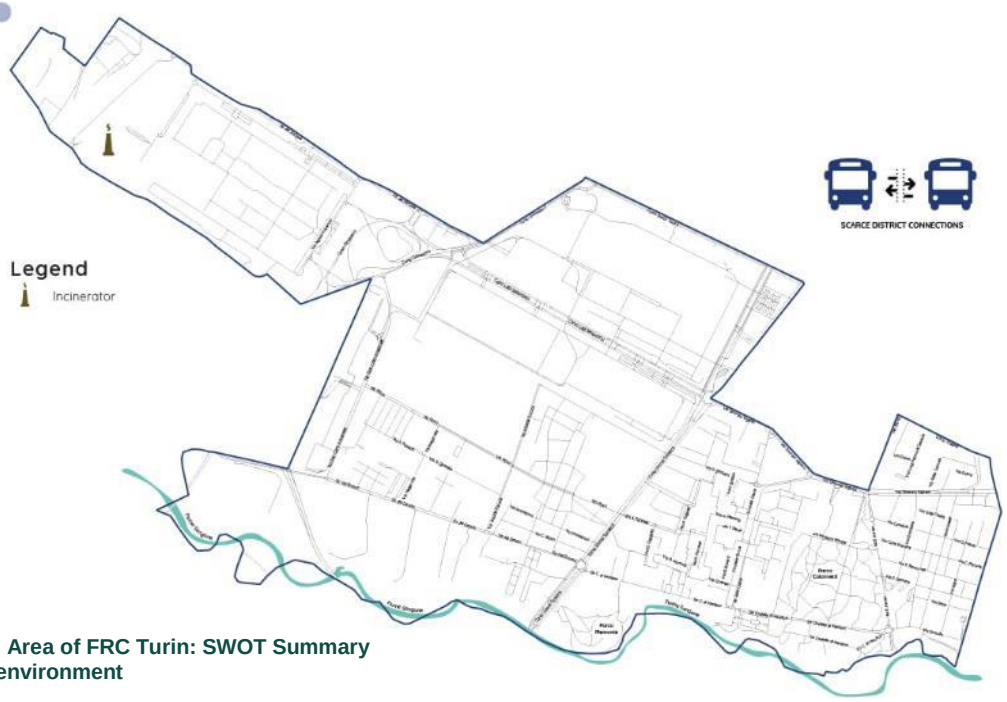


Figure 35 – Analysis Area of FRC Turin: SWOT Summary on ecology and the environment

7.3. SWOT analysis for Zagreb

SWOT ANALYSIS ZAGREB – CITY LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Developed social welfare system (financial aid and social services) - Diversity and abundance of civil society organizations - Good coverage of urban area with communal infrastructure - Good spatial coverage with public traffic system - Good accessibility of green spaces, and greenery as a service to inhabitants (3/4 of citizens having direct access within a radius of 300 m)	- Lack of funding for construction of needed social facilities and realisation of planned programmes - Inadequate inclusion of marginalized groups - Insufficient capacities and deterioration of buildings for education - Nonexistence of work evaluation criteria, results and developmental effects of civil society organizations: data is unavailable on the performance and social contributions of the NGOs - Vandalism/graffiti - Poor perception of importance of cultural and natural heritage as a development resource - Incomplete communal infrastructure network in the city outskirts - Lack of an integrated system of public transport connecting Zagreb and its surrounding area	- European programmes supporting lifelong learning and retraining - Organization of international sports and cultural events that position the City of Zagreb on the international stage - Plans to develop integrated public transport of Zagreb and its surrounding counties	- Global and national economic crisis - The increase of poverty - Social stratification – widening of the gap between the poor and the rich - Architectural barriers (temporary and permanent interventions on public areas, traffic poles, kiosks, market stalls, urban furniture etc.)
Human health and wellbeing	- Availability of medical and hospital services, developed network of public health and	- Insufficient capacity for specific medical services and poor condition of some facilities and equipment	- Use of ESI funds and other foreign financial sources for the development of the city	- Ageing population - Inadequate planning of new residential zones

	disease preventive programmes - Trend of increasing life expectancy (more than 2 years over the last 7) - Favourable epidemiological situation in terms of infectious diseases - Abundance of natural landscape zones: Medvednica nature park, alluvial plain of Sava river, Vukomeričke hills, urban forests in the city	- Mortality rate higher than the EU average (chronic diseases, some types of cancers etc.) - Increased need for health care and protection due to ageing population - Lack of accommodation capacity for the elderly - Insufficient number, poor condition and uneven distribution of existing sports and recreational facilities	- Raising awareness of health through education - Creating a network of green recreational zones and completing bicycle track network - The use of ESI funds and programmes and other foreign financial sources to prepare and implementation of health-related projects	- Privatization of sports fields - The inactivity and neglect of walking as a primary form of mobility (reducing the pedestrian corridors to accommodate parking and bicycle paths – difficult movement along the walking paths)
Ecological and environmental situation	- Natural diversity - Built heritage - Agricultural potential of rural city area - Good quality of parks and green areas - Diversity and preservation of natural resources: Sava aquifer, forests, agricultural land - Relatively good indicators of environmental quality in general but also for particular elements such as NO2 and O3 concentration; - Established system of protection and conservation	- Outdated communal infrastructure network (large water losses, maintenance costs) - Consistent exceeding of the reference values for PM10 concentration (EEA, 41.2% of the last 100 days – 2018. classified as “Poor” Air quality index due to PM10) - Abandoned and unfinished buildings - Insufficient use of train, park & ride and bike & ride options - Inadequately developed urban areas - Illegal landfills - Incomplete waste management system - Insufficient share of use of renewable energy sources	- Possibility of developing sustainable urban mobility plans - Developing and linking the rural area as an asset for development of economy, environment, landscape and tourism in the city - Revitalization of industrial architecture's valuable structures and their inclusion in cultural and tourist offer of the city through EU funds - Revision of physical planning documents with respect to the principles of low carbon development, energy transition and renaturalisation	- Loss of identity of historical settlements - Reconversion of forests and agricultural land in private ownership - Pressures for land use conversion of agricultural land - Degradation of architectural heritage - Expansion / sprawl of the city built-up areas without the urbanistic and economic justification - Endangerment of natural resources by conversion and exploitation

	of natural and cultural heritage - Tradition of environmental care	- Insufficient public awareness of need for environmental care - Low ratio of energy efficient buildings - Non-existent common strategy for protection and use of resources in the city of Zagreb and its surrounding area - Incomplete hot water network and no cooling water network - Decisions on city spatial development are made without using analyses	- More effective cooperation with neighbour counties in environmental and natural sense of values - The use of ESI funds and programmes and other foreign financial sources to prepare and implement projects in the field of environment - Protection of aquifer and development of space along Sava river - Unused geothermal sources	- Unsatisfactory coordination in planning and construction of traffic infrastructure - Centralization on the state level in certain sectors (forests, agricultural land, water) - Climate change - Insufficient coordination of key actors in environmental issues - Common changes to regulations, plans and programmes, related to the topic of waste management - Groundwater endangerment
Economy and labour market	- Educated population - Diversity of cultural, educational and scientific research institutions - Concentration of businesses/entrepreneurs and employment opportunity - Skilled labour - Growing tourist centre - Development of contemporary business infrastructure - Diversity of specialized business services - Development of high-tech sectors of economy	- Insufficient interconnection of economy and science/research - Lack of strategy and implementing measures for the development of the economy - Unused potential of city property - Underdeveloped and insufficiently accessible modern business infrastructure (entrepreneurial hubs, technology parks) - Existence of grey economy, which is neither taxed nor monitored - Complicated and time-consuming process of adoption of physical planning documents	- Drafting and implementation of a comprehensive policy programmes to encourage employment - Geopolitical position as a development resource - Development and availability of information and communication services - Networking and exchange of experiences with cities within the Republic of Croatia, EU and abroad (partnership programmes) - Zagreb university city - The use of ESI funds and other foreign financial sources	- Strengthening of the human capital flight trend - Mismatch of supply and demand for workforce - Dependence of development strategies, projects and programmes on political changes and political will in the city and the state - Administrative barriers when investing in entrepreneurship development - Competition of other European cities - Competition for cheaper foreign production

	(pharmaceutical, ICT, electrical industry) - Tradition of innovation - Market with the highest purchasing power (as the capital of Croatia) - Land and other property owned by the city – strategic development resources - Incentive policies in the field of traditional crafts and domestic products in the city markets	- Difficulties in resolving property - legal relations for realisation of projects of importance for the city - Inadequate flow of individual and public transport (mobility problems) - Concept of circular economy is undervalued	for the development of small and medium entrepreneurship - Modernisation of Pan-European VB and X transport corridors - Global trends of rising demand for urban, cultural, congress, health tourism and agritourism - Steering industry towards making products of larger added value - Developing management system of strategic city projects - Inclusion in support funds and expansion of market for ecological production, agrotourism, rural cultural landscape etc.	- Competition of neighbouring counties for lower business costs - Failure to fulfil commitments to the European Commission

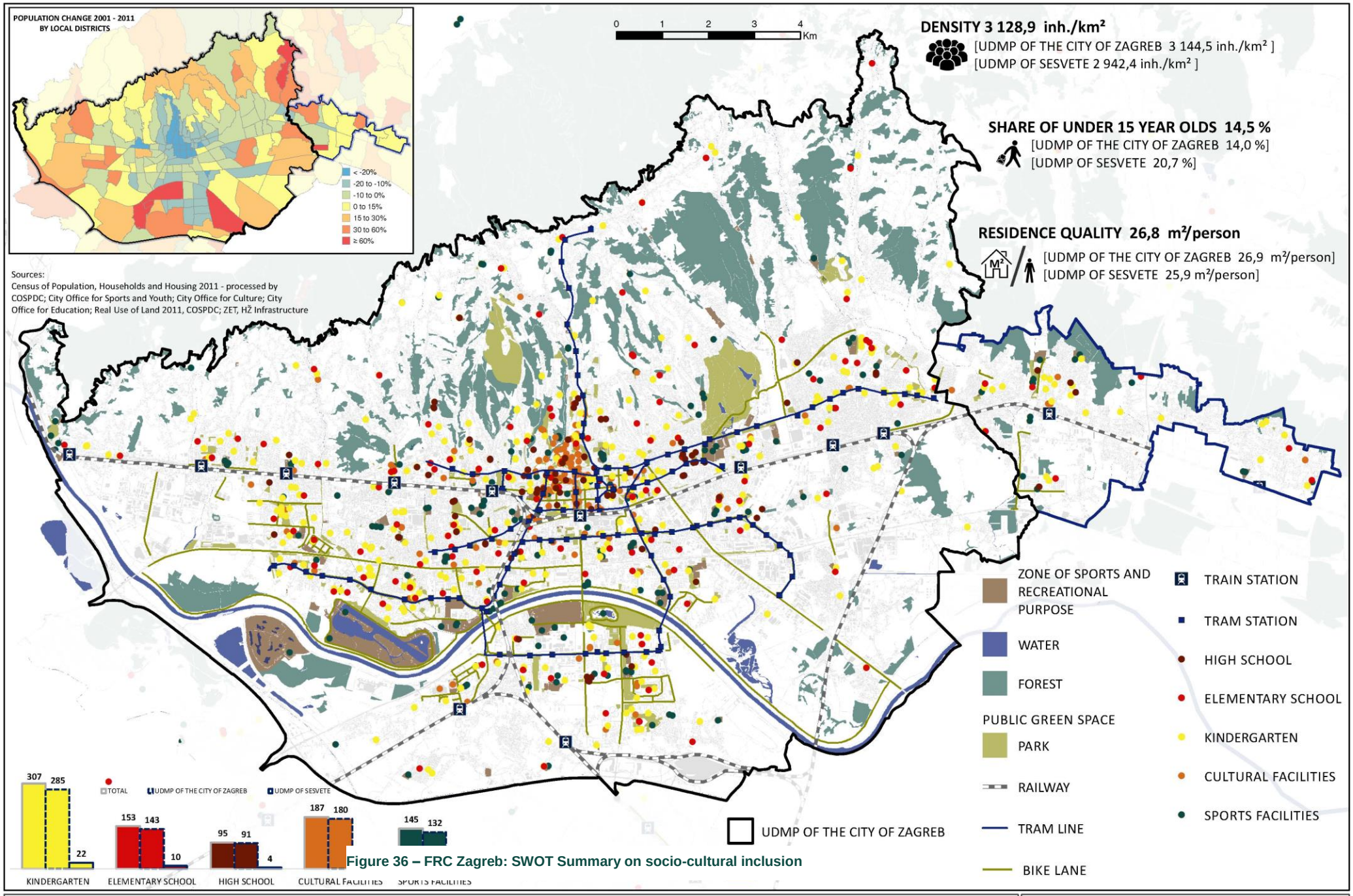


Figure 36 – FRC Zagreb: SWOT Summary on socio-cultural inclusion

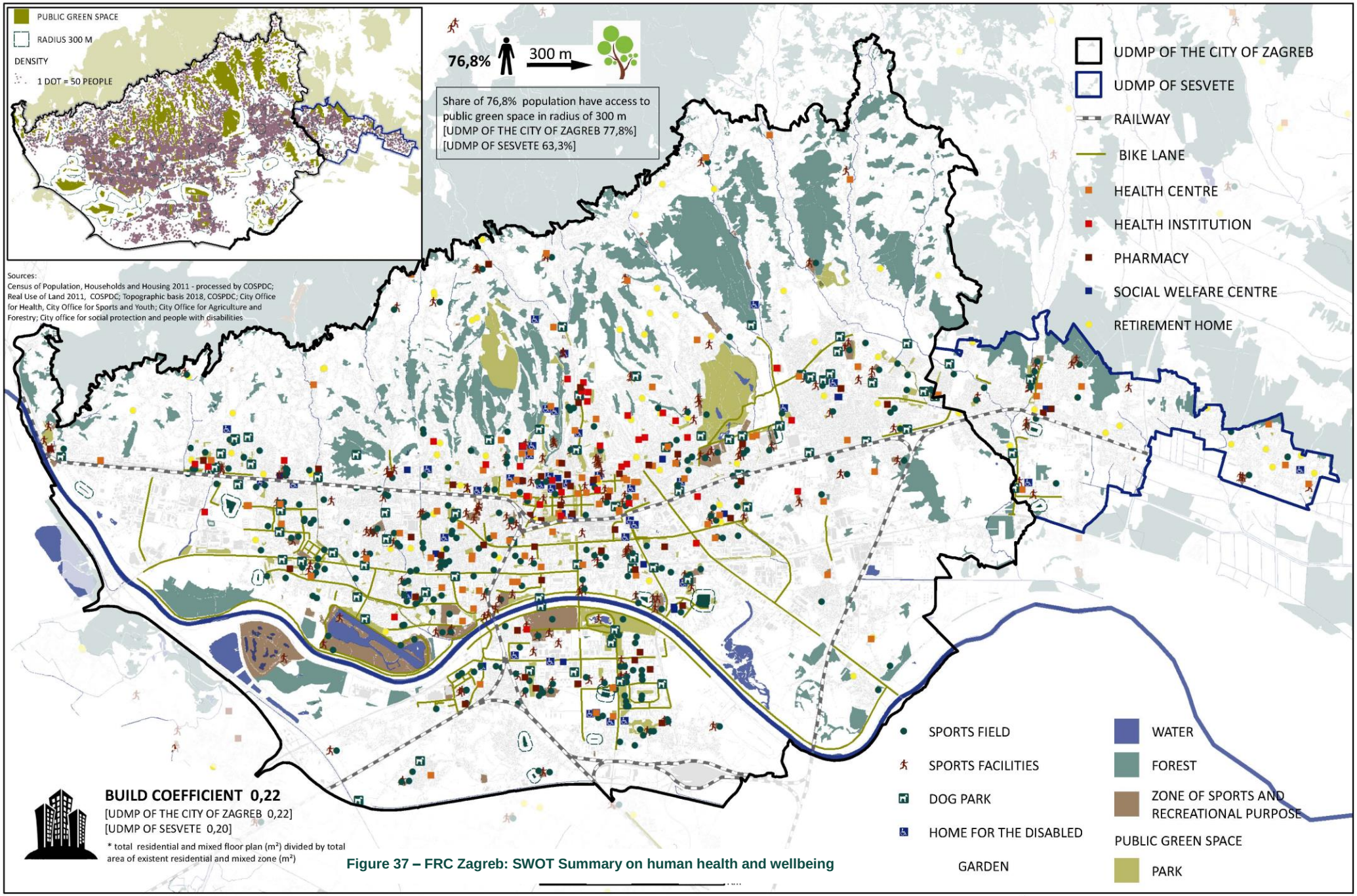
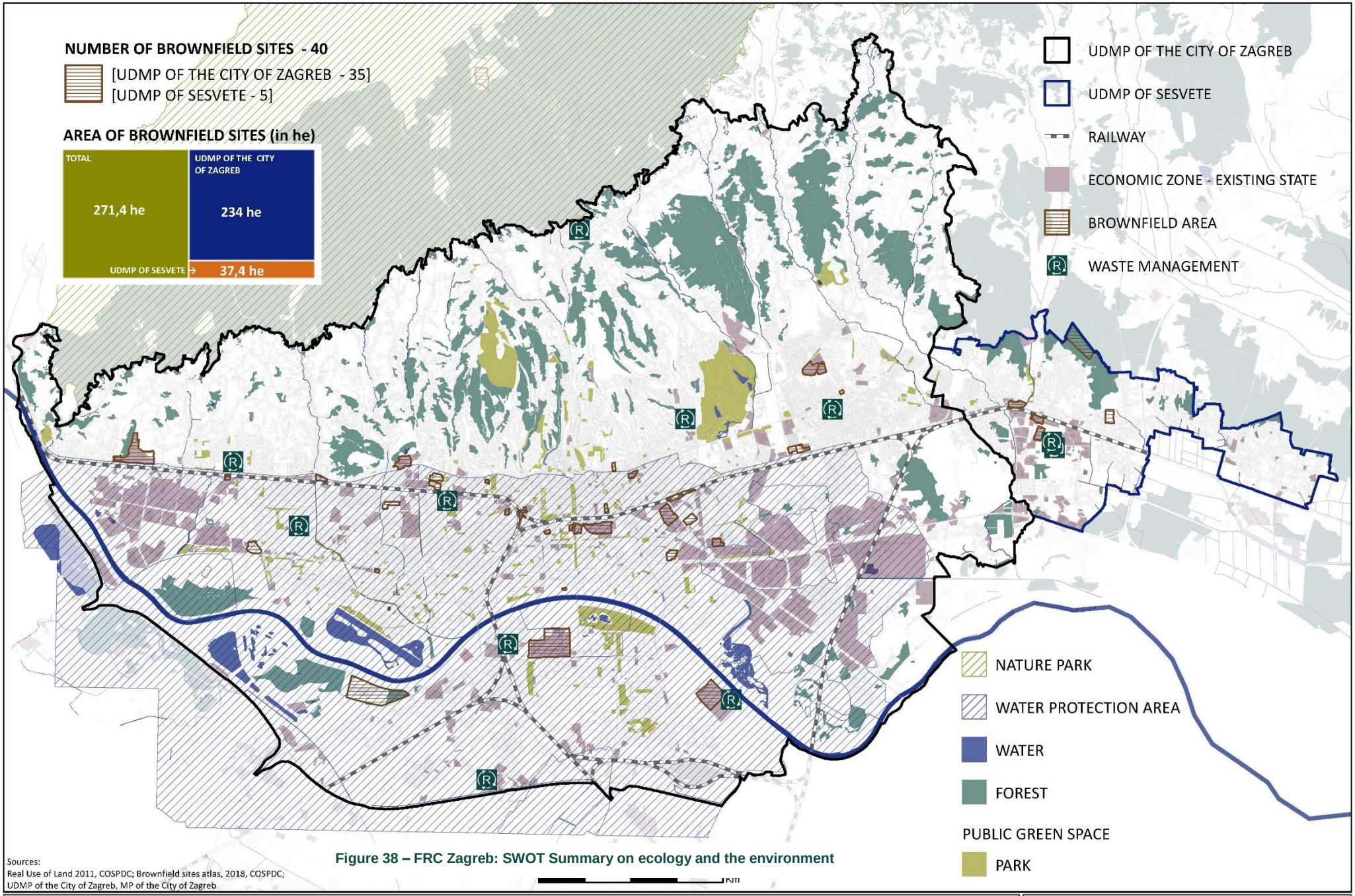


Figure 37 – FRC Zagreb: SWOT Summary on human health and wellbeing



Sources:
Real Use of Land 2011, COSPDC; Brownfield sites atlas, 2018, COSPDC;
UDMP of the City of Zagreb, MP of the City of Zagreb

Figure 38 – FRC Zagreb: SWOT Summary on ecology and the environment

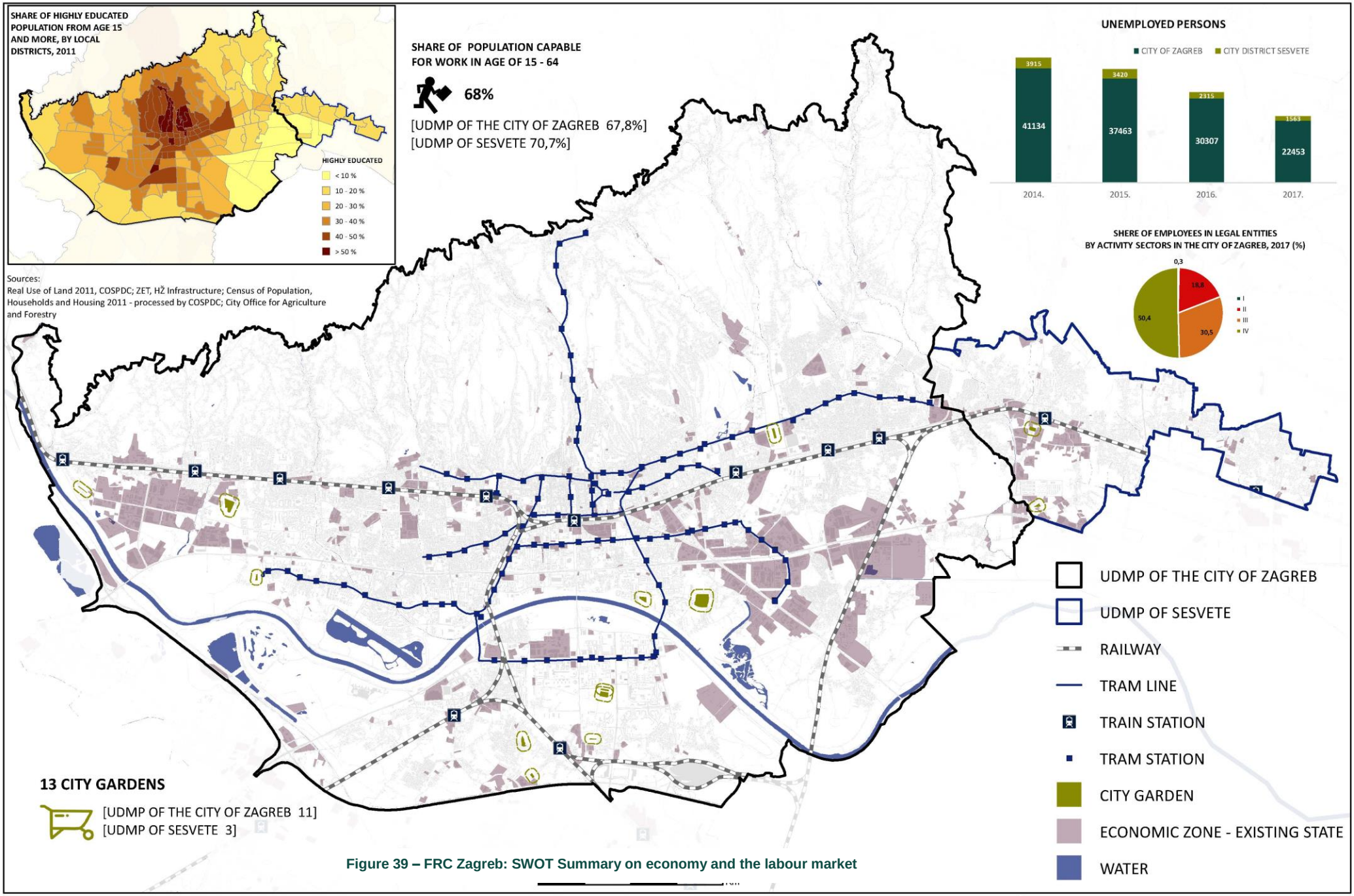
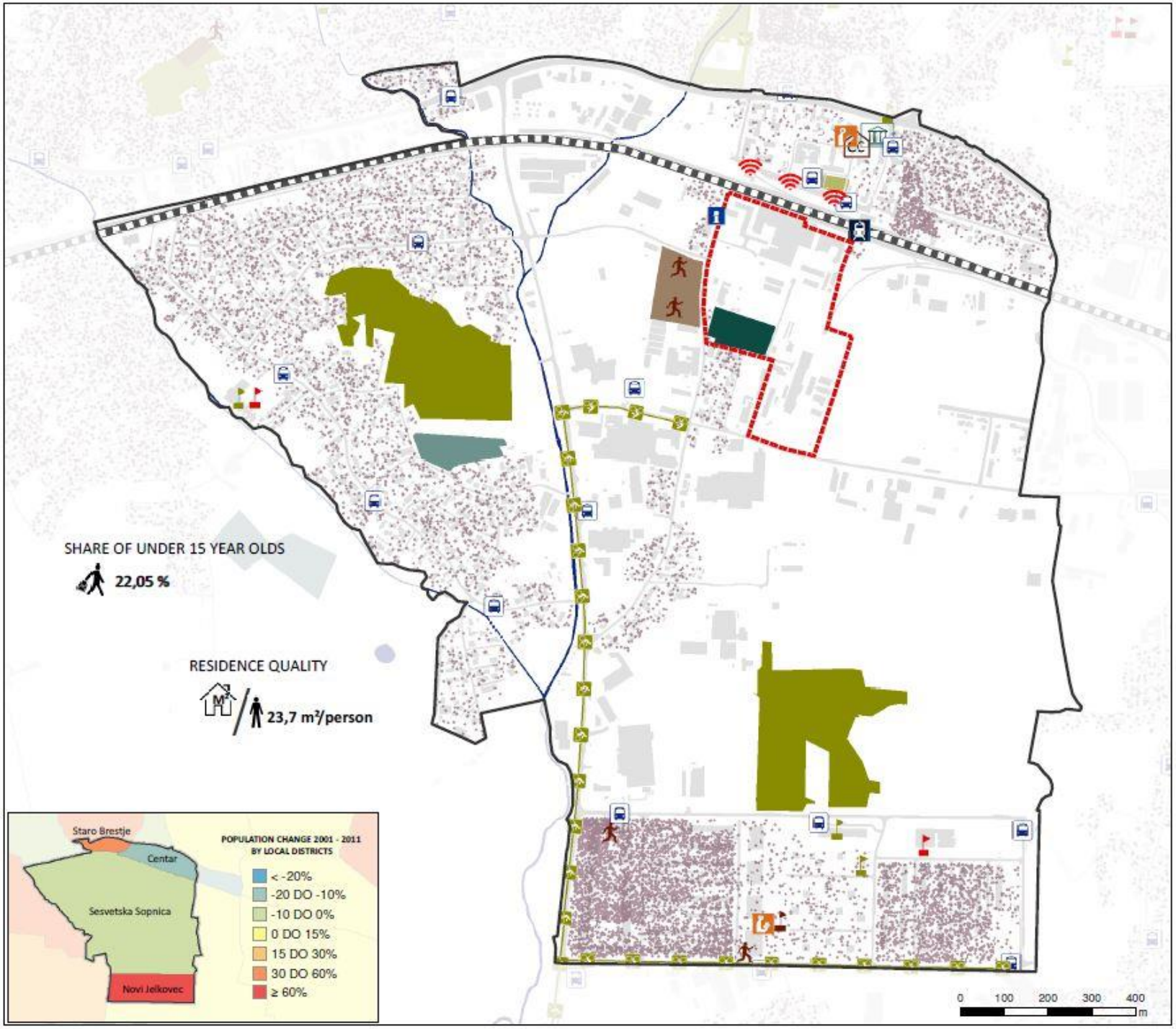


Figure 39 – FRC Zagreb: SWOT Summary on economy and the labour market

SWOT ANALYSIS ZAGREB – LIVING LAB LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Powerful civil society – local population supports the initiative to change the current conditions and develop new facilities - Young population in the adjacent area - Community gardens provide opportunity for socializing of the users - Presence of physical activity in part of the population, regardless of inadequate facilities	- Numerous marginalized social groups (poor, Roma, people with disabilities and special needs) - Difficult mobility due to inadequately constructed pavements and paths - The railway separates the area south of the centre of Sesvete, inadequate crossing - Population south of the railway isolated from the rest of Sesvete - Uniformity of land use in the zone - The wider area lacks public and social facilities - Illegal dumping of construction waste - Demographic explosion - population tripled in the last 30 years (communal problems) - The need for public services such as police, health centre, court, music school, technology centre etc. - Existing services and facilities are inadequate for actual population - Undeveloped awareness of ecological problems - the need for education and sensitization of the population	- Potential of planning social and inclusive developments in the area - Planning of commercial facilities that communicate with the pedestrians (shops, market, public institutions) - Possibility of development of sports and recreational zones at the centre of the area - existing spatial capacity due to the inactive commercial/ industrial zone	- The planned commercial/ industrial zone might be inaccessible to the public, and monofunctional so it is not used outside working hours, which could contribute to the isolation of the population from the centre of Sesvete - Inadequate participation of the local population in the planning process - Further exclusion of the population south of the railroad - The construction of a commercial /industrial zone does not ensure acceptable and necessary facilities for the needs of the local population
Human health and wellbeing	- Forest and plant nursery provide potential for a new recreation zone (not in current planning documents)	- Green areas are not linked to residential areas, are not publicly available and have no public facilities - Non-existent organized publicly available green or recreational zone within the whole LL area	- Extending and completing of the network of pedestrian and bicycle paths	- Introduction of loud and incompatible production in the commercial/ industrial zone, consequently the disturbance of the health of the population

	- Vuger stream in the vicinity, bicycle track and walking path are being built along the stream - 68.6% of the population in the Analysis Area of Zagreb LL have access to public green space in a radius of 300 m	- Railway line makes the area south of it poorly accessible - The environment is a threat to safety (the existing green zones are inaccessible and have become the place for dumping construction and other waste) - Lack of pedestrian-cycling infrastructure apart from partial tracks in the newly built neighbourhood of Novi Jelkovec (pedestrian communication takes place along a fast road, without vegetation, in the commercial/ industrial zone) - Playgrounds exist only within school property, with the exception of Novi Jelkovec where sporadically developed public facilities exist (such as fitness parks, bowling grounds, etc.) – inadequate for the number of inhabitants - Lack of sports and recreational facilities contributes to population inactivity - Lack of identity - the need for a new centre - Playgrounds are not publicly available - a large number of sports centres are commercial	- Possibility of extending sports and recreational facilities - Possibility of extending urban gardens to include the new concept of a therapeutic garden for people with special needs (planned within the proGIreg project, NBS3)	- Continuation of polluting with construction and other waste
Ecological and environmental situation	- Numerous green areas in the adjacent area, but inaccessible to the public and unused - Vuger stream as a N-S link connecting Medvednica and Sava river - Forest and plant nursery in the vicinity	- Neglected area of the abandoned industrial complex - the threat and the danger of collapsing infrastructure - Planning documents foresees insufficient areas for residential and mixed use - Streams are crossed by roads, next to the commercial/industrial zone - Disruption of the streambed by illegal construction - loss of the green corridor along the stream	- Opportunity to expand the idea of green infrastructure in an area that is yet to be built - Possibility of relocating the commercial /industrial zone - Possibility of increasing the share of	- Given the necessary modifications to the planning documentation, there is a risk that, besides project activities, other renewal activities will not be implemented, which would result in the site not coming to life - Continue the existing policy of neglecting space

	- Higher percentage of "green per capita" than the rest of the urban area - Presence of vast areas dedicated to community gardens - Presence of cycle paths that connect the district to the city centre	- The tendency of channelling the stream without the prospect of return to its natural state and / or development of social spaces next to the stream - Large area planned for commercial/ industrial purposes without adequate drainage - direct spillage of wastewater into the environment. - Lack of awareness of the need for environmental protection and planning of green areas - the need for a central park of a larger scale in the centre of the LL - Lack of parks along the streams - a continuation of sports and recreational facilities - Insufficient number of children's' playgrounds	green areas throughout the area - Possibility of using new principles and expanding road corridors - NBS solutions due to lack of space	- Existing road corridors are planned for the needs of commercial vehicles and do not take into account the needs of population mobility (trees, wide walking paths, necessary recreational facilities and resting platforms, pollution) - Further pollution of streams and loss of natural value
Economy and labour market	- Young and active population - Affordable real estate - Vicinity of railroad connecting Sesvete to Zagreb - Strong connection to people living abroad	- Unexplored demographic data of the existing population - Worn-out traffic infrastructure - Perception of the area as abandoned and obscured - The need for a different type of urban gardening (larger plots, possibility of production capitalization, variety of production etc.)	- Possibility of building new productive facilities in the zone such as HUB, market and public buildings - Alternative location for the development of the commercial /industrial zone beyond the LL area at the intersection of two European corridors with solved traffic	- Revitalization of the commercial/industrial zone as the main driver of the development of the space despite the different requests from the local community - Increased commercial/industrial traffic at the heart of the district from the development of the commercial/industrial zone - overload of transport infrastructure at the expense of residents



LIVING LAB DISTRICT
LIVING LAB - SLJEME SESVETE
RAILWAY
BIKE LANE
TRAIN STATION
BUS STOP
HIGH SCHOOL
ELEMENTARY SCHOOL
KINDERGARTEN
CULTURE CENTER
LIBRARY
MUSEUM
SPORTS FACILITIES
FREE WI-FI SPOT
INFO POINT
ZONE OF SPORTS AND RECREATIONAL PURPOSE
CITY GARDEN
FOREST - PRIVATE PROPERTY
FOREST
PUBLIC GREEN SPACE
PARK
DENSITY
1 DOT = 1 PERSON

Sources:
Census of Population, Households and Housing 2011 - processed by COSPDC; City Office for Sports and Youth; City Office for Culture; Real Use of Land 2011, COSPDC; ZET, HŽ Infrastructure

proGIreg

2.1 SPATIAL ANALYSIS 1) SOCIO - CULTURAL INCLUSIVENESS

CITY OF ZAGREB
CITY OFFICE FOR THE STRATEGIC PLANNING AND DEVELOPMENT OF THE CITY, January 2019

Figure 40 – Analysis Area of FRC Zagreb: SWOT Summary on socio-cultural inclusion

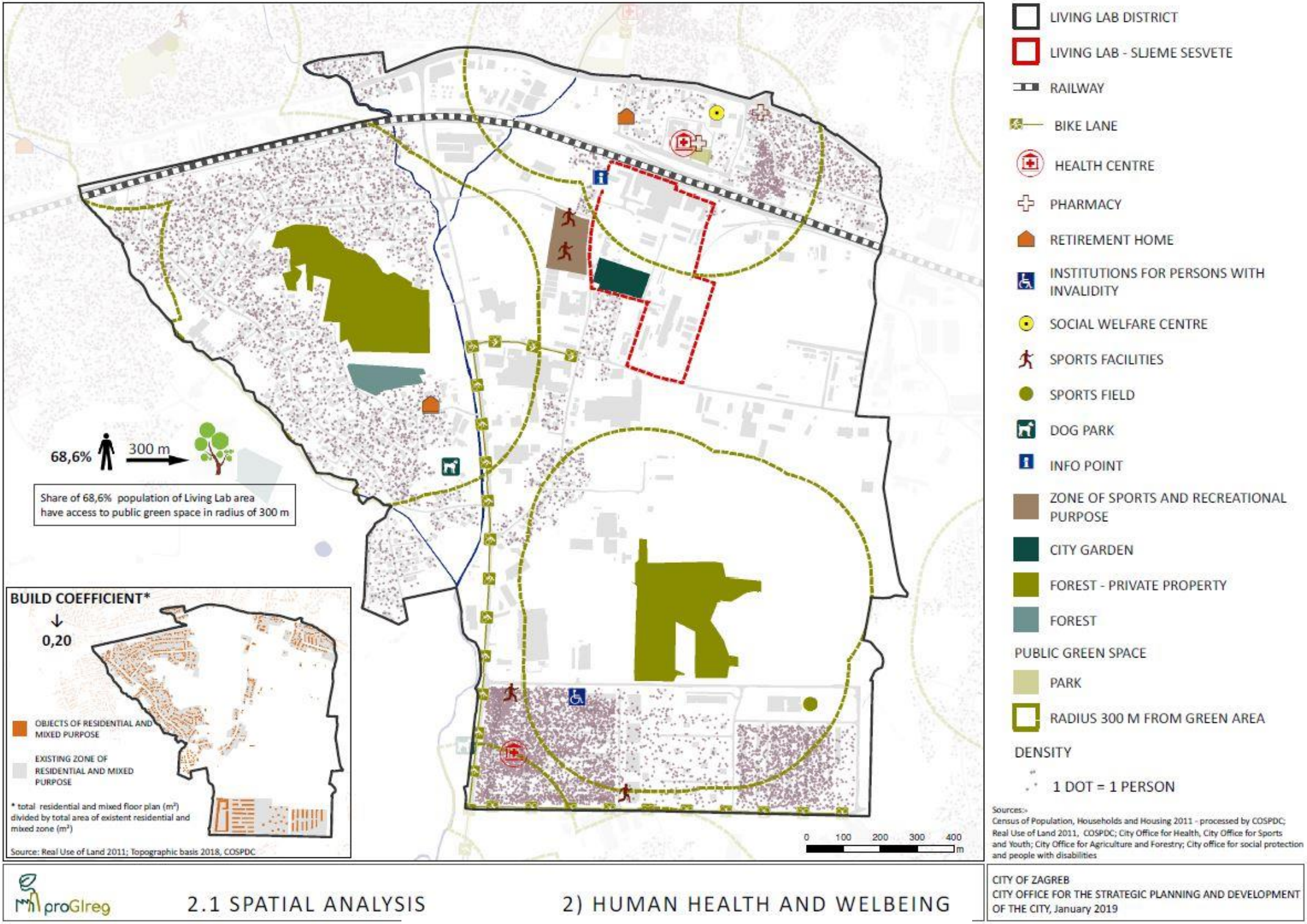
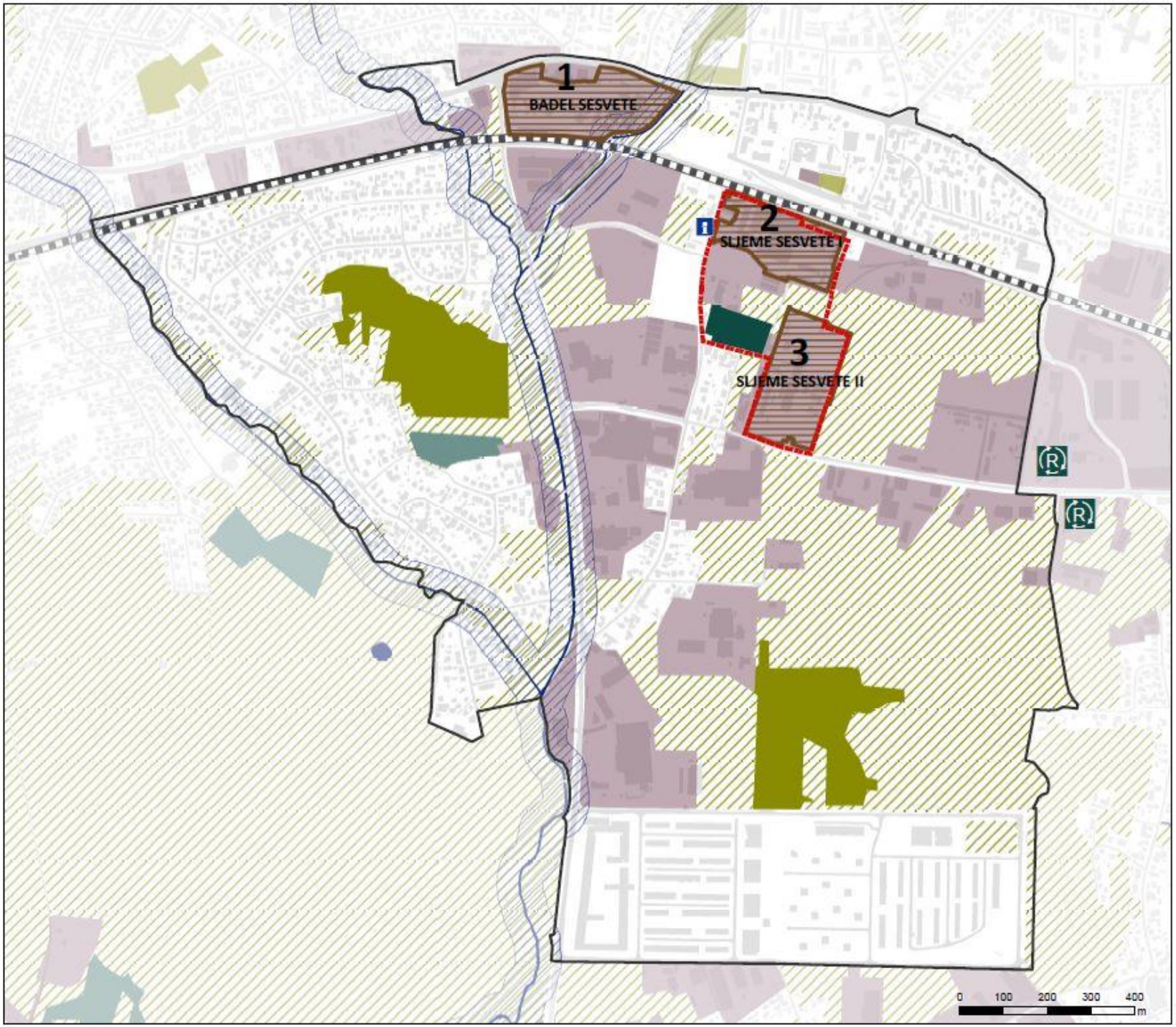


Figure 41 – Analysis Area of FRC Zagreb: SWOT Summary on human health and wellbeing



LIVING LAB DISTRICT

LIVING LAB - SLJEME SESVETE

RAILWAY

ECONOMIC ZONE - EXISTING STATE

STREAM

WASTE MANAGEMENT

INFO POINT

CITY GARDEN

FOREST - PRIVATE PROPERTY

FOREST

UNDEVELOPED GREEN AREA

PUBLIC GREEN SPACE

PARK

BROWNFIELD AREA

LOCATION NAME:
1 BADEL SESVETE
2 SLJEME SESVETE I
3 SLJEME SESVETE II

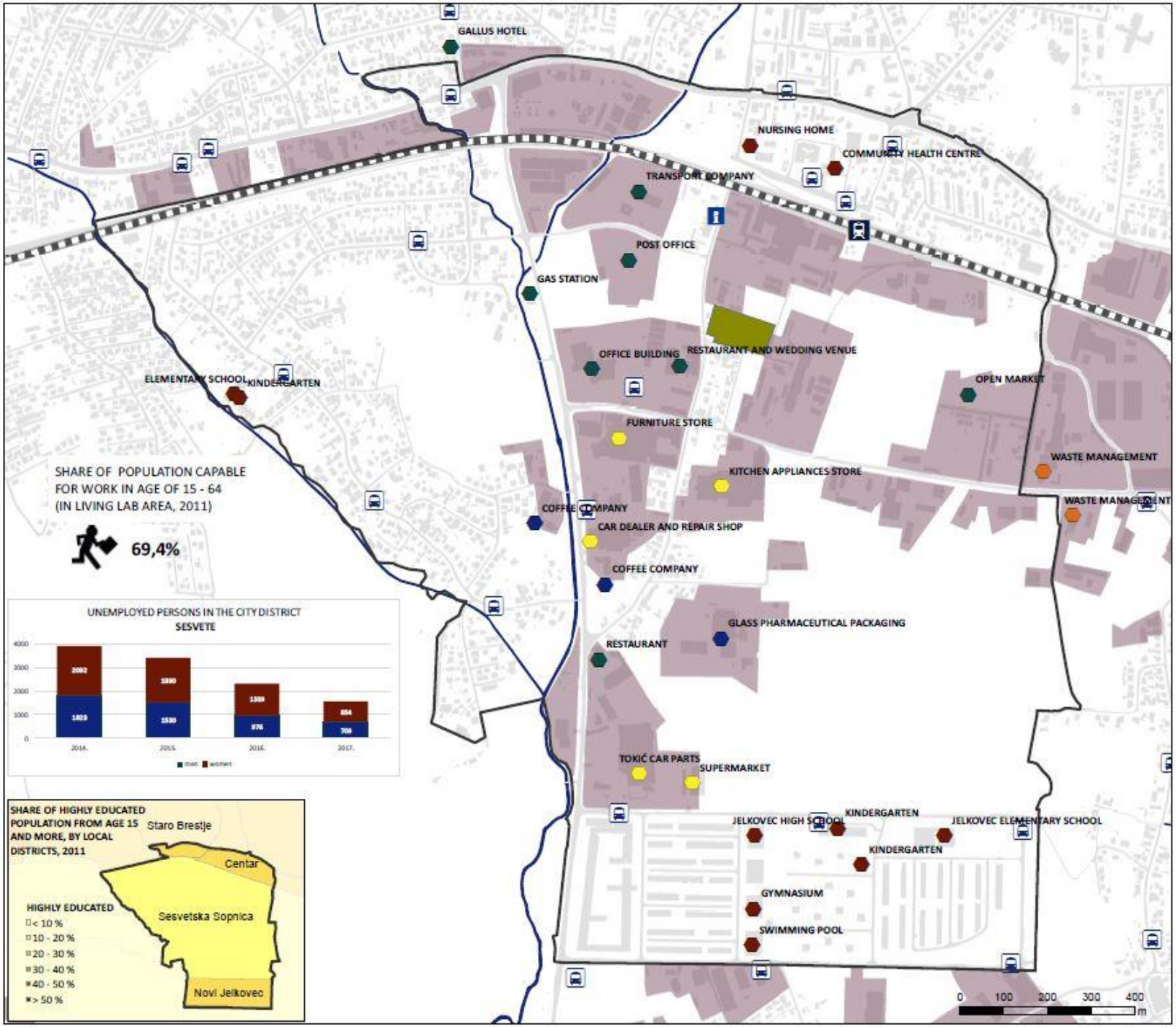
Sources:
Real Use of Land 2011, COSPDC

proGIreg

2.1 SPATIAL ANALYSIS 3) ECOLOGICAL AND ENVIRONMENTAL RESTORATION

CITY OF ZAGREB
CITY OFFICE FOR THE STRATEGIC PLANNING AND DEVELOPMENT OF THE CITY, January 2019

Figure 42 – Analysis Area of FRC Zagreb: SWOT Summary on ecology and the environment



Sources:
Real Use of Land 2011, COSPDC; ZET, HŽ Infrastructure; Census of Population, Households and Housing 2011 - processed by COSPDC; City Office for Agriculture and Forestry

proGireg

2.1 SPATIAL ANALYSIS

4) ECONOMY AND LABOR MARKET

CITY OF ZAGREB
CITY OFFICE FOR THE STRATEGIC PLANNING AND DEVELOPMENT OF THE CITY, January 2019

Figure 43 – Analysis Area of FRC Zagreb: SWOT Summary on economy and labour market

7.4. SWOT analysis for Cascais

SWOT ANALYSIS CASCAIS - CITY LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Cascais Social-net (Rede social de Cascais) - Peaceful communities (31 crimes / 1000 persons per year) - Participatory budget programme	- Migrant communities with lack of school education	- National Educational programmes for adults - EU projects like proGIreg and Milan pact	- Gang influence
Human health and wellbeing	- Good quality of life (Bloom Consulting's Portugal City Brand Ranking sets Cascais in 3rd place, of the 308 Portuguese municipalities) - Existing local public health infrastructures (1 public general hospital, 2 specialist hospitals, 6 health centres)	- Weak pedestrian accessibilities - Lack of urban green areas (indicator 3.1.3: 10%; indicator 2.2.1: 12 m²/person)	- EU projects like Milan Pact and proGIreg - Organic food is trendy	- Climate change
Ecological and environmental situation	- Mild climate (supporting year-round cultures; 12^0 C Winter mean temperature) - Local Land Bank (Banco de Terras)	- Lack of urban green areas (see above) - Urban expansion - River pollution - Other interests for land use, not in the NBS scope	- European projects like Milan Pact and proGIreg	- Climate change
Economy and labour market	- Factor C – Local development programme - Huge market for vegetables and fruits (Market study 2016) - Citizens with economic capacity that may support Community Supported Agriculture (CSA) - Local Brand Terras de Cascais	- Lack of interest and entrepreneurship in primary sector - Social and economic asymmetries - More profitable projects in short term - Lack of public/private partnership	- Organic vegetable market increasing trend - New economies emerging like CSA	- No national funds for the primary sector in Cascais

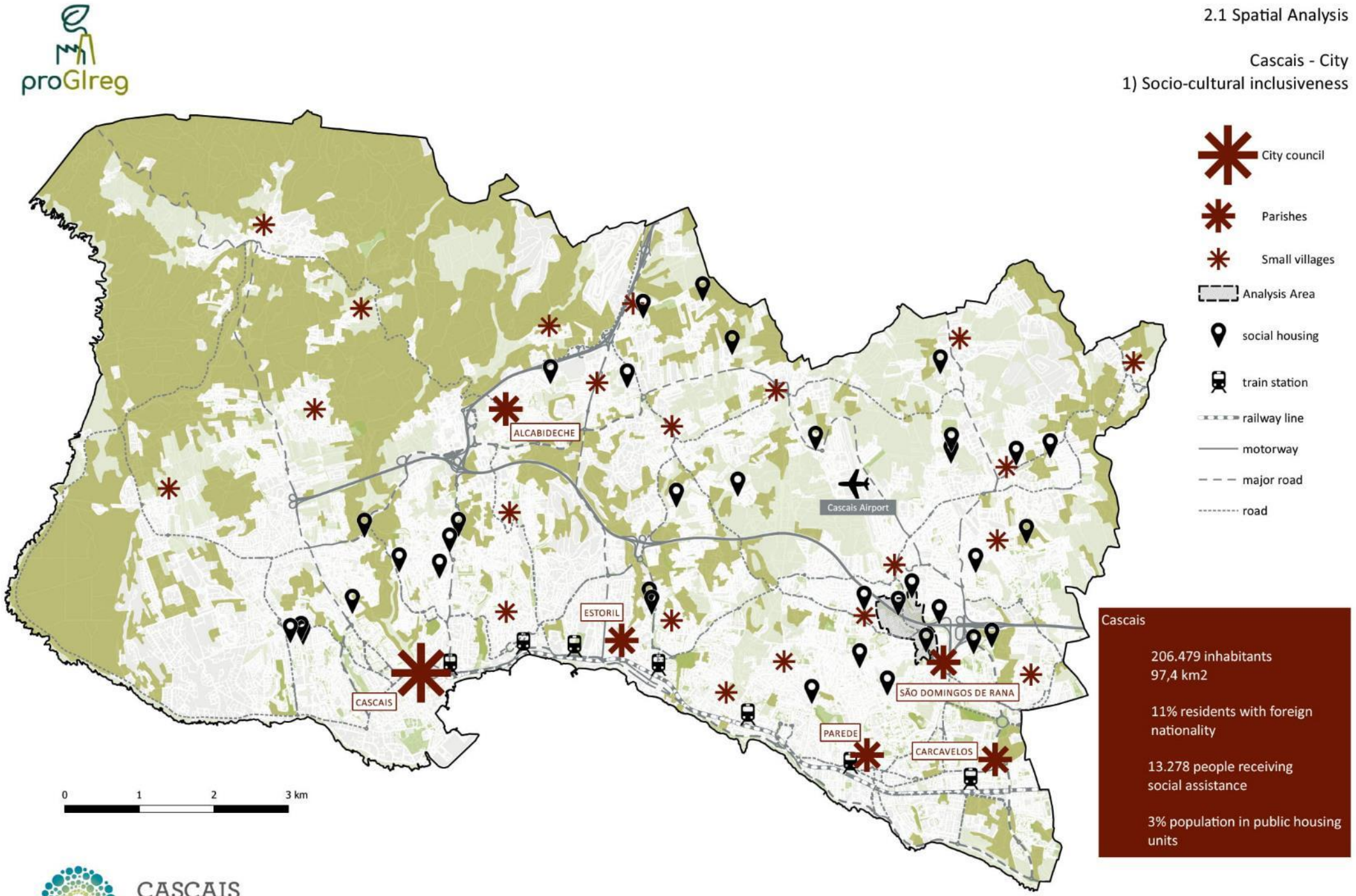


Figure 44 – FC Cascais: SWOT Summary on socio-cultural inclusion

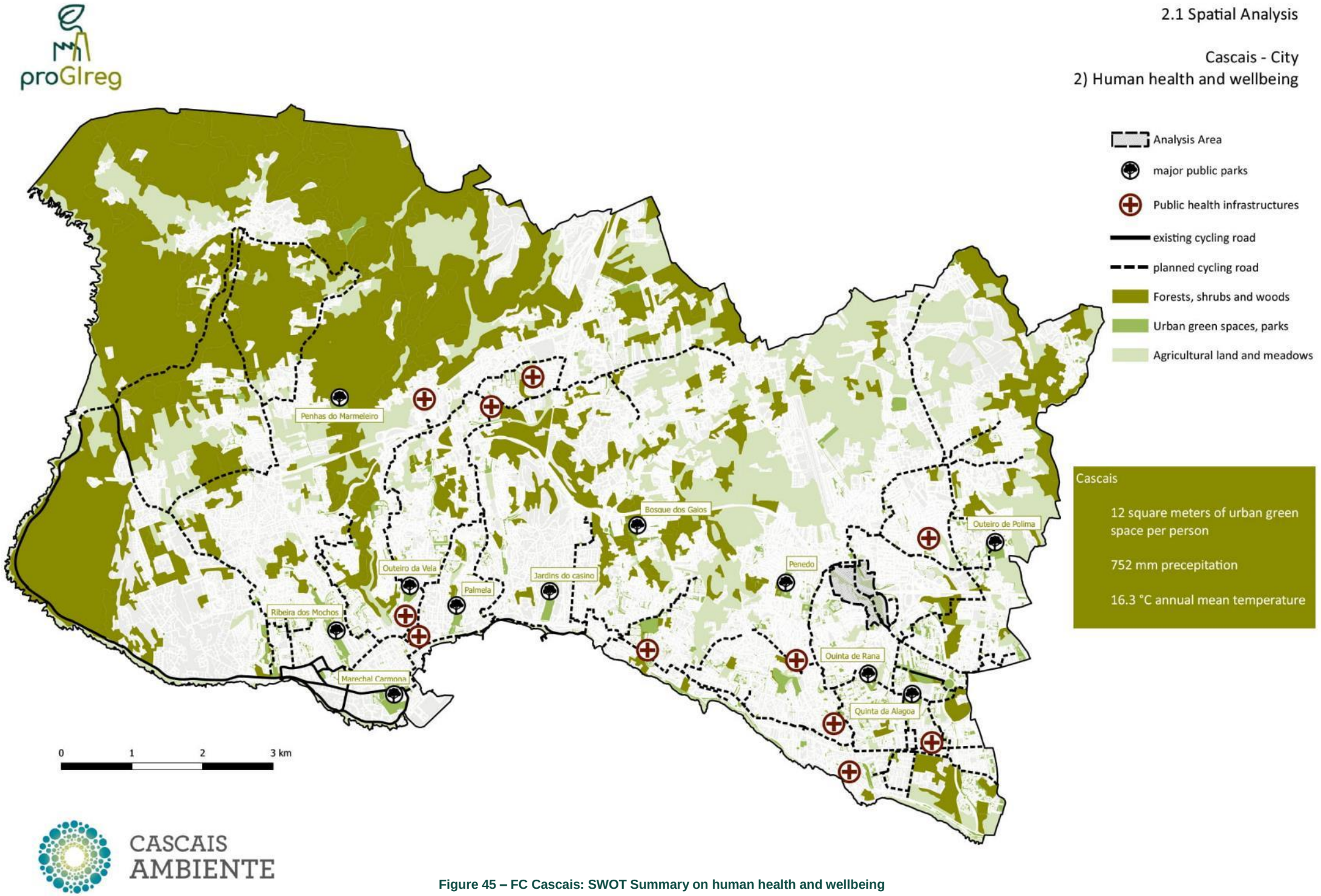


Figure 45 – FC Cascais: SWOT Summary on human health and wellbeing

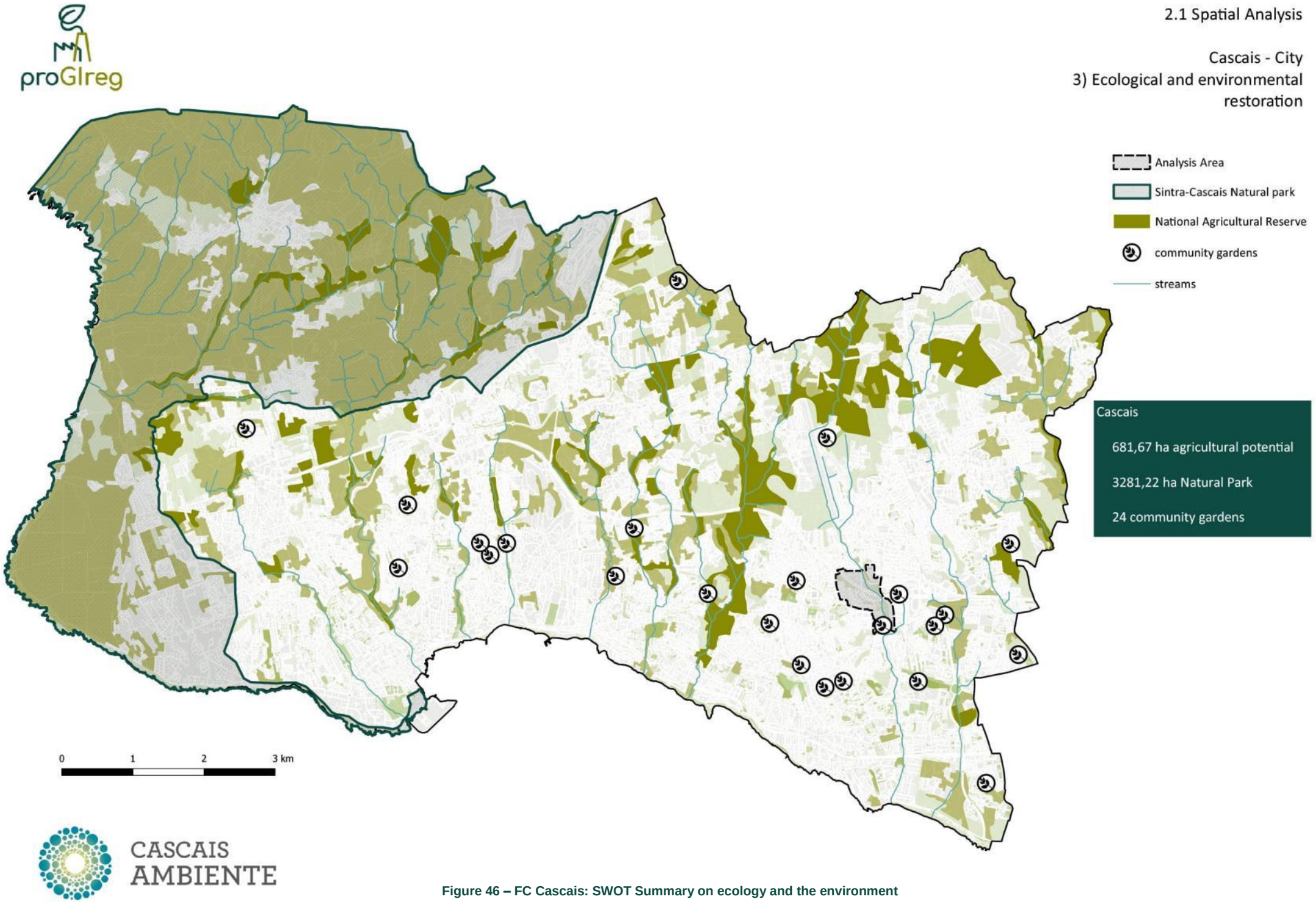


Figure 46 – FC Cascais: SWOT Summary on ecology and the environment

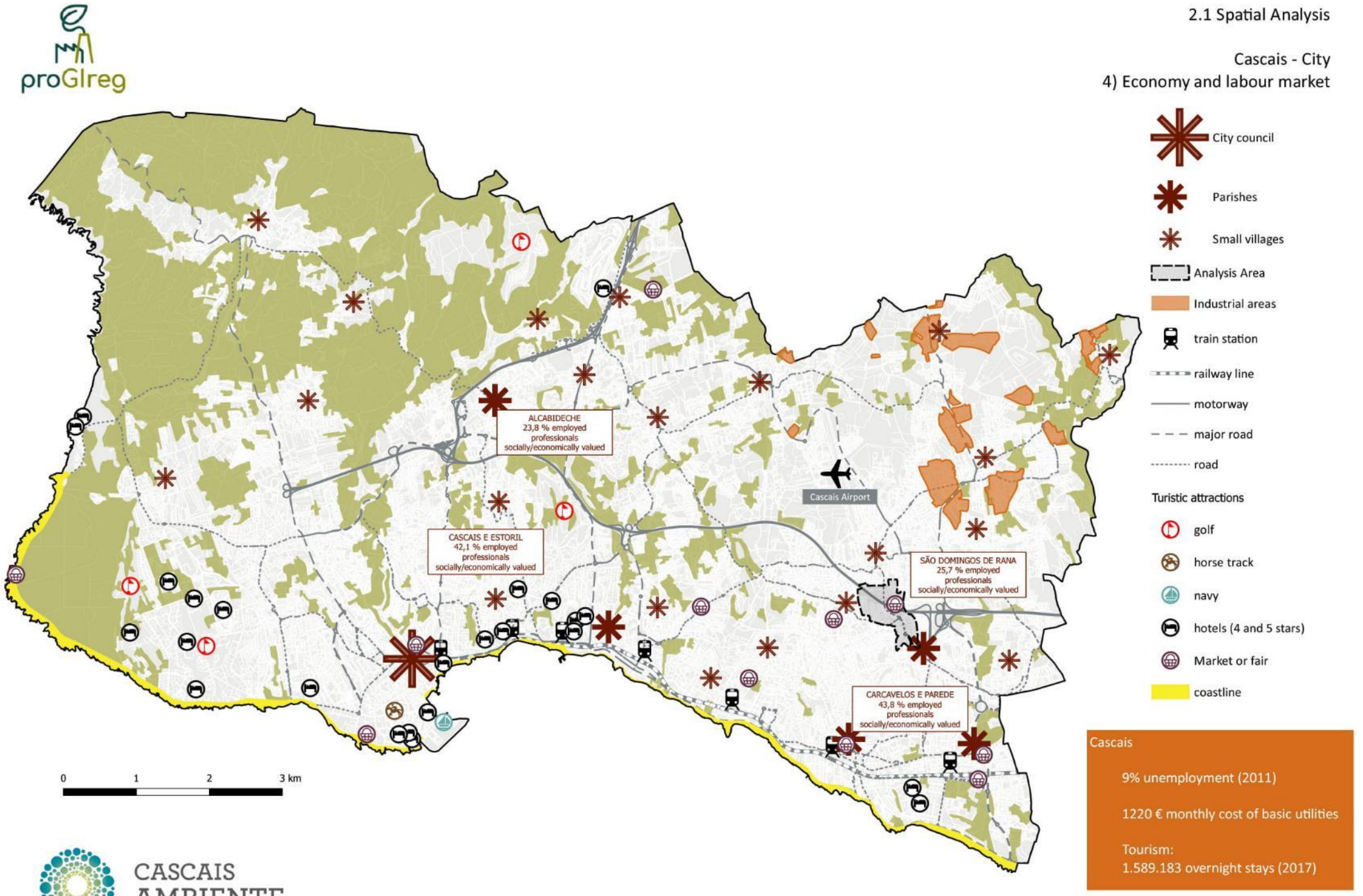


Figure 47 – FC Cascais: SWOT Summary on economy and the labour market

SWOT ANALYSIS CASCAIS – URBAN REGENERATION AREA Tires/ Brejos				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Municipal Social inclusiveness office (+Perto) - Several local civil society associations, including Food Bank (FEBA) and church	- Low education level of the residents - Difficult relationship / discrimination between previous residents by prejudice towards immigrant communities from African ex-Portuguese countries	- Community-Supported Agriculture (CSA) implementation	
Human health and wellbeing	- Mental health improvement by contact with nature and outdoor living	- Lack of pedestrian access - Addictions	- Health academy (Academia da Saúde)	- Air pollution from the highway
Ecological and environmental situation	- Naturalized river banks - Rich soils in the flood area - Existing vegetable gardens, and citizens showing interest in urban agriculture	- Illegal soil occupations - Discontinuous land parcels - Flood area/risk - Other land uses may compromise ecological values	- Local Land Bank (Banco de Terras)	
Economy and labour market	- Existing local open air market and small local grocery shops, may sell local products	- Residents with low income - Lack of entrepreneurship and education or training of the community	- Municipal start-up incubator (DNA Cascais) - Local Brand Terras de Cascais	- Legislation and bureaucracy too demanding for small local businesses - Difficult partnerships with private land owners, and investors - Low cost Supermarkets

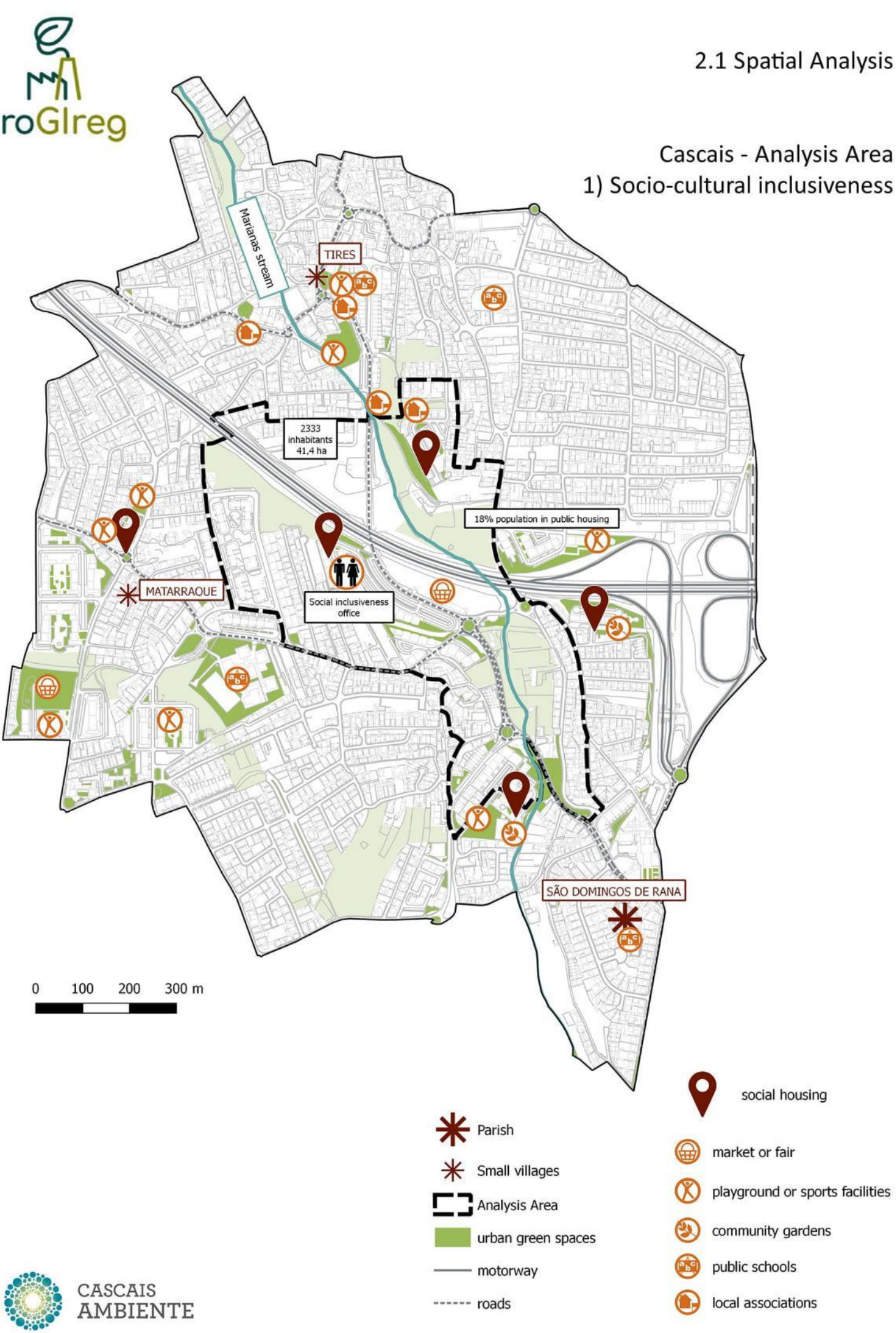


Figure 48 - Analysis Area of FC Cascais: SWOT Summary on socio-cultural inclusion

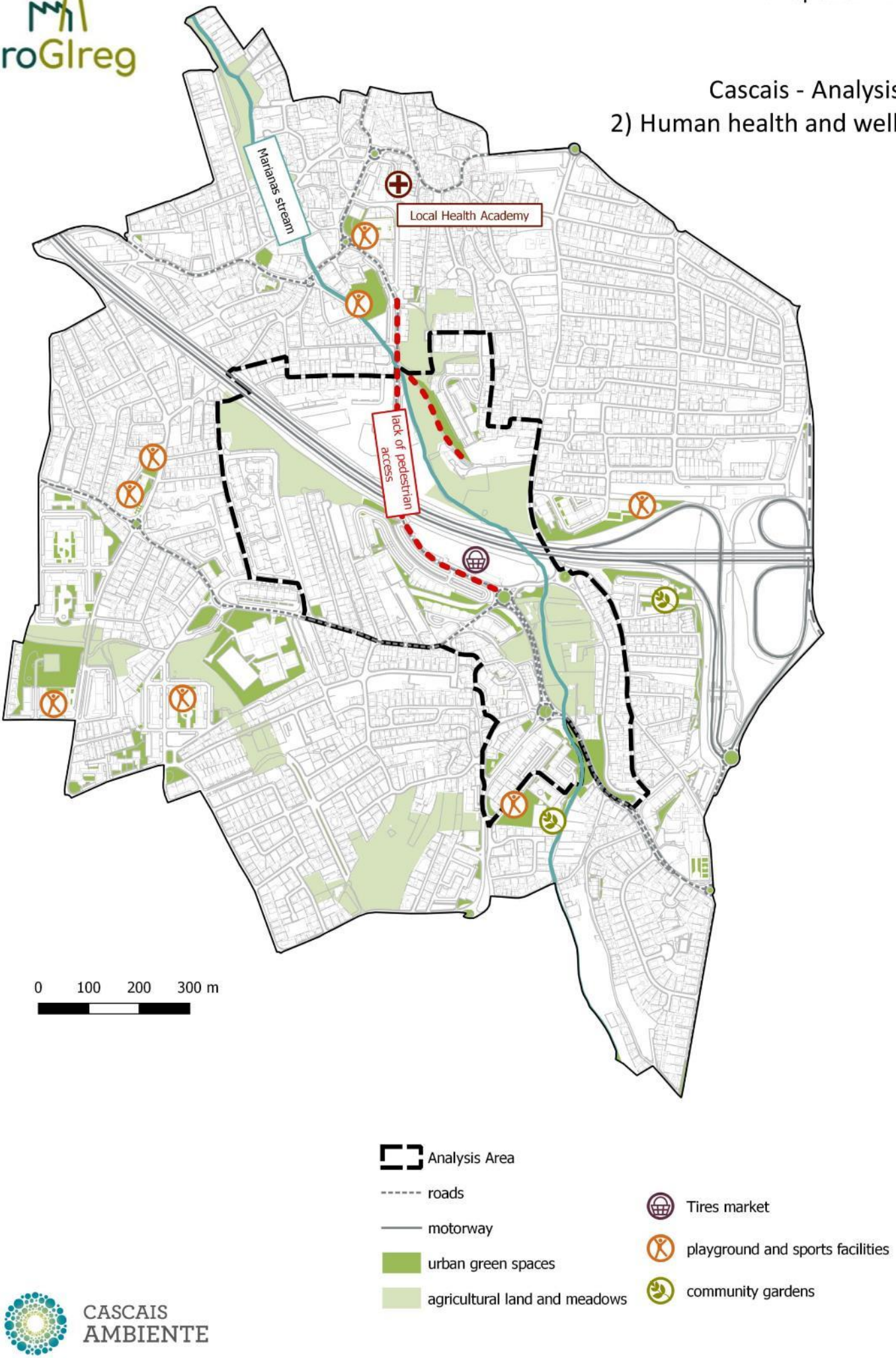


Figure 49 - Analysis Area of FC Cascais: SWOT Summary on human health and wellbeing

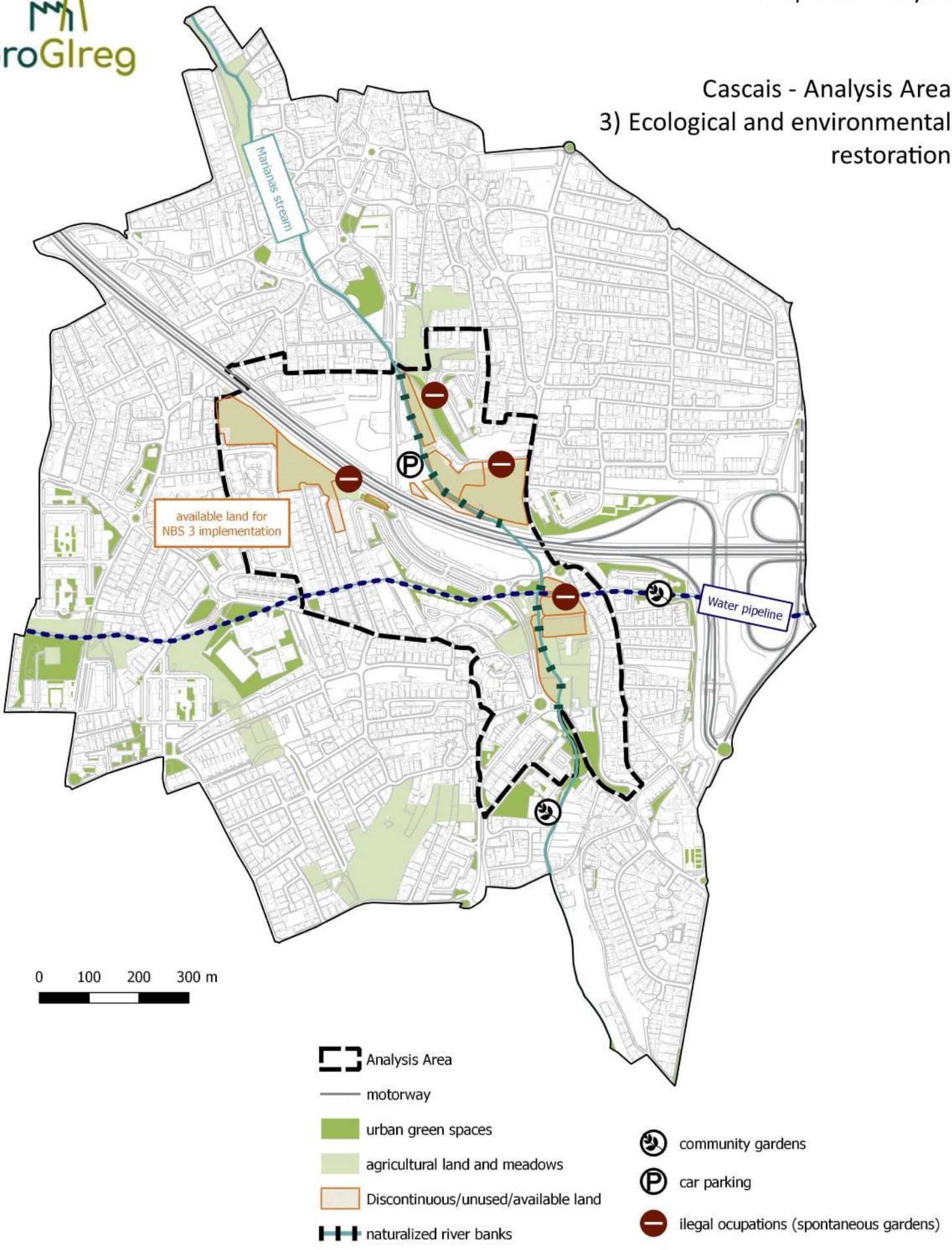


Figure 50 - Analysis Area of FC Cascais: SWOT Summary on ecology and the environment

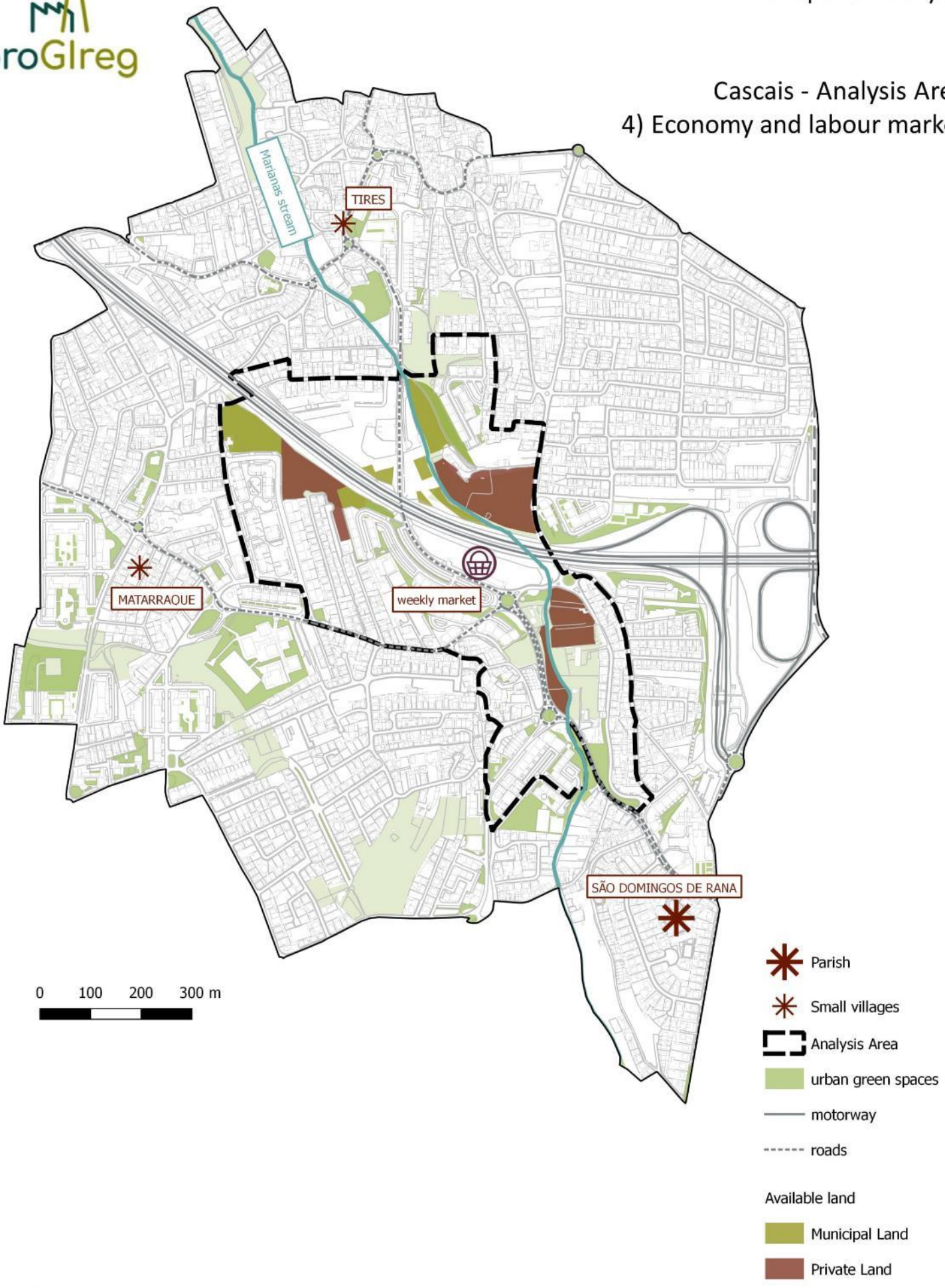


Figure 51 - Analysis Area of FC Cascais: SWOT Summary on economy and labour market

7.5. SWOT analysis for Cluj-Napoca

SWOT ANALYSIS CLUJ – METROPOLITAN LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Positive trends in demography, with a population growth rate of 1.38% and decrease of migration rate with 41% from 2013 to 2017 - High rate of young people (15-29 years old) Functional Urban Area (FUA) of the Cluj-Napoca city (19.4 – 23.2%) - Very low outmigration in the Metropolitan Area - The material deprivation rate is considerably dropping in the region, and subsequently in the area	- Underdeveloped ambulatory social services for the elderly and people with disabilities, home care, and daily care centres, etc. These services are missing in rural areas - Increase of rural-urban dependency for specialized services and facilities provided by Cluj-Napoca - Suburbanisation: Florești commune, adjacent to Cluj-Napoca to the west, reached 50 dwellings per hectare, in unsustainable urban amenity conditions - Low dwelling and amenity quality in the peripheral areas of the CMA	- National support programmes for the construction of social / youth housing - Development of partnerships between communities to solve various social problems - Access to funds for the modernization and development of university / pre-university education	- Lack of support for implementing social inclusion policies (Cluj-Napoca missing in the national Atlas for Marginalized Areas)
Human health and wellbeing	- High living standards in the Functional Urban Area m² ofm²of Cluj-Napoca (> 50 m²/house) - Several communes are supported by a rich natural environment - A well-consolidated East - West urbanisation axis, with	- Uncontrolled urban expansion with negative effects in the Functional Urban Area, facilitated by administrative passivity and commercial interests - Overcrowded, unplanned areas with a lack of sustainable perspectives in Florești / west of Cluj-Napoca, with strong negative effects on the	- Further development of communes endowed with a special natural heritage, as destinations for second homes - Major infrastructure projects which would considerably increase the production capacity of renewable energy at metropolitan level	- Lack of immediate intervention, on the improvement of housing conditions resulting from unplanned, uncompromising and chaotic development, mainly from Floreşti - If the 3500m runway is implemented, noise

	dwellings having amenities and utilities over national averages - Very good connectivity to the sanitation services at county level (90.1%) - Existence of medical institutions and doctors in every locality of the metropolitan area	inhabitants and both administrations, in the long run - Significant sources of air quality degradation at metropolitan level, including traffic, specifically E-W - Only 51 of the 98 localities in the metropolitan area benefit from the presence of water supply networks - Presence of very poor urban / rural areas (Cojocna, Gilau, Sânpaul, Bonţida)		pollution may affect the city more severely (acoustic and chemical pollution), also creating negative externalities by deviating the Someș course - Migration of specialized medical staff
Ecological and environmental situation	- Numerous natural protected areas of from which of interest for the community (9), of national interest (10) and of county interest (7) - Potential to define a green corridor along the Someşul Mic valley	- Uncompact tentacular expansion of housing creating “dormitory neighbourhoods” (monofunctional residential areas) of poor quality, impacting on the natural framework (extension to the protected Făget area) - High anthropogenicity: Only 18% of the area is covered by forests, natural meadows and marshes; - Uncontrolled waste disposal along Someș Valley, with a strong impact on water and soil quality; - There are valuable environmental areas in the CMA not included in protected areas (Bonţida centre);	- Valorisation of the northern slope in Cluj-Napoca and planned development on Lomb Hill; - Funding of some Regional Operational Programme (ROP) projects (Axis 4) and Large Infrastructure Operational Programme (Axes 3, 4 and 5) in the 2014-2020 period - Financing of some punctual interventions under the environmental and climate measures under the ROP 2014-2020	- The continuing of the tentacular expansion of Cluj-Napoca to the south and to Feleac - The extensive eastern agricultural area close to Cluj-Napoca is vulnerable from the point of view of the nitrate pollution of the groundwater - Continuing the approval of Urban Plans without considering the ecological limits of certain territories
Economic and labour market benefits	- Very good industrial investment support network, and availability of industrial parks with special status (TETAROM I-IV, ca. 283	- The young population decreased by 40% in the metropolitan area during the period 1992-2014 (with the exception of Floresti).	- High mobility of workforce due to the strong relations between ClujNapoca and CMA; - High attractiveness for Direct Foreign Investments, national	- Increasing rural-urban disparities by pursuing a quasi-exclusive financial concentration policy in the municipality

	hectares in total) in the FUA of Cluj-Napoca - CMA spearheads innovation and the Research and Innovation (R&I) economy at national level, holding 1st place in percentage of workers employed in specialized sectors (25,87% in 2016, PIAROM Patronage of Local Investors study) - High visibility and attractiveness of the CMA, especially of Bonţida, following the festive events, which stimulated cultural and entertainment tourism	- The entrepreneurial environment still generally incipient - Lack of harmonization between labour market qualifications and the requirements and trends of development of the local business environment	investors, university environment, increased investment opportunities due to infrastructure projects - Dynamic investment context, which shows interest from foreign investors in Cluj area - Facilitating trade links both to central and western Europe and to other cities in the country - The availability of European funding to support the business environment	- Poor connectivity with Bucharest, the main economic pole of the country and with the east of the country which hinders potential economic exchanges with the business environment and the East market

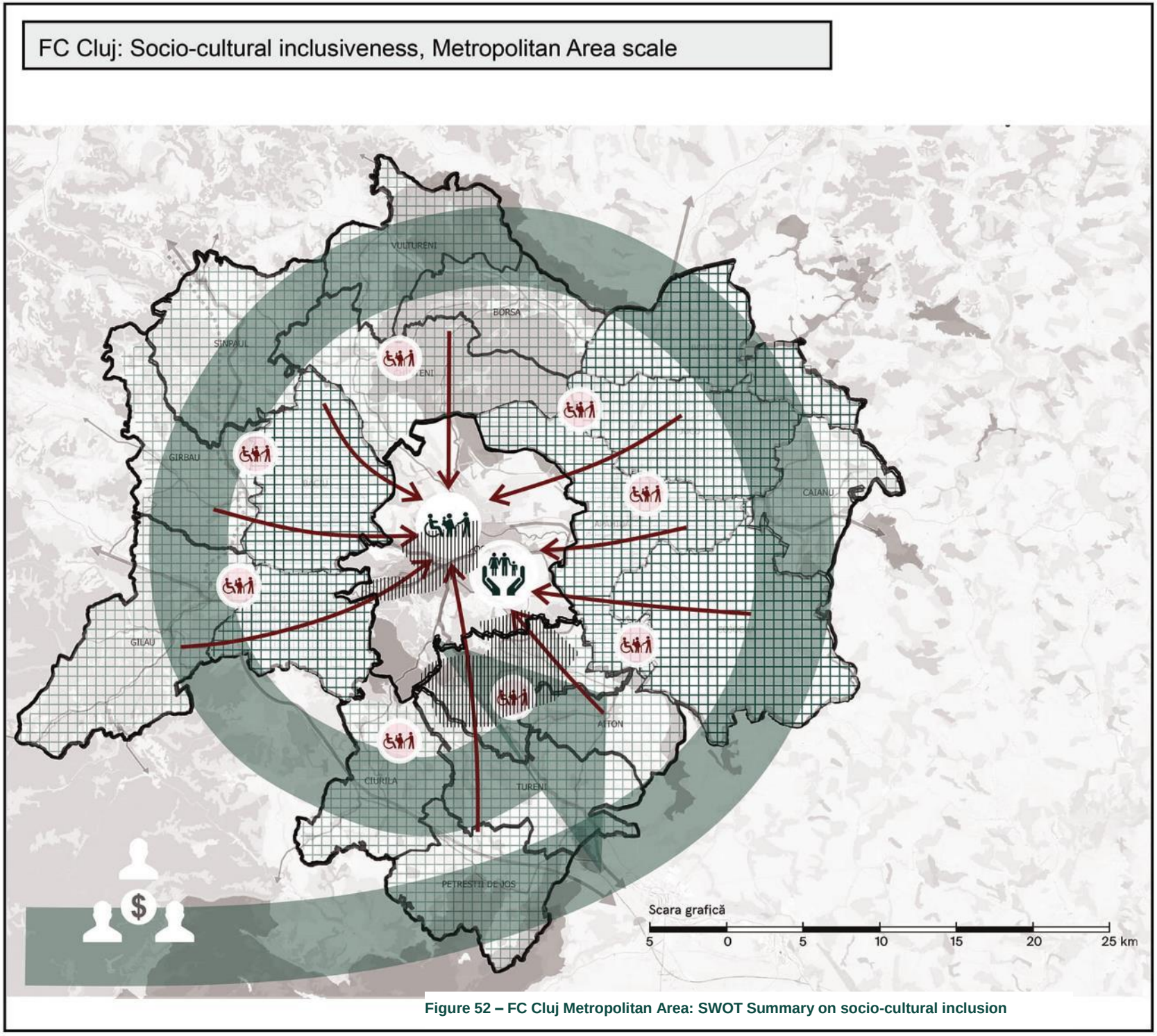


Figure 52 – FC Cluj Metropolitan Area: SWOT Summary on socio-cultural inclusion

FC Cluj: Human health and wellbeing, Metropolitan Area scale

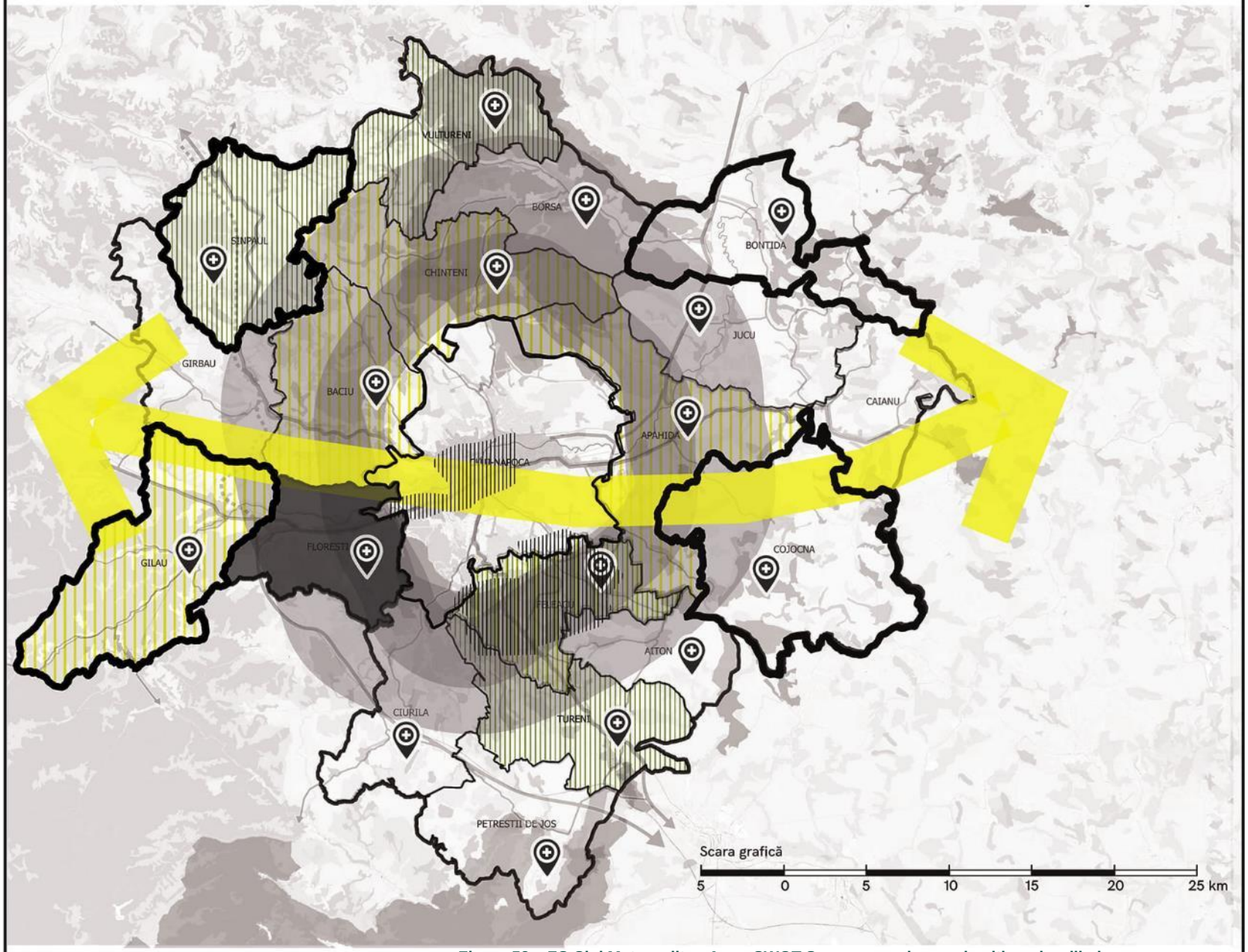


Figure 53 – FC Cluj Metropolitan Area: SWOT Summary on human health and wellbeing

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LEGEND

- High living standards (> 50sqm/house)
- Residential areas with natural potential
- Medical facilities
- East-west development axis: urban expansion trend corroborated with a high dwelling quality
- Underdeveloped / poor rural areas (as per the rural development index classification)
- High traffic pollution, with a relevant impact on human health - congestio in Cluj-Napoca
- Florești commune: suburban very high density and low amenity area
- High living standard neighbourhoods

proGIreg: productive Green Infrastructure for post-industrial urban regeneration

D2.2: Spatial Analysis in Front Runner and Follower Cities

City:

Map name: Metropolitan Area - SWOT on Human health and wellbeing

FC Cluj: Ecological and environmental restoration, Metropolitan Area scale

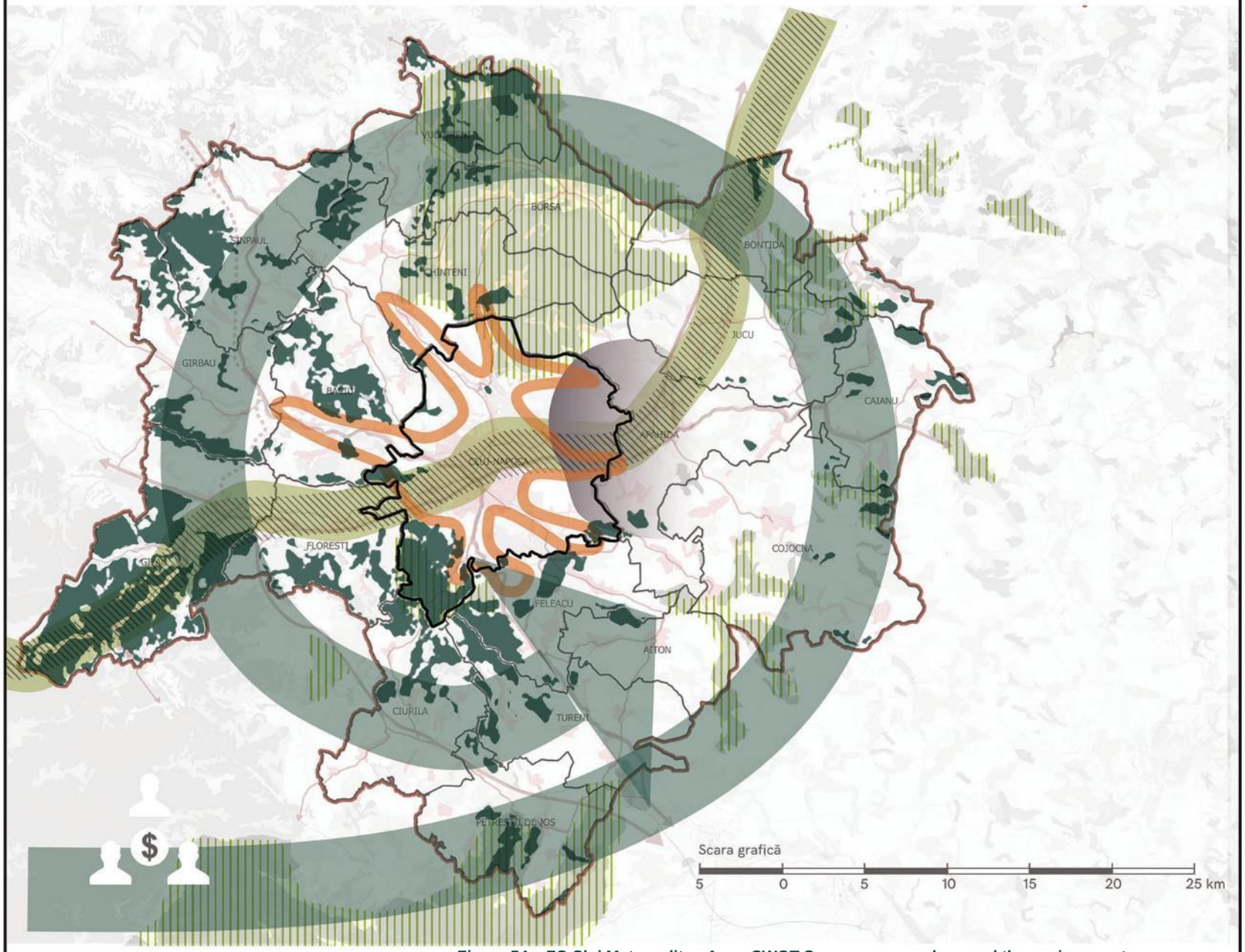


Figure 54 – FC Cluj Metropolitan Area: SWOT Summary on ecology and the environment

proGIreg

LEGEND

- Natural protected areas
- Green corridor on Someșul Mic Valley
- Forests in the metropolitan areas
- Uncontrolled waste disposal
- Axial urban development along the main transport corridors
- Area vulnerable to nitrate pollution
- Funding/Partnerships opportunities - POR projects (Axis 4) and POIM (Axes 3, 4 and 5) in the 2014-2020 period and also NRDP 2014-2020 for environmental and climate measures

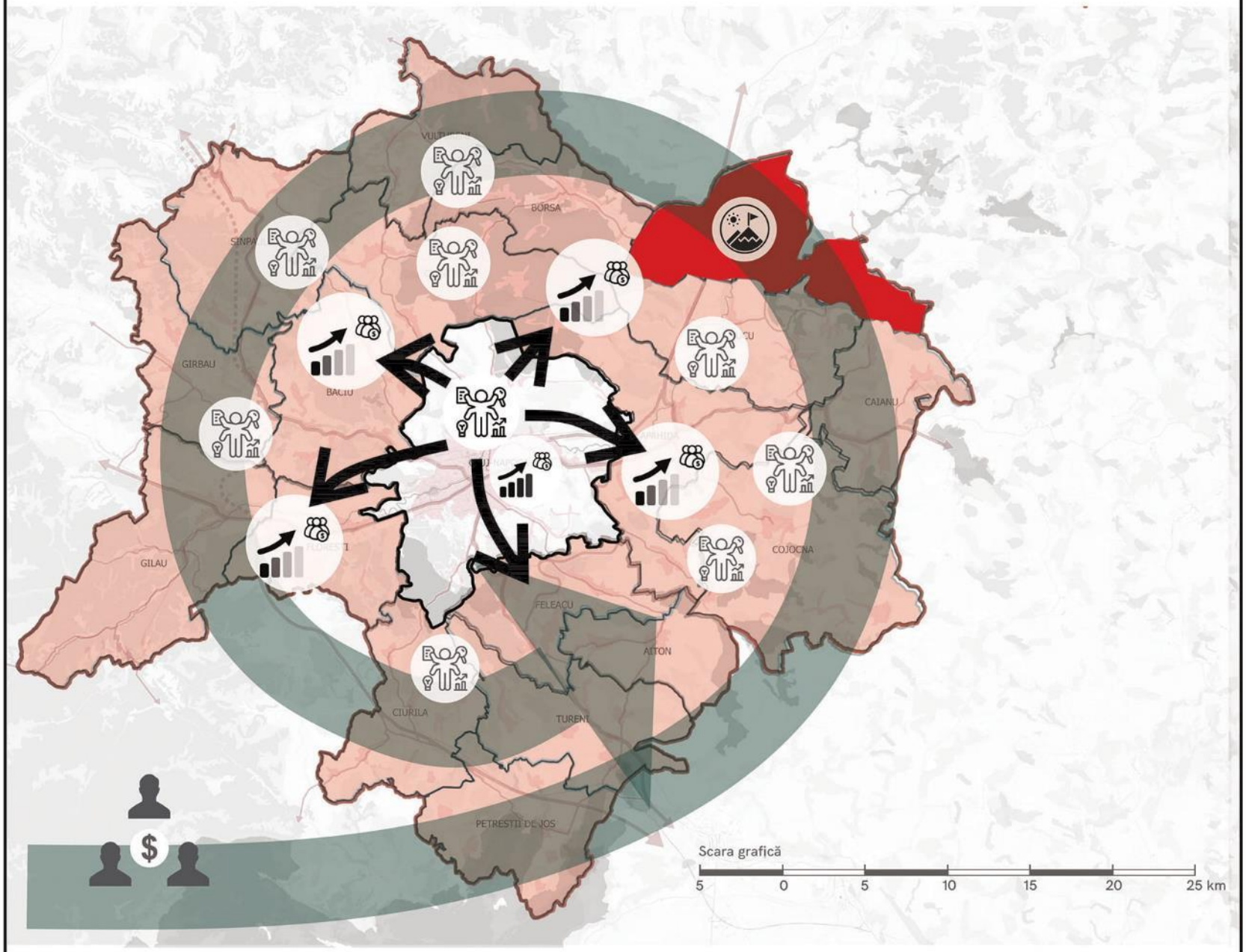
proGIreg: productive Green Infrastructure for post-industrial urban regeneration

D2.2: Spatial Analysis in Front Runner and Follower Cities

City:

Map name: Metropolitan Area - SWOT on Ecological and Environmental Restoration

FC Cluj: Economic and labor market benefits, Metropolitan Area scale



LEGEND

- High economic potential (tourism)
- Economic potential in CNMA
- Poorly developed entrepreneurial environment
- Poorly developed skills related to local development trends
- High dependency for Cluj-Napoca workforce
- Funding/Partnerships opportunities (European funding to support the business environment)

proGIreg: productive Green Infrastructure for post-industrial urban regeneration

D2.2: Spatial Analysis in Front Runner and Follower Cities

City:

Map name: Metropolitan Area - SWOT on Economic and labour market and benefits

Figure 55 – FC Cluj Metropolitan Area: SWOT Summary on economy and labour market

SWOT ANALYSIS CLUJ-NAPOCA – MUNICIPALITY / REGENERATION AREA				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Historically interethnic community: the Romanian citizens, followed by citizens of Hungarian nationality (15.3%), represent 75.2% of the total population - Performant higher education system (second in Romania), with 11 Universities, some of which are internationally recognized. 35% of the population has finished tertiary education - Existence of specialized social services - The existence of a wide range of NGOs providing social services and applying the legislation in the field of social security - High proportion of young people (15-29 years old) in Cluj-Napoca (17.4%) - Low costs for dwellings maintenance, lowest in the European level (186 out of 197), which positions Cluj-Napoca as one of the more attractive cities for expats - A modest quantity of public housing units has almost doubled in the last 4 years;	- High living densities in Cluj-Napoca (average 1787.3 inh/km²), reaching up to 7000-9600 inh/km² in neighbourhoods along the Regeneration Area (Mănăștur, Center, Mărăști) - A percentage of only 25.60% of dwellings are currently performing in terms of energy efficiency and refurbishing, along the regeneration area (Someș and rail corridors) - Very high property costs comparative with other cities at national level - Predominantly collective housing (over 78% in 2009), with degraded, poorly equipped and of very high density districts in the post 1980s (Mănăştur, Mărăşti) - New districts in southern part of the city (Bună Ziua, Europa, Făget, Borhanci, etc.) represent unplanned and poorly accessible expansions	- High tourist potential in the metropolitan area for the population of Cluj (one-day excursions, cycling tours, etc.)	-
Human health and wellbeing	- A performant health system in Cluj-Napoca, being a university centre for medical education, with a large and qualified medical staff - Life expectancy is slightly increasing in the county (almost a year, from 76.4 to 77.3 years over the last 5 years)	- Slightly growing incidence of cardiopathies, hypertension, cerebro-vascular diseases, chronic pulmonary diseases, respiratory and cardiac anomalies	-	- Lack of immediate intervention for improvement of housing conditions generated by unplanned, uncompromising and

	- Green space per capita increased by 40% in the last 7 years, to more than 25 m²/inh.			chaotic housing development - passive attitude of the municipality regarding housing conditions
Ecological and environmental situation	- High ecological and provisioning services potential of the Someș river, the „blue-green spine" of the city - Valuable protected areas (Fânațele Clujului Natural Reservations) and urban green spaces: Făget Forest, Băile Someșeni, Dealul Galcer, Hoia Forest	- The Cluj-Napoca area is prone to landslides, and hosts 23 geological and geomorphological hazard zones; furthermore, it's also prone to floods on the Someș river course - Eight contaminated sites at the level of Cluj-Napoca - Considerably-sized brownfields along the Săsar river corridor and the railway (Regeneration Area), in multiple ownership and in need of conversion	-	- The Făget Forest is threatened by uncontrolled development of residential areas, especially in recent years
Economy and labour market	- Key role at national level: one of the 7 growth poles where priority is given to community and national investments, and the second largest city in the country - The city is situated close to the western border, facilitating economic relations with central and western European countries - A diversified business environment with no dependency on any sector - Recent launching of initiatives to support entrepreneurs and stimulate innovation - Dynamics of cluster structures, with an increasingly diversified offer of support services for the industries they represent	- High costs for living in Cluj-Napoca comparing to income, especially taking into account the costs involved in housing, which creates a barrier to the attraction and retention workforce - Cluj-Napoca is the city with the most expensive dwelling rent (approx. 7.3 EUR / m² / month, 2018) and selling prices (approx. 1550 EUR / m², 2019) on average, in Romania	- Cluj-Napoca has the possibility to benefit from important investments for the development of the economic, university and infrastructure environment - Very close relations of the Municipality with the communes inside the first ring, but also on the E-W axis (Jucu, Gilau), high mobility of the workforce	- Poor connectivity with Bucharest, the main economic pole of the country, and with the east of the country, which hinders potential economic exchanges with the business environment and the East market

	- Current network of industrial parks (3 public investment parks, plus private investments), offers attractive locations for current or potential investors			

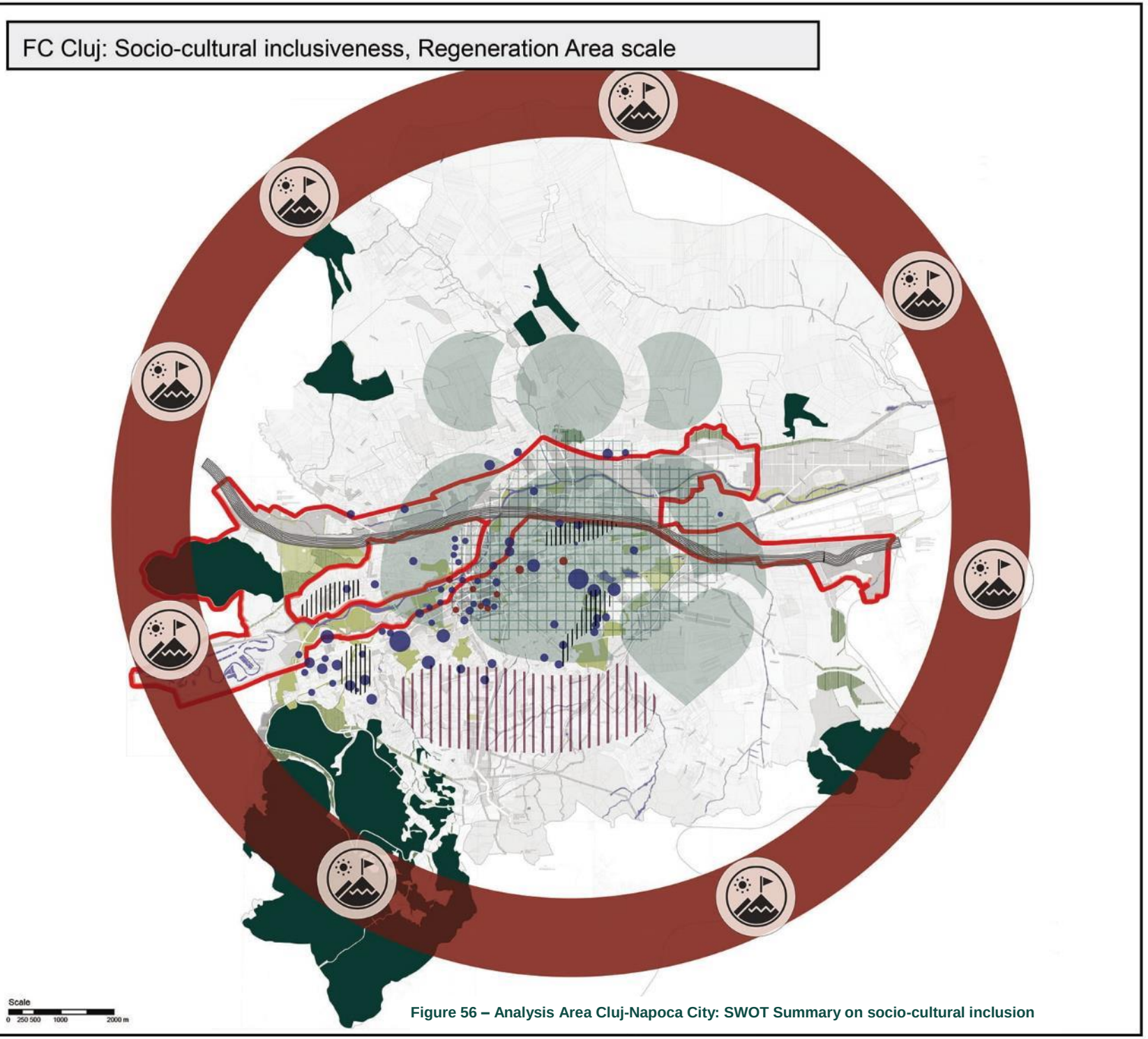
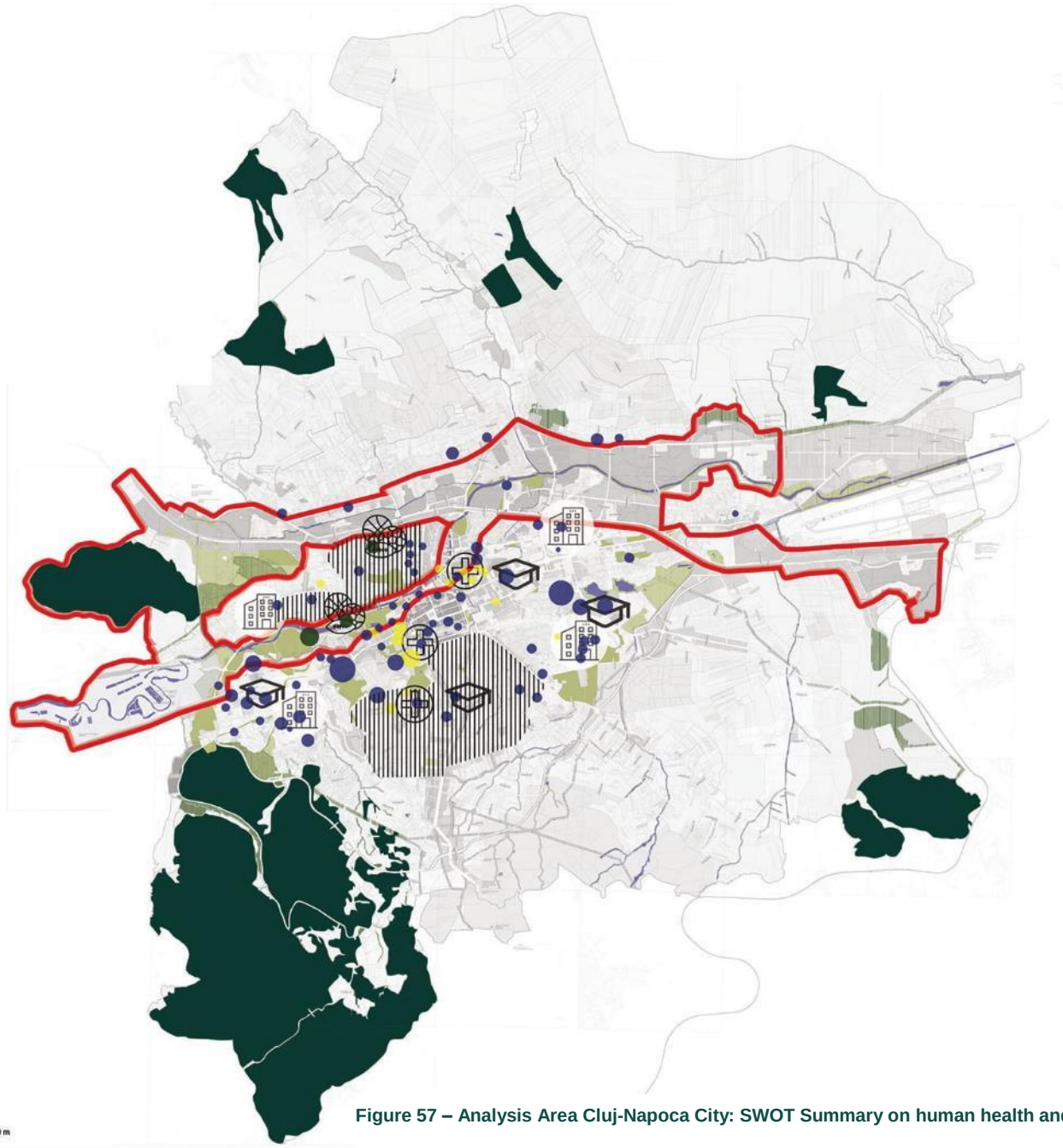


Figure 56 – Analysis Area Cluj-Napoca City: SWOT Summary on socio-cultural inclusion

FC Cluj: Human health and wellbeing, Regeneration Area scale



LEGEND

- Limit of the Regeneration Plan Area
- High living standard neighbourhoods
- Municipal green space
- Forests
- High density of poorly equiped collective housing
- Educational units (schools and universities)
- Sport units
- Medical units

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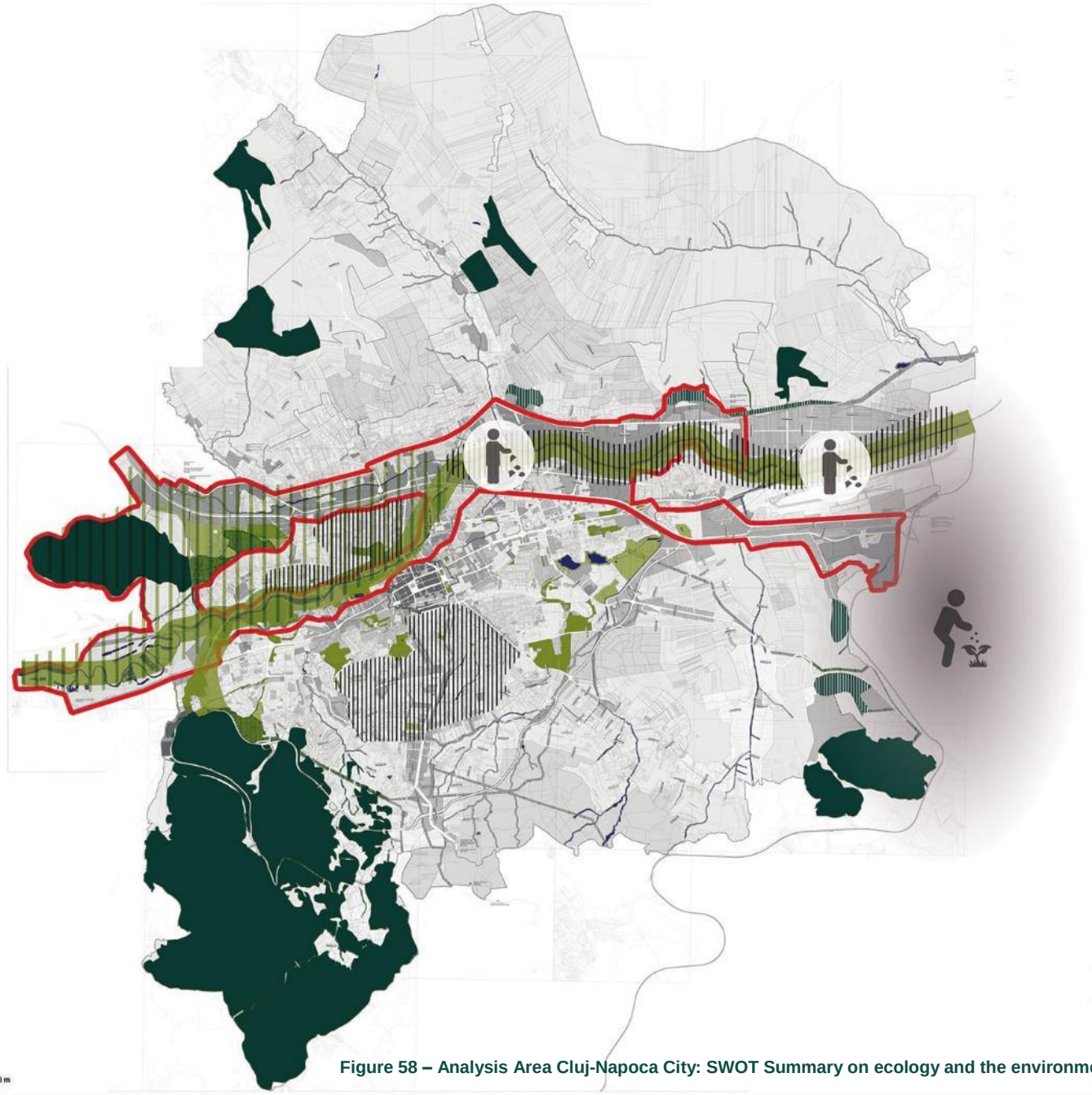
D2.2: Spatial Analysis in Front Runner and Follower Cities

City: Cluj-Napoca

Map name: City of Cluj Napoca - SWOT on Human health and wellbeing

Figure 57 – Analysis Area Cluj-Napoca City: SWOT Summary on human health and wellbeing

FC Cluj: Ecological and environmental restoration, Regeneration Area scale



LEGEND

- Limit of the Regeneration Plan Area
- Municipal green space
- Forests
- Lakes and rivers
- Forests for ecological reconstruction
- Recreational green areas
- Green corridor on Someșul Mic Valley and links with Făget forest
- Area in a process of ecological reconstruction
- Uncontrolled waste disposal
- Area vulnerable to nitrate pollution

proGIreg: productive Green Infrastructure for post-industrial urban regeneration

D2.2: Spatial Analysis in Front Runner and Follower Cities

City: Cluj-Napoca

Map name: City of Cluj Napoca - SWOT on Ecological and Environmental Restoration

Figure 58 – Analysis Area Cluj-Napoca City: SWOT Summary on ecology and the environment

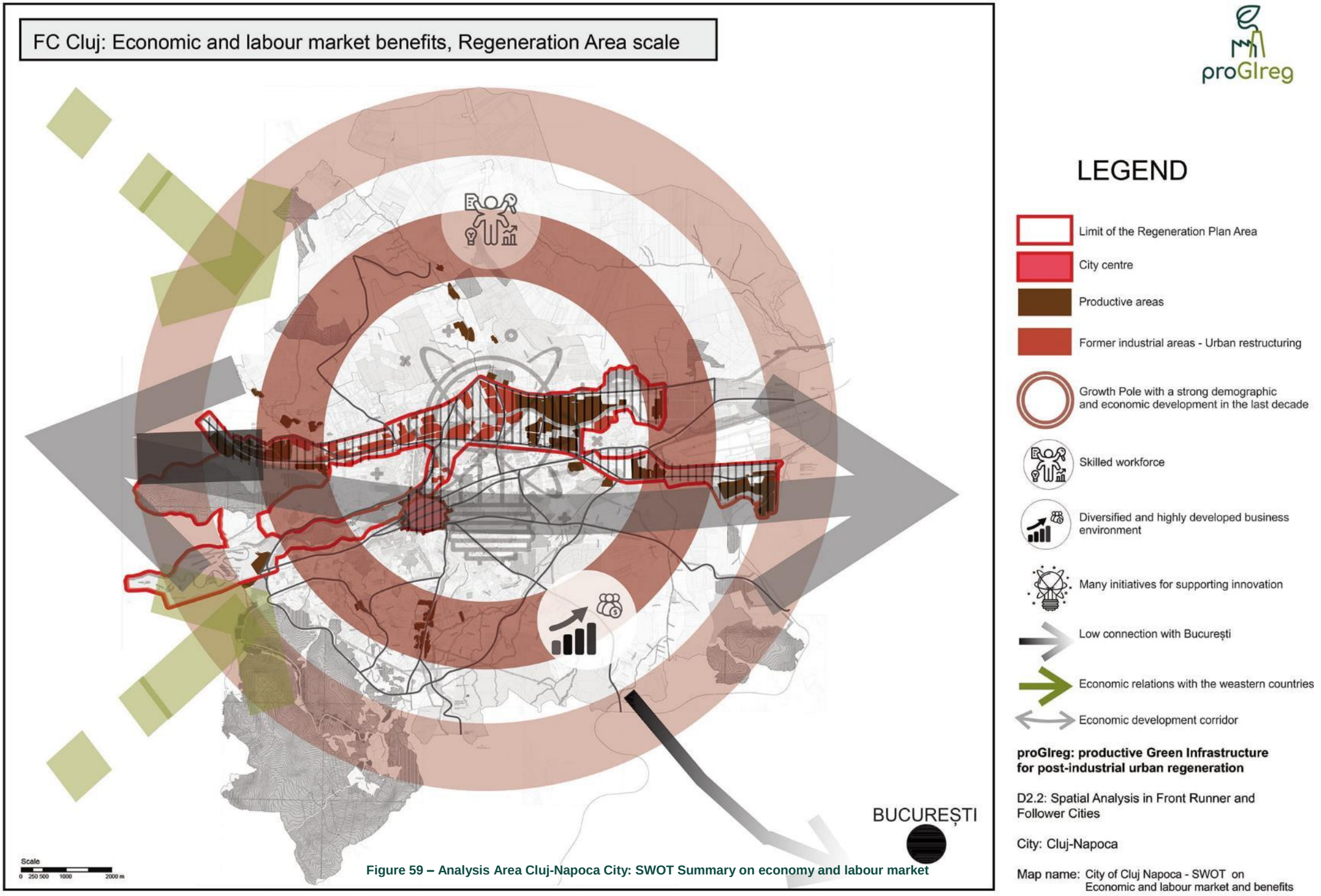


Figure 59 – Analysis Area Cluj-Napoca City: SWOT Summary on economy and labour market

7.6. SWOT analysis for Piraeus

SWOT ANALYSIS PIRAEUS - CITY LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- 26 churches, some of which are popular with increased intra- and inter- visitation - The presence of archaeological sites located throughout the city as valuable cultural assets - Access to all forms of transport (tram, urban and suburban rail, metro) - High work intensity - employment status of working-age household members (approx. 80%) - Relatively high levels of qualification and educational attainment of the population, with one fifth having completed higher education studies	- Very dense living environment and a relatively high overcrowding rate (about 38% of housing units under 30 m²) m²imply the need to provide proper infrastructure for ensuring liveability / high quality of life m² - A relatively large amount of the population (9.4%) have not completed primary education - Buildings occupy 34.6% of the total surface area of Piraeus	-	- Depopulation and out-migration (downwards trend with a 7% population loss between 2001 and 2011, according to national Censuses)
Human health and wellbeing	- Piraeus is surrounded largely by the sea, which has potentially beneficial effects for its inhabitants from the point of view of iodine, salt and magnesium present in sea air (with purported beneficial effects for the respiratory system and against allergies) - Provision of recreational sea related services - Since 2008 the number of crimes has decreased by more than half - The total number of accidents caused by drivers in the last couple of years (33-41 accidents) has decreased slightly since 2008	- Piraeus is also of the busiest ports in Greece, which contributes to the degradation of air quality through generation of sulphate aerosols from the shipyard, which potentially negative effects to the health of the inhabitants. - Limited green space availability. The calculated green space per capita (excluding tree avenues) is approximately 0.83 m²/person - Limited number of playgrounds - Increased traffic hence noise	-	- Increasing freight and people transit traffic with further development of the port

		(near main roads and port) and particle air pollution		
Ecological and environmental situation	- Within residential and pedestrian areas people interact with green spaces - The amount of NOx, remained relatively the same over years 2008-2017 after showing a relatively small decrease in 2010-2014 - The amount of PM 2.5 concentration has decreased since 2008 from 28 μg/m3 to 18 μg/m3 in 2017	- Low share of green spaces (about 1%, excluding tree avenues) - Potentially contaminated sites - the amount of PM10 concentration increased since 2008 from 33 μg/m3 to 41 μg/m3 in 2017 - Private ownership of derelict sites	- Regeneration of former industrial sites - Better harnessing of the potential of small green spaces through interconnection	-
Economy and labour market	- Presence of port – Europe's third largest in terms of passenger transportation, and the third one in Greece in terms of freight transport - Good transport system, facilitating circulation of freight and urban mobility of citizens - The number of industrial businesses within Piraeus is relatively high (1,269 in 2015). Similarly, the number of commercial and office businesses is relatively high (respectively 7,865 and 4,073 in 2015) - The total economically active population (15-64 years of age) employed is relatively high (79.2%; Hellenic Statistical Authority, 2011c) - Since 2010, the total number of tourist overnight stays within Piraeus increased from 304,968 to 405,763 in 2017	- Economically productive functions concentrated in a very particular area (City Districts A' and B') - Derelict industrial building sites, most in private ownership - The average local taxes have decreased from 457,188,000 Euros in 2008 to 363,232,000 Euros in 2011	- Regeneration of former industrial sites - Reuse of abandoned industrial buildings - Partnership possibilities with Athens	- Increased development costs due to state of dereliction and potential contamination of soils

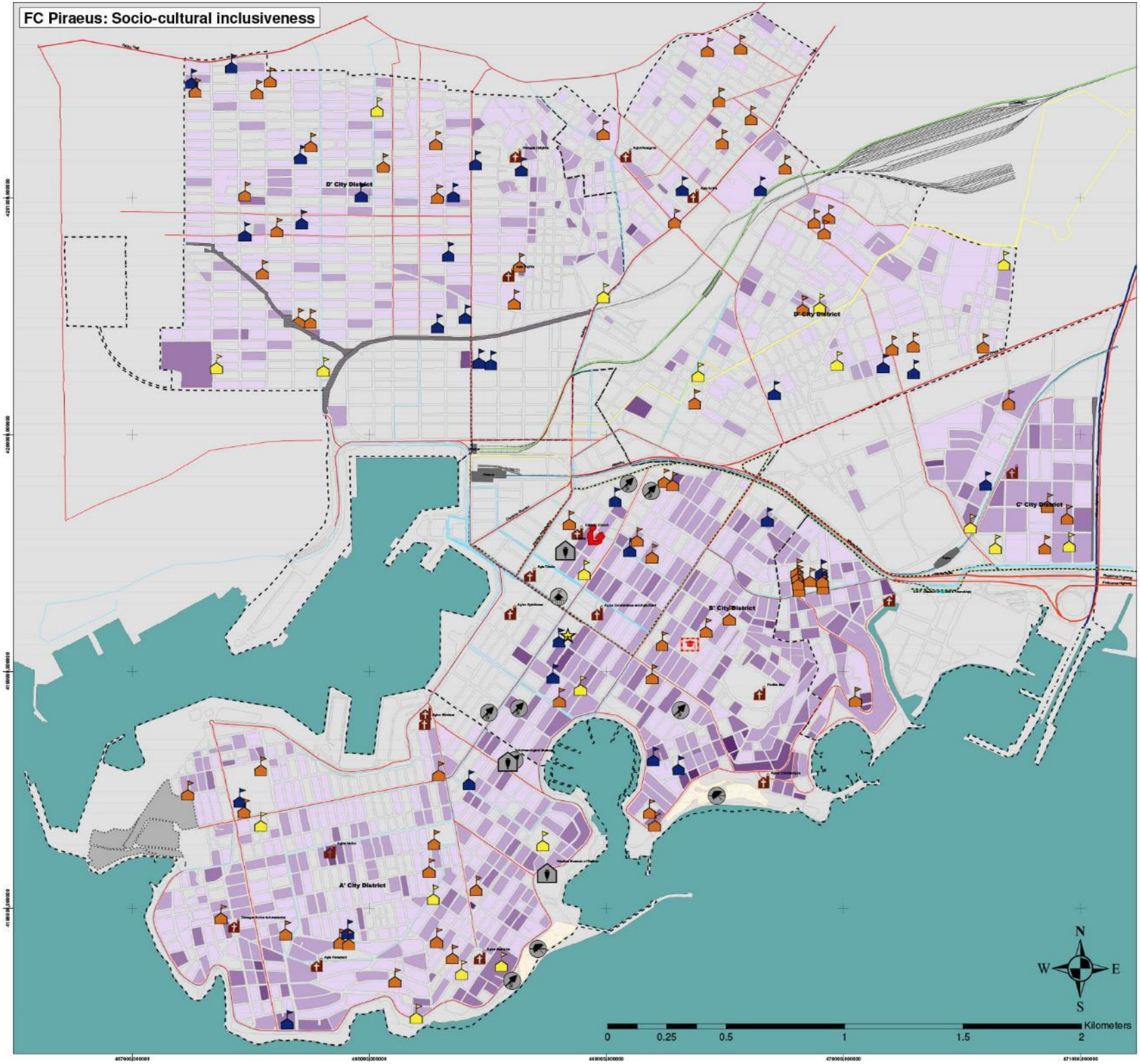


Figure 60 – FC Piraeus: SWOT Summary on socio-cultural inclusion (1)

D 2.2: Spatial Analysis

City: Piraeus

Map Name: Socio-cultural inclusiveness

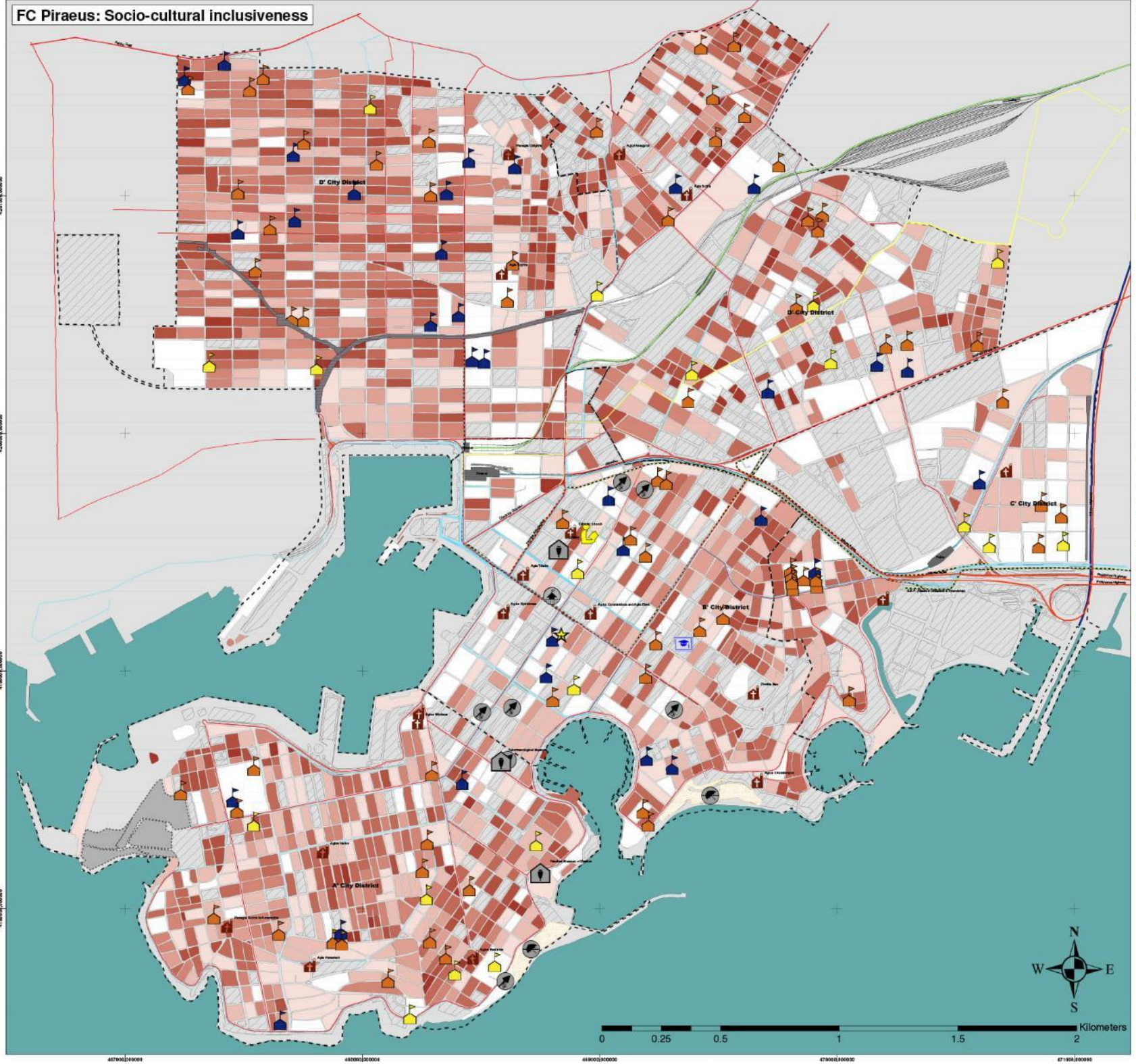


Figure 61 – FC Piraeus: SWOT Summary on socio-cultural inclusion (2)

D 2.2: Spatial Analysis

City: Piraeus

Map Name: Socio-cultural inclusiveness

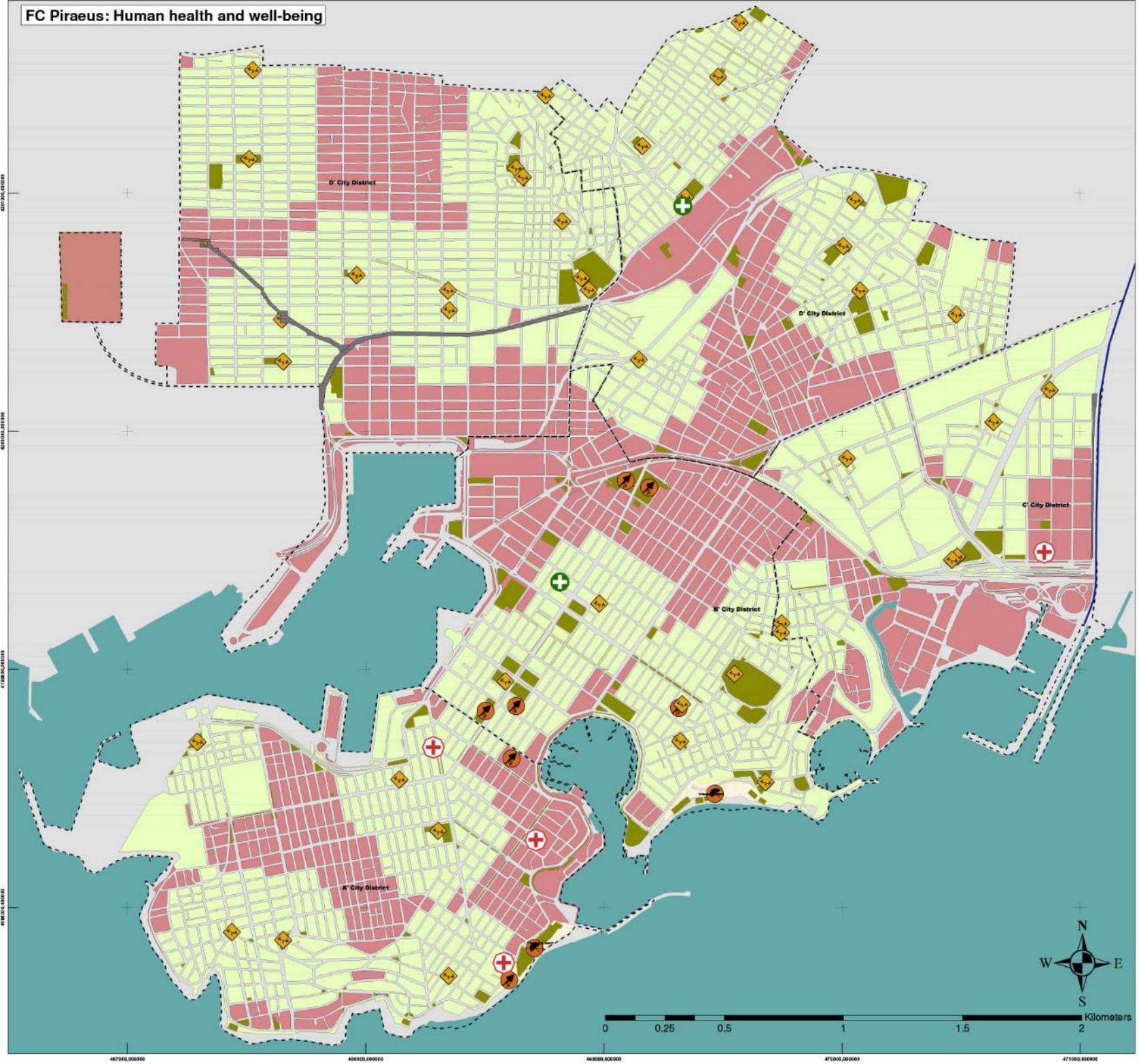


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Figure 62 – FC Piraeus: SWOT Summary on human health and wellbeing

D 2.2: Spatial Analysis

City: Piraeus

Map Name: Human health and well-being

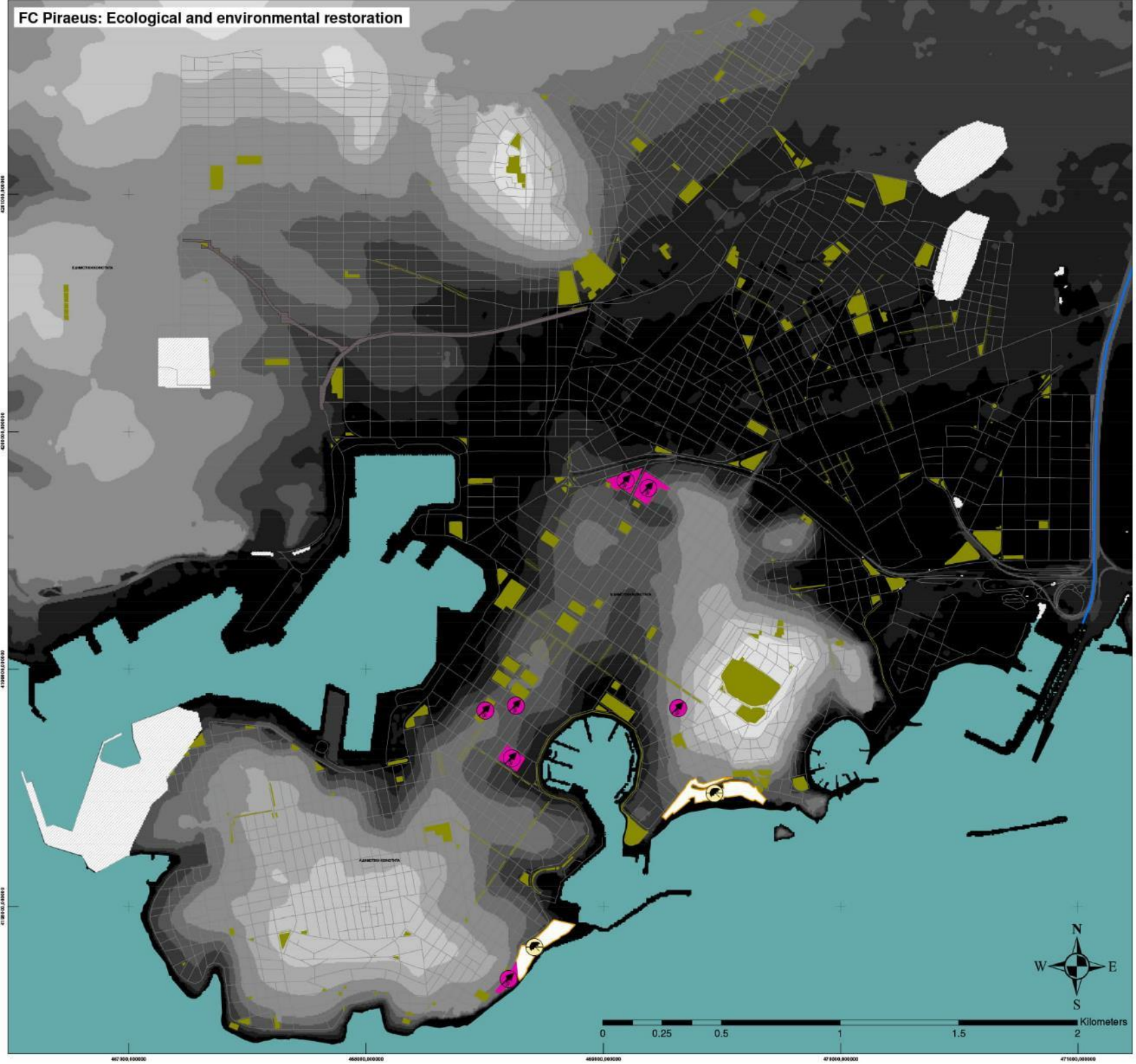

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Figure 63 – FC Piraeus: SWOT Summary on ecological and environmental restoration

D 2.2: Spatial Analysis

City: Piraeus

Map Name: Ecological and environmental restoration

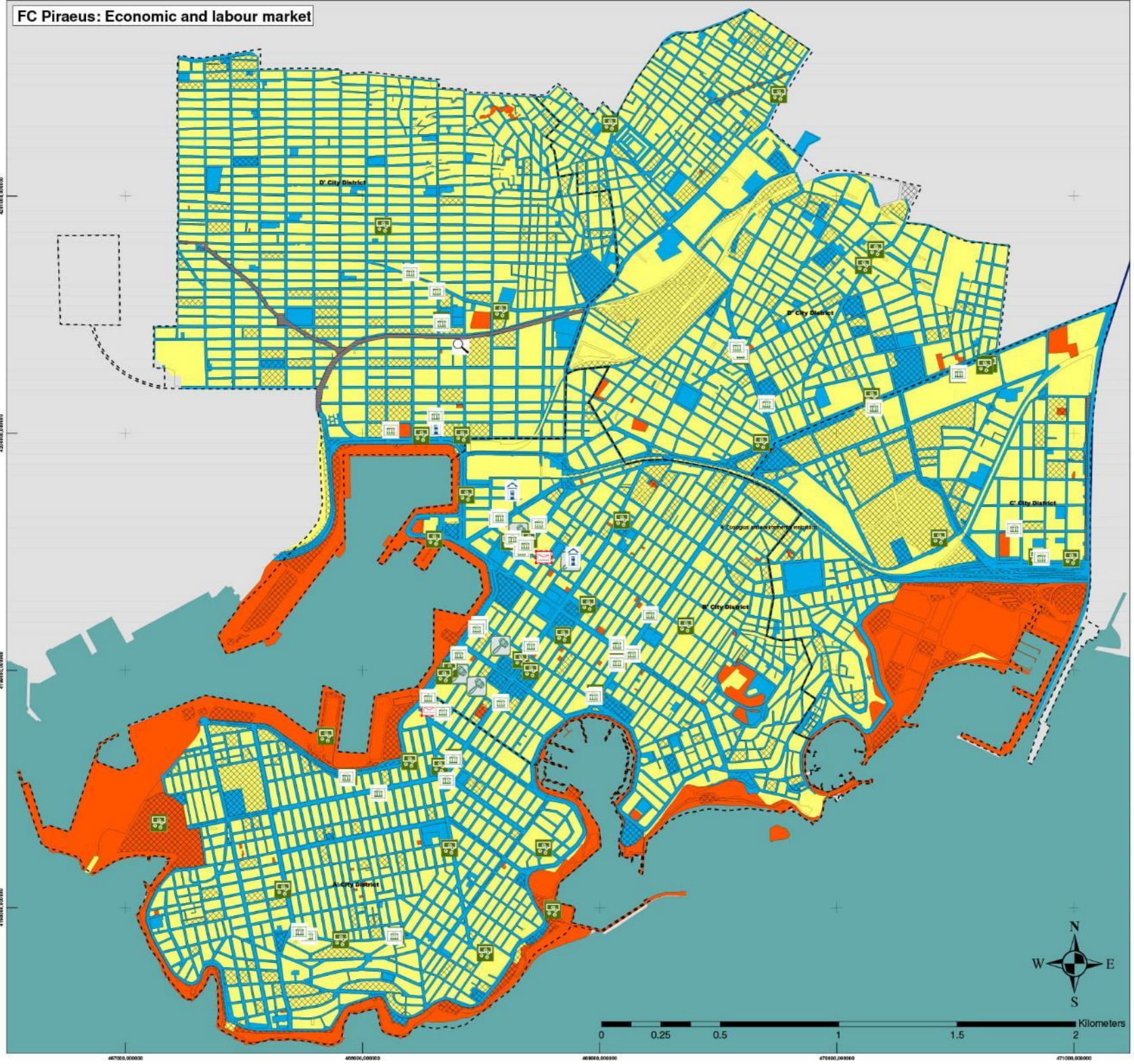

Figure 64 – FC Piraeus: SWOT Summary on economy and labour market (1)

D 2.2: Spatial Analysis

City: Piraeus

Map Name: Economic and labour market

Legend

- NBS No 5
- NBS No 6
- Post office
- Bank
- ATM
- Inland Revenue
- Court house
- manpower employment organisation
- residential
- city centre
- commercial local
- green space designated
- sports
- care
- cultural
- tourism recreational
- particular uses
- parking
- transit areas
- industrial
- regeneration Piraeus Avenue
- regeneration Ag. Dionisios area
- river

(Data Source: Hellenic Statistical Authority - 2011, Government gazette of Hellenic Republic 79Δ/88, Government gazette of Hellenic Republic 063Δ/94)

proGIreg

Figure 65 – FC Piraeus: SWOT Summary on economy and labour market (2)

D 2.2: Spatial Analysis

City: Piraeus

Map Name: Economic and labour market

SWOT ANALYSIS PIRAEUS – DISTRICTS C' and E' LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Both areas (C' and E') are mainly residential, with small local commercial areas. The latter also hosts the passenger port, a main attractor of the city, and successful regeneration areas (Dilaveri clay brick factory) - C' District hosts three child day care centres, 2 nurseries, 6 primary schools, 3 secondary schools, 2 lyceums and 1 public vocational training school. Both stadiums (Karaiskaki, and Peace and Friendship Stadium) have local, regional and national significance; there is also the Athens Marina (in the Eastern part of Piraeus), 3 churches and 6 play-grounds - E' District hosts four child day care centres (1 infant - preschool and 3 preschool age >2.5 years), 15 nurseries (12 public that include 1 special nursery and 3 private), 11 primary schools (9 public that include 2 special and 5 reform schools and 2 private schools), 7 gymnasiums (all public that include 1 music and 1 night school), 8 lyceums (all public that include 1 music, 1 professional, and 1 night professional school), and 1 public vocational training school	- The facilities of the former Papastratos industry are located within the E' district - and the area is scheduled for regeneration - There are no cycle paths or cycle shops within either area - Relatively good connectivity via bus routes, yet the transport lines are confined to the main urban axes	- "Recycle" abandoned industrial buildings for new use	- Depopulation and out-migration (downwards trend with a 7% population loss between 2001 and 2011, according to national Censuses)
Human health and wellbeing	- Existence of a private hospital in district C' (Metropolitan Hospital)	-	-	-
Ecological and environmental	- C' District possesses approx. 14,000,050 m² green space incl. few medium size green spaces (1,200-4,500 m²) and many smaller in size (≤ 900 m²). - E' District possesses 18,600,605 m² of green space	- Green spaces still insufficient, quantitatively, in either of the two districts	- Regeneration of former industrial sites - Create a green network linking smaller green	- Private ownership of derelict sites - Contaminated soils

situation	comprised mainly of medium sized parks and squares, ranging between 1,200-5,000 m² - Local initiative for up-keep of the planting beds in pedestrian areas		spaces	
Economy and labour market	- In district E', concentration of activities is mainly localized near the passenger port - Limited elements are located in the south region of the C' District (near the Peace and Friendship Stadium, Karaiskaki Stadium and marine).	- Remaining industrial sites in District E' in need of regeneration and re-introduction into the productive cycle - Private ownership of the industrial sites	- Regeneration of former industrial sites - Partnership possibilities with Athens	- Private ownership of derelict sites - Increased development costs due to state of dereliction and potential contamination of soils

7.7. SWOT analysis for Zenica

CITY LEVEL				
	Strengths	**Weaknesses**	**Opportunities**	**Threats**
Socio-cultural inclusion	- Material deprivation rate is low - Plenty of recreational and cultural facilities - University city - Favourable geographical position, with a good connection to Sarajevo (one hour, via direct highway) - Relatively high homeownership rates (73.68%)	- Negative population growth rate (-0.6%) - Housing quality is relatively low - Reduced work intensity (only 52.7%)	-	- "White plague" – drastic reduction in birth rates, which if continued, can lead to significant population loss - Immigration issues
Human health and wellbeing	- Accessible green spaces	- High number of crimes - High number of respiratory diseases - High air pollution affecting health	- Opportunity of using adjacent hills of Zenica for recreation, in benefit of the residents' health	- General feel of danger in communities can accentuate
Ecological and environmental situation	- Average level of precipitation - Moderate climate - High quality water for drinking	- Highly polluted air (high NOX – 22 µg/m3 / ppb and PM10 – 55 µg/m3 / ppb concentrations) - Soil polluted by heavy metals	- Rehabilitation of contaminated sites - Use of water for energy production	- Topography negatively influencing air pollution distribution - Stable metrological conditions

Economy and labour market	- Low local taxes - Plenty of property for living - Existence of agricultural small businesses	- Low number of green jobs - Low GDP per capita - Industry prevailing companies - Low employment rate - Low number of tourists - Low number of foreign students	- Possibility of new small businesses in the field of green jobs - Increase work intensity by green jobs - Creating of green funds - Green tourism and leisure facilities usage - Use of rehabilitated soil for agriculture - Fair tourism building expansion	- Resistance of green companies to be in heavy industry polluted city - Political will affecting decisions

8. Conclusions

8.1. Conclusions on Front Runner cities

In the following sub-chapters, most important findings of the Spatial Analysis process for the FC are summarized, identifying the city and LL challenges pertaining to the future co-design and implementation of proGIreg NBS. This analysis represents a baseline of the current situation of each city, from the planning, policy and investment / concerted actions point of view, which will inform the NBS co-design and planning processes in Task 2.2 and will inform the subsequent WPs. Conclusions for the FC are included in Chapter 8.2.

8.1.1. Dortmund

Dortmund has gained extensive experience in managing structural change due to the end of coal mining and steel production and its corresponding challenges and opportunities for urban development. ProGIreg´s Living Lab and Analysis Area are representatives of these changes and are currently in Dortmund´s focus on urban renewal initiatives as well as for renewal of urban and green infrastructure.

The restoration of the Emscher River with its banks, the construction of the Emscher path, the re-cultivation of the former landfill Deusenberg, as well as the reuse of former Hansa coking plant as an attraction of regional interest already have improved remarkably the situation within the Living Lab and Dortmund during the past decades. Urban renewal projects and the development of the economic site Gewerbepark Hansa are further examples within the Analysis Area.

This progress, and the opportunity to build on the decades-long experience in working with GI and regenerating former industrial areas at local level, represent significant strengths for the proGIreg frontrunner. For one, Dortmund benefits from a robust plan and policy framework supporting the NBS initiatives and fitting them into a wider, metropolitan-scale action (e.g. the International Garden Exhibition Ruhr 2027); secondly, the FRC builds on pre-existing relationships and initiatives at local level to deploy an ample “second level partnership” – a wider group of stakeholders to be involved in the LL activities. However, Dortmund focuses simultaneously on several planning processes, and as many stakeholders are already involved – all focusing on their specific project intention while having the improvement of the overall situation in mind – it will be necessary to coordinate all ongoing projects to create synergies.

Beyond the achievements of the last years, there is still much potential for further improvements, which are part of proGIreg:

- The HSP-site as an abandoned former industrial site offers manifold opportunities for urban development – sites for living, working and recreation as well as connecting so far isolated areas with adjoining neighbourhoods since the 45 ha site is still not yet accessible for the public.
- The Emscherallee within Huckarde-Nord and Dorstfeld impedes closer path connections in west-east direction. Improved opportunities to cross the busy road respectively the creation of new connections and attractive infrastructure at Hansa coking plant will help especially Huckarde-Nord to grow closer together.
- proGIreg aims to integrate the local population into implementation of nature-based solutions, especially underprivileged groups like children, elderly, unemployed persons or refugees. A good

communication strategy during co-design process to address and interest these target groups mainly within the Analysis Area will be crucial for the success of proGIreg. At the same time, the opportunity to participate in the creation of new facilities and improvement of their living surroundings may be a decisive positive contribution to public life and improve the district´s image.

The Spatial Analysis conducted by the FRC yielded important considerations for the future implementation of the LL.

City level

From the point of view of the socio-cultural inclusiveness, the city has the particularity of a high diversity of settlements, with a large number stemming from the 1950ies as the city was heavily bombed during WW II. The city population has been growing slightly (+4.3% in the last 7 years), and subsequently the density has also been growing; due to the post-industrial challenges which Dortmund is facing, the city has relatively high numbers of welfare recipients.

Regarding human health and wellbeing, the city benefits from a high percentage of green infrastructure, which translates to high amounts of green space per capita; as Dortmund downtown and adjacent areas are heavily sealed, there is a significant heat island effect in the inner city area. A well-developed bike infrastructure inter-connects the city's areas and links them within the region.

The city has implemented, from the point of view of ecological and environmental restoration, ample and complex renaturation projects for the Emscher River and post-industrial brownfields (ca. 1,100 ha) over the last decades. These efforts, while remarkable, still need matched further action in mitigating the negative effects of industrial soil contamination and effect of historic industrial production in the area.

The impact of de-industrialization in the coal and steel industries has also left its mark on the economy and the labour market; however, the city was able to navigate this issue and nowadays around 80% of Dortmund's workforce is employed in the tertiary sector. While declining, unemployment rate remains high in Dortmund, being about twice as high as Germany's unemployment rate. Ultimately, the surplus of workforce, relatively low values of land and property and the upward trend in tourism and business / investment interest, can point towards new opportunities for economic development within the next few years. If proGIreg can harness the potential of NBS for providing green job opportunities, it can certainly leverage on this advantage.

Analysis Area level for the Dortmund Living Lab

The Analysis Area (AA) is slightly denser populated than the city, having a high degree of diversity (one fourth of the residents being foreign-born) and registering a high degree of material deprivation, with one in every four citizens being severely affected by a lack of resources, partly as a result of the decline of the coal industry. The AA is mainly confronted with issues stemming from being a peripheral, socially deprived settlement, an ex- industrial workers' neighbourhood with below average living space per person, in need of new urban renewal programs. However, it is also a neighbourhood with a strong identity, which represents an advantage for further proGIreg implementation.

The LL represents an area with a very high potential for free time recreation activities, for inhabitants as well as the overall Dortmund population and tourists. Outstanding points of attraction are Hansa coking plant as an industrial heritage museum also hosting Germany's largest climbing wall

Regarding ecological and environmental restoration, the LL area records a high proportion of anthropogenically influenced soils. Due to soil contamination caused by former industrial use, there

are only few areas left within the Living Lab, used for professional farming. . It may be necessary to extend the Living Lab to an area with appropriate soil conditions, good access and short-term availability.

Regarding the local economy and labour market, the AA area is characterised by an unemployment rate significantly higher than Dortmund average (which is already comparably higher than the national levels). However, it also has specific potential which can stimulate investment in the area: existing and future attractive economic sites, work force training initiatives, and comparatively low land prices, property and rent prices. These distinctive competencies can be further considered in proGIreg implementation.

As many initiatives are currently realized in the Huckarde district, it will become a challenge to synchronize different projects, e.g. the connection between Huckarde-Nord and Deusenberg (NBS 6) within proGIreg and “Stadtumbaugebiet Huckarde-Nord”, respectively IGA 2027 All projects follow the same target, but the timeframe of “Stadtumbaugebiet Huckarde-Nord” is delayed in comparison to proGIreg.

8.1.2. Turin

City level

In the last 25 years, the city of Turin has changed radically, emerging from a deep structural crisis, due to the difficult transition from a company-town past into a post-industrial future. Since the 1990’s Turin has been transformed from an automotive industrial centre into a city of innovation and culture, developing participatory and innovative regeneration strategies to deal with the social, environmental and economical legacy of its industrial past and the emergency of contemporary societal challenges.

Turin benefits from an important quantity of green areas (ca. 55 m²/inhabitant), most of them with a high ecological value, located within the city borders and connected to a wider green belt (Corona Verde) at the regional level. This latter represents an opportunity as already valued for its touristic and ecological potential. Turin’s green system is largely public, well distributed and easily accessible by a walking distance, with still some deficiencies in the social housing districts (especially in west peripheries). Many brownfields have been converted into urban parks, contributing thus to increment the provision of public green space for inhabitants. Moreover, agricultural areas have been preserved from new urbanization and real estate development. Despite the big effort in recovering former industrial sites, social disparity remains an important issue and major regeneration needs to relate to marginal city areas and post-industrial socio-environmental problems. Poor quality urban areas highlight aspects of social deprivation, including difficult access to housing, high unemployment, low school attendance rates and low levels of vocational education. Social marginalization of peripheral areas is worsened by the weakness of the local public transport, not enough efficient in connecting these areas with the city centre. The fragmentation of bike-lanes, the perceived unsafety of pedestrian and bikes paths, mainly due to evident deficiencies in their maintenance, suggest a problematic provision of sustainable and alternative mobility solutions, which contributes to increase the use of private cars, with alarming impacts on air quality and pollution.

To tackle these problems, Turin is developing innovative and participative regeneration strategies for the urban fringe (AXTO, CO-CITY) and is connecting physical NBS interventions with action on social inclusion and the promotion of sustainable economies. For its support to social enterprise start-ups and for creating new business opportunities for urban innovations, the city was awarded the second prize for the “European Capital of Innovation” in 2016.

Within this framework, community gardens represent an important resource for the city, as well as farmed areas with a potential for being managed as commons. The widespread distribution of urban food markets and farmers markets represent a resource for developing a “zero mile food”-oriented economy, also levering on international important networks like Slow Food (in which originated from the Piedmont region). Moreover, Universities are drivers for innovation in the green infrastructures field, as research centres on environmental restoration, agronomy, urban agriculture, sustainable urban planning, and social innovation design. These are also attractors for new urban inhabitants, like national and international students, which create new demand for services and housing.

Nevertheless, in the last years, the city is experiencing a progressive depopulation process, in favour of the neighbouring towns of the metropolitan area. As main threat, Turin is facing the economic crisis of the last years, which has reduced the amount of private investments in the city, and the impoverishment of the public administration, which undermines public action. Moreover, the city needs still to develop adequate planning tools to deal with climate change effects.

Living Lab level

The post-industrial district of Mirafiori is linked with the history of FIAT Company, which has been one of the most significant examples of Italian city-factories. It was characterised in its post-industrial features by a relentless process of physical, cultural and social degradation. Nevertheless, FIAT continues to be one important player to bring regeneration on the area as they aimed to provide a strong CSR component that shows the commitment of the company to enrich the Post-industrial Cultural heritage site.

The Mirafiori district is in a peri-urban area surrounded by the green belt Corona Verde. Moreover, the fact that the Sangone River delimits its borders has given the district a network of naturalistic pathways, which can further be capitalized within proGIreg. Inside Mirafiori, the greenery is present on the most important mobility corridors, and there is a considerable extension of public greenery within two larger parks. Nevertheless, the main challenge of the area is the lack of accessibility from other parts of the district resulting from a lack of public transport connections with Mirafiori. Project such as Corona Verde, AxTo and FM Projects (detailed in Chapter 4.2) foster social cohesion through public green spaces. In addition, in the south part of the district, there is an emerging culture of community gardens, not all of them regulated by the city.

Mirafiori is a traditional working-class district with a considerable amount of social housing, which subsequently expanded and finally downsized. Numerous urban voids in the area reveal progressive depletion of industrial and residential buildings, and reduced commercial activities. Few remaining businesses range from retail to open markets. The loss of industrial activity has brought unemployment and sharp decline in population density of the district, leaving a high number of elderly people and a considerable number of empty social housing.

The district presents the characteristics of an enclave: a concentration of people with a high incidence of social problems and a strong cultural mix physically isolated and socially separated from the surrounding areas. However, since the ‘90s, different urban regeneration projects were promoted to preserve and enhance the urban fabric and post-industrial cultural heritage sites, to give a new image to the district. These activities have been promoted by a strong presence of non-state actors including businesses and universities, which are gathered under Fondazione Mirafiori management.

There are important stakeholders at local level, which have been mapped for providing the overview in Chapter 5.2, which have been involved in initiatives to revitalize Mirafiori Sud over the last years. In spite of a large amount of resources and expertise, their initiatives had rather modest outcomes.

Against this backdrop, proGIreg offers a new approach to capitalize the local resources, most specifically the human and physical capital present in the area, and to enrich the economic profile of the district with NBS, stimulating social entrepreneurship.

8.1.3. Zagreb

City Level

The population of Zagreb together with the Zagreb metropolitan region, consisting of the larger area of influence with 690 towns and villages, measures to total of about 1.1 million inhabitants. In recent years, the suburban population has grown, while the city of Zagreb, especially its historical centre, witnesses a decline in population. Zagreb keeps incorporating its former suburbs into its urban tissue.

As the national capital and regional centre, Zagreb is well equipped with social, cultural, economic, commercial and other amenities. Most of the city is well connected by traffic and communal infrastructure. There is an abundance of green and natural spaces in and around the city, natural, historical and cultural monuments, and well-preserved built heritage. Population is above national average in terms of education and skills. There is a complex and comprehensive educational system including the largest university in Croatia.

However, the ongoing recession has left its mark in both public funding, which has been reduced in all the sectors from medical and health, to cultural and independent activities (entrepreneurship). General lack of optimism and programmes for the young result in higher incidence of vandalism and unhealthy lifestyles. There is a general lack of awareness of health and ecology, leading to long-term problems. Public transport and other sustainable means of transportation are underused. Zagreb has partly outdated communal infrastructure network, and existing geothermal energy is not being used at all. Legal and property-related matters are resolved in a time-consuming manner, slowing down economic activity.

The use of European funding presents a great potential in development of the city, both for infrastructural and for large-scale urban projects and the City is actively working to use this opportunity. The global trend of advanced technology in all sectors of life and energy efficiency as an obligation can lead to smarter buildings with fewer energy losses and overall better functionality. Cooperation with other Croatian and European municipalities and international networks can have positive influence on policies, plans and practices.

Increasing poverty and social stratification have left their mark on society and continue to threaten its functioning and development. Young professionals move abroad in search of better opportunities, and the city spreads without adequate infrastructural and social development. Centralization and administrative barriers obstruct economic growth.

With all this in mind, the City has undertaken numerous activities, EU-funded, public and private-funded, to ensure that the city potentials will be used adequately and to ensure development envisioned in the Zagreb development strategy. Energy efficiency, clean energy and similar topics have been in public focus lately.

Living Lab level

Sesvete is a municipality of the City of Zagreb and a part of the Zagreb urban agglomeration, in its easternmost side, covering a little under 20% of the overall surface area of Zagreb. Sesvete has the

youngest population in Croatia. The young population is a great asset, strengthened by the civil society, which actively works on improvement of the living conditions and economic opportunities in Sesvete.

The surrounding area of Sesvete and the LL is rich with natural green areas, some of which are not accessible to the public; however, the advantage of provisioning services still stands, in what concerns improvements of the local microclimate. Urban gardens complement the existing rural tradition, and expansion of the urban gardens are welcome in the area.

Intense growth of Sesvete resulted in a neighbourhood that lacks a human scale centre, a central urban park, a suburban landscaped park, cycling tracks, sports fields and many other facilities. Sesvete lacks public facilities like a music school, buildings for culture and a large city square, a municipal court, a farmer's market, a police and fire service building, and other similar facilities. Today it is an incomplete municipality with the potential of becoming a neighbourhood with high quality of life. This aspect, corroborated with the fact that Sesvete has witnessed an unparalleled demographic growth in the last years, have both intensified social and environmental pressures and problems.

Sesvete is well connected to the city centre by railway and two important city roads, which are not sufficient for the existing E-W transit traffic. However, Sesvete lacks good N-S connections, and the LL area and Novi Jelkovec neighbourhood is cut off from the centre and its main public and social facilities by the railway and large roads spreading in the East-West direction. These fractures in the territory can be addressed within the project, as an opportunity to enhance connectivity via green infrastructure.

Sesvete has a tradition in production and industry, which has today been replaced with other economic activities, mainly transport, automobile and construction industry. The residents of Sesvete are unhappy with the current planning documents, which envision a large monofunctional commercial/industrial zone, which they fear would prevent the desired spatial integration of the district centre with its parts south of the railroad. The LL area is partly within this large zone. Therefore, the civil society organizations are working on changes to the Urban Development Master Plan of Sesvete, in order to introduce other purposes in area south of the railroad. This aspect is especially important to the implementation of future activities in the LL, more specifically the co-design processes under Task 2.2 – the pre-conditions and openness of an already activated local community can fuel the development and implementation of the LL at local level, ensure local rooting and ownership, and foster sustainability of proGIreg.

8.2. Conclusions of the Spatial Analysis

The Spatial Analysis in Front Runner and Follower Cities aimed at developing a common spatial framework based on existing indicator data, corroborated with information pertaining to the stakeholder and plan and policy landscape in each city.

The challenge of the report was to produce a homogenous overview of the seven cities analysed (without Ningbo, which will be addressed at a later stage), while considering their differences in what concerns their approach to proGIreg interventions (FRC versus FC, area delineation and NBS selection), plan and policy framework, data availability, data interpretation.

The contexts of the cities differ widely, but between FRC, the approach has been to test NBS in post-industrial neighbourhoods (Huckarde, Mirafiori, Sesvete), having particular socio-economic challenges, for which NBS can make a strong case towards supporting renewal and redevelopment.

FRC had already identified their Living Lab areas in the project proposal stage, but for FC, this spatial analysis offered an opportunity to establish a first area-based approach to the Urban Regeneration Plans. Their options have produced a diverse approach, with FC Cascais identifying a peripheral neighbourhood of the city, similar to FC Piraeus, who provisionally delineated two such areas in the Western and Eastern sides of the city. FC Zenica and Cluj both opted to select areas on the courses of rivers (Bosna and Somes respectively). While the first one has narrowed the potential Urban Regeneration Plan area to a 0.43 km^2 in the heart of the city, the latter has the ambition of including the entire main development axis of the city (along the Somes River and railway) within the activities of Task 2.3. This heterogeneity represents an opportunity to test the proGIreg NBS in very diverse settings, at diverse scales, and to validate them in multiple replicable contexts.

Moreover, the selection of NBS in FC resulted in an interesting clustering of the cities' preferences with two cities opting for NBS 3 "Community-based urban gardening and farming on post-industrial sites" (Cascais, Cluj-Napoca), three for NBS 6 "Making post-industrial sites and renatured river corridors accessible for local residents" (Cluj-Napoca, Piraeus, Zenica), and all four for NBS 5 "Capillary GI on walls and roofs". While this is, to a degree, corroborated with the local situations (e.g., areas with highest potential have been identified along river corridors), it can point to a still immature, or incipient understanding of the potential of proGIreg NBS, and their opportunities for the local areas. It will be important, in the future activities of the project, to facilitate the understanding of possible scenarios of NBS testing in FC beyond this first selection. Based on the SWOT analysis conducted by the cities, the initial selection represents a rather conservative approach to valorising NBS in the Urban Regeneration Plan areas, and further solutions to be considered can certainly be explored. Currently undervalued NBS No. 7 "Establishing protocols and procedures for environmental compensation at local level" can represent a zero-cost measure and even a way to facilitate further implementation of investments foreseen in the Urban Regeneration Plans. More preparation work is needed in order to lay the groundwork for, and properly focus the Task 2.3 implementation.

Regarding the plan and policy framework in FRC, there is coherence between the proGIreg LL implementation proposals on one hand, and the planning documentations (normative and strategic) as well as other actions either in implementation or planned, on the other. Horizontal and vertical integration with the current framework is ensured in all three cities, with Dortmund leveraging the most on the existence of an overarching GI and NBS development concept. FC present different contexts, and while some of them have previous experience with NBS (e.g. urban community gardening in Cascais), others are newcomers to the topic, and the development of the Urban Regeneration Plans can provide a great opportunity to embed NBS in their plans and policies. There have already been opportunities identified in this sense (e.g. the updating of the Cluj county and Metropolitan Area Plan in the following ca. two years).

Stakeholder groups of the FRC are well-rounded, presenting very clearly the quadruple-helix approach behind their selection, but also the different ambitions and contexts of the cities. Linking proGIreg implementation to real needs in the territory is reflected well in the different foci of the cities: from social inclusion in Mirafiori, Turin, to ownership creation and social entrepreneurship in Zagreb, as well as economic valorisation of NBS value chains and neighbourhood quality improvement in Dortmund. In FC, stakeholder identification is still in its exploratory phase, and some of the cities have relied on recovering stakeholders from previous initiatives. There is no obvious refinement of their stakeholder lists, apart from Cascais and – to a certain extent – Cluj-Napoca, based on the specific NBS selected. As the understanding of the "best fit" approach in proGIreg will take shape in the future, it is expected that the stakeholder lists will expand and become more specific to the particular solutions to be included in the Regeneration Plans. Nevertheless, there is evidence of a multi-stakeholder approach in all cities, which has the potential of leading to a quadruple helix model of co-

developing the Regeneration Plans as well (and possibly of implementing them, after the project lifetime).

Regarding data collection, one of the biggest challenges starting from the beginning was ensuring a critical mass of (existing, already collected) indicators on which to base the Spatial Analysis. As this has been the priority, a very extensive indicator list has been produced, from which cities ultimately picked the indicators for which data was available. This approach has produced at least 1-2 valid indicators per sub-domain for each city but has challenged the possibility of ensuring comparability between them.

Even data for FRC has been particularly limited, especially in what concerns health (as indicators are collected by other entities than the municipalities) and the environmental quality (air, water, soil). These are key pieces of information for the project, and in lieu of available data for the baseline, cities will need to get creative with data collection afferent to the WP 4 tasks (i.e. overcome the lack of health data with the use of questionnaires).

Despite the fairly FRCs' different contexts, cultures, and histories, the SWOT analysis confirmed cross-cutting issues characteristic of post-industrial and socially-deprived areas such depopulation, economic stagnation, social segregation and disconnection:

- The LL areas have a **negative image** from the outside (Huckarde, Dortmund; Mirafiori, Turin) or are generally unknown and marginalised (Sesvete, Zagreb). The population base in the areas of Dortmund and Turin is characterised by a strong presence of welfare recipients and lower education, while the LL area in Zagreb has challenges of its own caused by a dramatic population increase, which created a disparate community, lacking a local identity.
- There is a **lack of public services** and social facilities in the LL areas which generates significant local pressures, in particular when corroborated with lower housing standards (Huckarde), a decline in the capacity of existing social support structures (Mirafiori) or an excessive population densification not served by such public services and urban functions (Sesvete).
- From an infrastructure point of view, all three LLs struggle with **low urban fabric permeability, low accessibility of urban green spaces and severed connections** between points of interest in the areas, due to the barrier effect of transport infrastructure. Lack of connections and paths (Huckarde), low permeability which leads to urban green spaces being abandoned (Mirafiori and Sesvete), the fracture in the territory caused by infrastructure, cutting off communities (Sesvete).
- While health data is not available except for Turin (which an indication of **a higher incidence of several diseases** in the Mirafiori area compared to the city), **urban safety** and low availability of good-quality green space is perceived as an issue.
- **Pollution** is also an important issue. Albeit soil data is very limited, brownfields and anthropogenically influenced soils are present in all FRC, including soils polluted by fuels (Mirafiori).
- Lastly, **unemployment** (Huckarde; Mirafiori – especially youth) and a **low number of businesses and entrepreneurship opportunities** (Mirafiori), as well as a generally inert economic landscape where potential is not harnessed (Sesvete) are present.

ProGIreg NBS have been designed to tackle post-industrial challenges, by, for example, fostering social inclusiveness, enhancing quality of life and improving environmental condition via access to GI and regeneration of polluted areas, as well as providing business opportunities. The FRC can leverage strengths and opportunities for NBS implementation such as presence of available land for re-development (all cities); a generally young, active population (Sesvete) or possibilities of attracting it with sports equipment (Huckarde); a high density of urban green spaces (all cities) with possibility to create a GI network. Comparatively lower costs of real estate and land in all three areas are a

competitive advantage for attracting businesses and inhabitants and raising the profile of the neighbourhoods, but the effect of these actions need to be carefully assessed in conjunction with potential future gentrification – especially since all three areas are now highly diverse neighbourhoods, socially and culturally.

The challenges and contexts of the FC are more diverse – nevertheless, there are still commonalities between the four cities. A high level of air pollution, partly due to traffic, is present in Zenica, Cluj-Napoca as well as Piraeus. A problem of very high population density, private ownership of brownfields, overcrowding and lack of urban connections / relationship with the green areas are issues characteristic of both Cluj as well as Zenica, while deficient pedestrian and bicycle accessibility represents a problem identified throughout the four cities. Cascais presents issues similar to Turin / Mirafiori and Huckarde, with a potential Urban Regeneration Area having a lower-income social situation, low education, discrimination, as well as illegal soil occupation with diverse functions. Cluj has the opposite problem than all three FRC with respect to the economic component: here, property costs are high and very high, with the city spearheading the upwards rent and land / construction costs at national level. In addition, while it is growing (overall slowly, such as Dortmund), Zenica is strongly depopulating. These are all critical drivers to be further considered in developing the Urban Planning processes in the follower cities, and their diversity ultimately represents an advantage of proGIreg being able to test and explore embedding of NBS in different settings.

This first assessment has played different roles for the two types of cities involved in the project (FRC and FC). Specifically for FRC, the Spatial Analysis represents part of the preparation for the NBS implementation, which will be conducted through WP3 and accompanied with a co-design process (Task 2.2). This grounding work will be further supplemented through the WP4 assessment of the key domains.

For the FC, the Spatial Analysis represents the opportunity to narrow down the potential NBS and Urban Regeneration areas, in order to better capitalize on the knowledge transfer process from the FRC to the FC. In a later stage (starting January 2021), this analysis will serve as a basis for the deployment of the Urban Regeneration Plans co-design at local level.

For both FRC and FC alike, the present analysis represents a first building block framing the local challenges and priorities. The extent to which this purpose was fulfilled has been dependent mainly on data availability in the cities. There have been a few factors and limitations to the spatial analysis, namely:

1) Aligning the Spatial Analysis with further requirements in the project, and incorporating data requests has generated delays; however, parallelizing the work has been crucial in ensuring that the project progresses in an integrated, holistic manner.

2) Data requests placed by the cities to external institutions or other municipal departments (i.e. statistics offices) took up a long time to be resolved, an aspect which should be considered in subsequent data collection under the already-developed indicator framework.

3) A significant amount of data, especially in FC, has not been available. The analysis at a sub-municipal Regeneration Area level was only possible to conduct in Cascais, while the rest of the FCs only have available data at municipality level – in the case of Piraeus, strictly for the census year 2011 for most indicators.

While the above limitations factor in the results of the Spatial Analysis process, the information and analysis work carried out by the partners in the present deliverable has produced a very relevant

database and subsequent set of analyses, both textual as well as graphical. The indicators, albeit not all available for the cities (making cross-comparison difficult), are sufficiently compact and clearly related to the societal needs which the proGIreg NBS aim to address. Hence, the present deliverable provides baseline data to assist understanding the situation at the beginning of the NBS piloting activities in FRC Dortmund, Torino and Zagreb, to support identification of relevant project-attributable changes over the next years of project lifetime, and to foster transfer of NBS into the planning processes in FC of proGIreg.

The proGIreg LL in FRC and Urban Regeneration Plans in FC will be, ultimately, demonstrators of how NBS can be embedded in local level spatial planning and decision-making; new forms of planning and implementation can be demonstrated with the citizens in real-life contexts, and solutions can afterwards be upscaled, translated and adapted to the long-term local needs.

Analysing the effectiveness of NBS in the different contexts builds evidence for a feedback loop into plans and policies, both within the FRC, and as a methodological transfer to the four FC. These potential changes in policy, legislation and spatial planning can further support and influence the uptake of nature-based solutions at local, regional or national level, or inspire other like-minded cities to adopt proGIreg NBS.

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Municipality of Cascais – **https://www.cascais.pt**

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The spatial datasets at Municipal level included the following:

- Administrative units and Land cover, obtained by the Municipality of Piraeus.
- Transport network, obtained by OASA Telematics.
- Land use, obtained by Government Gazette 79Δ/88 and 663Δ/94.
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- Cadastral parcels, ownership status, and digital terrain maps (DEM) obtained by the Hellenic Cadastre.
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ANNEX 1.1: SPATIAL ANALYSIS INDICATOR DATABASE
FRONT RUNNER CITY DORTMUND

a. MULTIANNUAL INDICATORS

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	YEAR_2008	YEAR_2009	YEAR_2010	YEAR_2011	YEAR_2012	YEAR_2013	YEAR_2014	YEAR_2015	YEAR_2016	YEAR_2017	SOURCE_LINK	NOTE
1.Socio-cultural inclusiveness	1.1 Demographics	1.1.1 Total population	Total number of persons living in the specific area.	Dortmund	1.1.1.a	persons			576,704	578,126	579,012	583,658	589,283	596,575	601,150	601,780	"Bevölkerung nach Geschlecht und Altersgruppen am 31.12." ("Population by sex and age") 2010-2017, published by Dortmunderstatistik - 24.10.2018	
				Analysis Area	1.1.1.b	persons						55,091	55,936	56,709	57,081	56,812	Dortmunderstatistik, 22.10.2018	
		1.1.2 Population density	Number of persons per square km of land area.	Dortmund	1.1.2.a	p /sq km			2,054	2,059	2,062	2,079	2,099	2,125	2,141	2,143	eigene Berechnung auf Grundlage Geodaten Stadt Dortmund und Einwohnerzahl	
				Analysis Area	1.1.2.b	p /sq km						2,420	2,457	2,491	2,508	2,496		
		1.1.3 Population growth rate	Average annual rate of change of population size (%).	Dortmund	1.1.3.a	%				0.2	0.2	0.8	1.0	1.2	0.8	0.1	derived from "Bevölkerung nach Geschlecht und Altersgruppen am 31.12." ("Population by sex and age") 2010-2017, published by Dortmunderstatistik - 24.10.2018	
				Analysis Area	1.1.3.b	%							1.5	1.4	0.7	-0.5	Dortmunderstatistik, 22.10.2018	
		1.1.4 Migration rate	Net number of migrants (immigrants – emigrants) per 1,000 population.	Dortmund	1.1.4.a	net number migrants / 1,000						11	10	15	10	3	Dortmunderstatistik, 22.10.2018	negative number: more emigrations than immigrations!
				Analysis Area	1.1.4.b	net number migrants / 1,000						13	15	24	12	0		
	1.2 Social and cultural inclusiviness	1.2.1 Welfare recipients	Material deprivation rates gauge the proportion of people whose living conditions are severely affected by a lack of resources	Dortmund	1.2.1.a	%						13.9	14.0	14.2	14.4	14.3	Dortmunderstatistik, 22.10.2018	
				Analysis Area	1.2.1.b	%						20.2	20.4	20.6	21.0	20.8		
		1.2.2 Work intensity	% employed out of total economically active population (15-64 years of age)	Dortmund	1.2.2.a													
				Analysis Area	1.2.2.b													
		1.2.3 Diversity statistics (percentage of residents with foreign nationality)	% foreign born residents (if available, for both scales, or) Population by ethnicity	Dortmund	1.2.3.a	%						14.0	15.0	16.3	17.3	17.7	Dortmunderstatistik, 22.10.2018	
				Analysis Area	1.2.3.b	%						21.3	22.8	24.4	25.5	25.6		
	1.3 Education and access to social and cultural services and amenities	1.3.1 Educational attainment	Average level of education completed by the 20-64 year-old population	Dortmund	1.3.1.a	persons	see SINGLE YEAR INDICATORS											
				Analysis Area	1.3.1.b													
		1.3.2 Recreational or cultural facilities	Relevant for LL/regeneration level: no. and identification of recreational and / or cultural facilities	Dortmund	1.3.2.a	number	see SINGLE YEAR INDICATOR											
				Analysis Area	1.3.2.b	number												
		1.3.3 Accessibility of public urban green spaces		Dortmund	1.3.3.a													
				Analysis Area	1.3.3.b													
	1.4 Housing	1.4.1 Housing quality	Average useful floor area per person, calculated in sqm	Dortmund	1.4.1.a	sqm/person	39.3	39.7	39.9	40.0	40.1	40.0	39.8	39.5	39.4		Dortmunderstatistik, 22.10.2018	
				Analysis Area	1.4.1.b	sqm/person	36.5	36.8	37.0	37.0	37.1	36.8	36.3	35.8	35.6			
		1.4.2 Public housing units (appartements)	Percentage of residents in public housing	Dortmund	1.4.2.a	units						26,526	25,546	24,627	22,593	22,237	Dortmunderstatistik, 22.10.2018	
				Analysis Area	1.4.2.b	units						4,683	4,286	4,116	3,846	3,784		
		1.4.3 Housing affordability	Homeownership rate	Dortmund	1.4.3.a													
				Analysis Area	1.4.3.b													
		1.4.4 Density of the built environment	Building Coverage Ratio, or if unavailable, Floor Area Ratio (Total residential floor area divided by total residential area	Dortmund	1.4.4.a	persons	see SINGLE YEAR INDICATOR											
				Analysis Area	1.4.4.b	persons												

a. MULTIANNUAL INDICATORS

2. Health & Wellbeeing	2.1 Health	2.1.1 Incidence of cardio and respiratory diseases	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Dortmund	2.1.1.a												
				Analysis Area	2.1.1.b												
		2.1.2 Incidence of allergic disease	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Dortmund	2.1.2.a												
				Analysis Area	2.1.2.b												
		2.1.3 Incidence of chronic stress, stress-related diseases, mental	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Dortmund	2.1.3.a												
				Analysis Area	2.1.3.b												
		2.1.4 Obesity rate	*Possibly available by region / in specific studies (or possibly at school level)	Dortmund	2.1.4.a												
				Analysis Area	2.1.4.b												
		2.1.5 Life expectancy	Average life expectancy (possibly available at higher levels / regional level)	Dortmund	2.1.5.a	average age at death m / f					76.3 / 81.8	76.2 / 81.7	76.7 / 81.8	76.6 / 81.6	77.0 / 81.8	77.4 / 82.1	Dortmunderstatistik, 22.10.2018	
				Analysis Area	2.1.5.b													
	2.2 Wellbeing	2.2.1 Green space per capita	Sqm of green space / person	Dortmund	2.2.1.a	sq m / capita	see SINGLE YEAR INDICATOR											
				Analysis Area	2.2.1.b	sq m/ capita												
			Sqm of green space / person	Dortmund	2.2.1.a	sq m / capita	see SINGLE YEAR INDICATOR											
				Analysis Area	2.2.1.b	sq m / capita												
		2.2.2 Urban safety – crime	Yearly number of reported crimes per 1,000 persons	Dortmund	2.2.2.a	number of reported crimes per 1.000 persons			73,115	80,086	80,851	80,540	86,549	83,586	76,259	67,291	Annual crime statistics, "Polizeiliche Kriminalstatistik Dortmund und Lünen", published by Dortmund Police, 2012 - 2017 - 26.10.2018	
				Analysis Area	2.2.2.b													
		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	Dortmund	2.2.3.a	pedestrians / bicyclists	409 / 435	386 / 379	349 / 327	408 / 386	344 / 358	335/ 313	337 / 317	301 / 349	407 / 360	356 / 379	Annual statistics of traffic accidents, "Verkehrsbericht", published by Dortmund Police, 2012 - 2017- 26.10.2018	
				Analysis Area	2.2.3.b													
	3.1 Land use and Vegetation	3.1.1 % of green spaces	% of total surface which is destined for green spaces	Dortmund	3.1.1..a	%	see SINGLE YEAR INDICATOR											
				Analysis Area	3.1.1.b	%												
		3.1.2 structure of green spaces	% of tree covered areas	Dortmund	3.1.2.a													
				Analysis Area	3.1.2.b													
		3.1.3 structure of green spaces	% of shrub covered areas	Dortmund	3.1.3.a													
				Analysis Area	3.1.3.b													
		3.1.4 structure of green spaces	% of meadow covered areas	Dortmund	3.1.4.a													
				Analysis Area	3.1.4.b													
		3.1.5 % Surface of brownfields *(not including reused areas)*	% of total surface which is destined for brownfield areas	Dortmund	3.1.5.a	%	see SINGLE YEAR INDICATOR											
				Analysis Area	3.1.5.b	%												
		3.1.6 % Surface of polluted brownfield areas	% of polluted brownfield areas	Dortmund	3.1.6.a													
				Analysis Area	3.1.6.b													
		3.1.7 Canopy cover	The proportion of the forest covered by the vertical projection of the tree crowns	Dortmund	3.1.7.a													
				Analysis Area	3.1.7.b													
		3.1.6 Leaf Area Index	Leaf area index is defined as the projected area of leaves over a unit of land (m2 m−2), so one unit of LAI is equivalent to 10,000 m2 of leaf area per hectare. This index takes into account the leaf stratification within the canopy.	Dortmund	3.1.6.a													
				Analysis Area	3.1.6.b													
		3.1.7 NDVI	Normalized Difference Vegetation Index	Dortmund	3.1.7.a													
				Analysis Area	3.1.7.b													

a. MULTIANNUAL INDICATORS

3. Ecological and environmental restoration	3.2 Climate / Meteorological data	3.2.1 Precipitation	Average annual precipitation (mm)	Dortmund	3.2.1.a	mm	882	834	837	714	803	677	824	871	696	839	Emschergenossenschaft / River Emscher Association, Division for Technical Services and Flood Management	Value = average taken from four measuring stations in Dortmund
				Analysis Area	3.2.1.b													
		3.2.2 Relative humidity	Relative humidity	Dortmund	3.2.2.a													
				Analysis Area	3.2.2.b													
		3.2.3 Air temperature	Annual mean temperature (°C)	Dortmund	3.2.3.a	°C										10.4	Deutscher Wetterdienst, Station Waltrop	Information forwarded by the Department for the Environment (Umweltamt), City of Dortmund
				Analysis Area	3.2.3.b													
		3.2.4 Wind strength	Wind intensity (km/h)	Dortmund	3.2.4.a													
				Analysis Area	3.2.4.b													
		3.2.5 Wind direction	Main wind direction	Dortmund	3.2.5.a													
				Analysis Area	3.2.5.b													
	3.3 Air Quality	3.3.1 Ozone concentration	µg/m3 / ppb	Dortmund	3.3.1.a													
				Analysis Area	3.3.1.b													
		3.3.2 NOx concentration	µg/m3 / ppb	Dortmund	3.3.2.a	µg/m3 / ppb								27-51*			Landesamt für Naturschutz Umwelt und Verbraucherschutz, NRW	* The range shows the respective average values of various stations. As the locations for measurements were selected to monitor problematic areas they do no represent an average for the City of Dortmund. Information forwarded by the Department for the Environment (Umweltamt), City of Dortmund
				Analysis Area	3.3.2.b													
		3.3.3 PM 2.5 concentration	µg/m3 / ppb	Dortmund	3.3.3.a	µg/m3 / ppb								13-14*			Landesamt für Naturschutz Umwelt und Verbraucherschutz, NRW	
				Analysis Area	3.2.3.b													
		3.3.4 PM10 concentration	µg/m3 / ppb	Dortmund	3.3.4.a	µg/m3 / ppb								19-24*			Landesamt für Naturschutz Umwelt und Verbraucherschutz, NRW	
				Analysis Area	3.3.4.b													
		3.3.5 VOC Concentration	µg/m3 / ppb	Dortmund	3.3.5.a													
				Analysis Area	3.3.5.b													
		3.3.6 GHG inventory	Inventory of greenhouse gases (GHG) emission at city level and LL level	Dortmund	3.3.6.a													
				Analysis Area	3.3.6.b													
	3.4 Soil	3.4.1 Soil quality	Concentration of C / Concentration of N/ bulk density / permeability / water retention capability	Dortmund	3.4.1.a													
				Analysis Area	3.4.1.b													
	3.5 Water	3.5.1 Water quality	Free O/ Nutrients / Ph /eutrophication level / hydrocarbons / other polluntants	Dortmund	3.5.1.a													
				Analysis Area	3.5.1.b													
	3.6. Urban enviorment	3.6.1 Heat island effect	Difference (°C) between urban and rural surface temperatures	Dortmund	1.6.1.a													
				Analysis Area	1.6.1.b													
	4.1 Market labour and economy indicators	4.1.1 GDP per capita	GDP (PPP), Euro	Dortmund	4.1.1.a	€ / capita						33,607.0	34,054.9	34,956.2	35,852.9		Volkswirtschaftliche Gesamtrechung der Statistischen Ämter von Bund und Ländern, provided by DortmunderStatistik 22.10.2018	
				Analysis Area	4.1.1.b													
		agriculture and forestry	Employment in agriculture and forestry	Dortmund	4.1.2.a	persons			300	300	300	300	300	300	300			
				Analysis Area	4.1.2.b													
		production	Employment in production	Dortmund	4.1.3.a	persons			44,800	45,800	47,400	46,900	46,900	46,900	45,900		Number of employed people by location of employment (i.e. independent from their residency) AK Erwerbstätigenrechnung der Statistischen Ämter des Bundes und der Länder / task force for employment calculations of the statistical departments of the federal government and federal states	
				Analysis Area	4.1.3.b													
		processing	Employment in processing	Dortmund	4.1.4.a	persons			26,100	26,700	27,300	27,700	27,600	27,500	26,800			
				Analysis Area	4.1.4.b													
		construction	Employment in construction	Dortmund	4.1.3.a	persons			14,400	14,600	14,800	13,900	13,800	13,900	13,900			
				Analysis Area	4.1.3.b													
		trade, hospitality industrie und traffic	Employment in trade, hospitality industrie und traffic	Dortmund	4.1.4.a	persons			95,100	96,800	97,200	97,100	95,300	85,000	85,400			
				Analysis Area	4.1.4.b													
		finance, real estate	Employment in finance, real	Dortmund	4.1.5.a	persons			64,600	64,800	64,400	66,500	66,100	67,600	69,900			

a. MULTIANNUAL INDICATORS

		(renting), business services	estate (renting), business services	Analysis Area	4.1.5.b												States	
		public and private services	Employment in public and private services	Dortmund	4.1.6.a	persons			102,100	102,900	102,500	102,900	106,600	109,600	112,000		provided by DortmunderStatistik	
				Analysis Area	4.1.6.b													
		4.2.1 Employment rate	the proportion of employed adults in the working age (20-64 years)	Dortmund	4.2.1.a													
				Analysis Area	4.2.1.b													
		4.2.2 Unemployment rate	the proportion of unemployed adults in the working age (20-64 years)	Dortmund	4.2.2.a	%						12.5	12.2	11.8	11.2	10.2	derived from "Arbeitslose nach Statistischen Bezirken	
				Analysis Area	4.2.2.b	%						16.9	15.8	15.2	14.0	13.1	derived from "Arbeitslose nach Statistischen Bezirken	
		4.2.3 Revenues by household	Average household disposable income	Dortmund	4.2.3.a	€ / capita*	16,561	16,360	16,771	17,370	17,743	17,810	18,324	18,537	18,946		Arbeitskreis Volkswirtschaftl. Gesamtrechnungen der	*revenue of households / capita available for personal expenses
				Analysis Area	4.2.3.b													
		4.2.4a Current property sale value for residential use	Property value, average, EUR/sqm, for single- and collective housing, sale price	Dortmund	4.2.4.a.a	€/sqm										720-3,200	Immobilienrichtwert (Standard Property Value), published by Oberer Gutachterausschuss für Grundstückswerte im Land Nordrhein-Westfalen,	4.2.4a The Standard Property Value (Immobilienrichtwert) shows an average value for a typical building within an determined zone of similar architecture and use.
				Analysis Area	4.2.4.a.b	€/sqm										665-2245		
		4.2.4b Current property rental value for residential use	Property value, average, EUR/sqm, for single- and collective housing, renting (monthly)	Dortmund	4.2.4.b.a	€/sqm										4,85 (1930-77), 5,59-6,17 (1978-2001), 6,56-6,94 (2002-2011)	Mietspiegel 2017 Dortmund (Rent-Index Dortmund published by the the City of Dortmund)	4.2.4.b.a The rent-index median is determined by construction-period.
				Analysis Area	4.2.4.b.b	€/sqm										5.2 - 6.7 (-9.01)	DortmunderStatistik 29.10.2018	*4.2.4.b.b The range shows only the average monthly rent /m² of new rentals (as offered on the market) for various subdistricts. For Dortmund (as alternative data to 4.2.4.b.a) this value for new rentals would be 6.66€/m²
4. 4. economy + labour market	4.2 Gentrification indicators	4.2.5a Current property value for commercial/ industrial/ office use	Property value, average, EUR/sqm, sale price	Dortmund	4.2.5.a.a	€/sqm										industrial use 35-90; commercial use: up to 570 (up to 2,100 in the city center)	Bodenrichtwert (Standard Ground Value), published by Oberer Gutachterausschuss für Grundstückswerte im Land Nordrhein-Westfalen (29.10.2018)	*4.2.5a The Standard Ground Value ("Bodenrichtwert") is a benchmark derived from average sales prices, including development charges etc. but refers only to the ground (without taking the value of buildings into account). It is regularly revised and is taken as basis for the determination of property tax rates. It is assigned to zones of similar use and structure.
				Analysis Area	4.2.5.a.b	€/sqm										industrial use 50-76; data for commercial use unsufficient		
		4.2.5a Current property rental value for commercial/ industrial/ office use	Property value, average, EUR/sqm, renting (monthly)	Dortmund	4.2.5.a.a													
				Analysis Area	4.2.5.a.b													
		4.2.6 Free services	Total number of free services (parks, librairies, cycle trials, skate parks…)	Dortmund	4.2.6.a													
				Analysis Area	4.2.6.b													
		4.2.7 Basic utilities	Monthly cost of basic utilities (Electricity, water, Garbage…)	Dortmund	4.2.7.a													
				Analysis Area	4.2.7.b													
		4.3.1 Current number of tourists	Measured as average number of overnight stays in tourism accommodations	Dortmund	4.3.1.a	overnight stays			861,185	931,389	999,139	1,028,940	1,071,627	1,134,632	1,214,333	1,253,546	DORTMUNDtourismus GmbH forwarded by	
				Analysis Area	4.1.3.b													
		4.3.2 Number of temporary events	Trade Fairs, Congresses, Symposiums, Concerts, Parades before NBS application (in number)	Dortmund	4.3.2.a													
				Analysis Area	4.3.2.b													

a. MULTIANNUAL INDICATORS

	4.3 Tourism and attractiveness indicators	**4.3.3 No. of foreign students**	% of foreign students out of total enrolled higher education students	**Dortmund**	**4.3.3.a**	students / year						4,002	4,274	4,049	4,192	4,206	TU Dortmund, Dezernat Hochschulentwicklung und Organisation - Statistik -; Fachhochschule Dortmund University of Applied Sciences and Arts, Dep. VI - Hochschul IT	Inquiry at Dortmund universities / academies. Most but not all institutions provided information about internal students. *numbers refer to the second semester of the respective year
				Analysis Area	**4.3.3.b**													
		4.3.4 Local expenses	Expenses in local retail businesses	**Dortmund**	**4.3.4.a**	*see SINGLE YEAR INDICATOR*												
				Analysis Area	**4.3.4.b**													
	4.4 Taxes, Investment & Financing	**4.4.1 Local taxes**	Average local taxes per capita	**Dortmund**	**4.4.1.a**	€ / capita	893.28	771.76	900.13	907.37	902.88	913.39	958.18	1,009.74	1,058.85	1,181.20	Realsteuervergleich der Gemeinden in Nordrhein-Westfalen ab 2016 Landesdatenbank NRW, State Department for Statistics of North Rhine-Westfalia	
				Analysis Area	**4.4.1.b**													
		4.4.2 Green investment programs/funds	Public investment programs, and investment funds	**Dortmund**	**4.4.2.a**													
				Analysis Area	**4.4.2.b**													

b. SINGLE YEAR INDICATORS

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	VALUE	SOURCE	YEAR	NOTE
1. Socio-cultural inclusiveness	1.3 Education and access to social and cultural services and amenities	1.3.1 Educational attainment - *Average level of education completed by the 20-64 year-old population*	no school graduation	Dortmund	1.3.1.a1	%	10.00%	Statische Ämter des Bundes und der Länder, 2014, Zensus 9.Mai 2011 https://ergebnisse.zensus2011.de/#dynTable:statUnit=PERSON;absRel=ANZAHL;ags=059130000000;agsAxis=X;yAxis=SCHULABS	2011	
			Hauptschule (9 years)		1.3.1.a2	%	36.40%			
			Realschule (10 years)		1.3.1.a3	%	20.70%			
			Fachabitur (Entrance qualification for Universities of Applied Sciences/ restricted qualification for tertiary education)		1.3.1.a4	%	9.50%			
			Abitur (comparable to A- levels)		1.3.1.a5	%	23.30%			
		1.3.2 Recreational or cultural facilities	Relevant for LL/regeneration level: no. and identification of recreational and / or cultural facilities	Dortmund	1.3.2.a	No.		research conducted online - only to be taken as rough aproximation	2018	9 recreational facilities (public swimming pool, sports club and similar), 15 cultural facilities (museums, theater and similar)
				Analysis Area	1.3.2.b	No.	24			
	1.4 Housing	1.4.4 Density of the built environment: Floor area ratio	Building Coverage Ratio - % of built-over area within housing zones	Dortmund	1.4.1.a	%	23.39	Geodata City of Dortmund (ALKIS): "Wohnen_41001_41006_region"; "GEBAEUDE"; boundaries of city and of subdistricts that make up the regen. District	2018	
2. Health & Wellbeeing	2.2 Wellbeing	2.2.1 Green space per capita	Sqm of green space / person	Dortmund	2.2.1.a	sq m / capita	40.0	DortmunderStatistik, 22.10.2018 (Number of Inhabitants), Geodata City of Dortmund (ALKIS): "SIEDLUNG" (analised categories: "Friedhof"; "Sport-, Freizeit- und Erholungsfläche") "VEGETATION" (referred categories: all but "Brachland"). "SETTLEMENT": Cemeteries; Sports, Leisure and recreational area. "VEGETATION": all but brownfields (i.e. fields, pastures, forests, orchards)	2018	*We discussed the inclusion of agricultural / forest areas for their recreational qualities, since the implementation of NBS aim at the creation of said uses. However for the comparison of the status quo (city > reg. distr.) this calculation may not be suitable because the periphery of the city (within admin. boundaries) shows a much larger ratio of agricultural use. Comparing only typical urban green spaces (parks, cemeteries etc.) creates a very different picture.
				Analysis Area	2.2.1.b	sq m / capita	38.0			
				Dortmund	2.2.1.a*	sq m / capita	227.0			
				Analysis Area	2.2.1.b*	sq m / capita	100.0			
3. Ecological and environmental restoration	3.1 Land use and Vegetation	3.1.1 % of green spaces	% of total surface which is destined for green spaces	Dortmund	3.1.1.a	%	8.70%	Geodata City of Dortmund: like above + boundaries of city and of subdistricts that make up the regen. district	2018	idem above
				Analysis Area	3.1.1.b	%	9.40%			
				Dortmund	3.1.1.a*	%	40.00%			
				Analysis Area	3.1.1.b*	%	25.00%			
		3.1.5 % Surface of brownfields (not including reused areas)	% of total surface which is destined for brownfield areas	Dortmund	3.1.5.a	%	1.17%	Geodata City of Dortmund (ALKIS): "VEGETATION" (analised categories: "Brachland")	2018	
				Analysis Area	3.1.5.b	%	0.16%			
4. Economy + labor market	4.3 Tourism and attractiveness indicators	4.3.4 Local expenses (gross turnover in retail)	Expenses in local retail businesses	Dortmund	4.3.4.a	€	690.0	Wirtschaftsfaktor Tourismus für die Stadt Dortmund 2013, study published by dwif -Consulting GmbH / dwif e.V., provided by DORTMUNDtourismus GmbH 16.10.2018	2013	

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	YEAR_2008	YEAR_2009	YEAR_2010	YEAR_2011	YEAR_2012	YEAR_2013	YEAR_2014	YEAR_2015	YEAR_2016	YEAR_2017	SOURCE_LINK	NOTE
Inclusività socio-cultural	1.1 Demographics	1.1.1 Total population	Total number of persons living in the specific area. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	CITTÁ DI TORINO	1.1.1.a	persons	909,345	910,504	908,568	906,874	911,823	905,014	898,714	892,276	888,921	884,733	www.comune.torino.it/statistica_	Data found on the yearbooks from 2008 to 2017 (the latter will be published soon) available on the website of the Statistical Service and Toponymy at the address
				<MIRAFIORI SUD>	1.1.1.b	persons	36,160	36,237	36,108	36,044	36,106	35,876	35,474	35,203	34,961	34,659	www.comune.torino.it/statistica_	Ad hoc processing carried out using a dataset available to the Statistical Service, containing a summary of the main personal data at 31/12 of each year
		1.1.2 Population density / densità di popolazione	Number of persons per square km of land area. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	CITTÁ DI TORINO	1.1.2.a	persons / km2	6,995.02	7,003.93	6,989.04	6,976.01	7,014.08	6,961.70	6,913.24	6,863.71	6,837.91	6,805.69	www.comune.torino.it/statistica_	The surface of Turin, for the calculation of the density, was found in the Yearbook 2017 (to be published shortly) - Km ^ 2 = 129.999
				<MIRAFIORI SUD>	1.1.2.b	persons / km2	3,219.95	3,226.80	3,215.32	3,209.62	3,215.14	3,194.66	3,158.86	3,134.73	3,113.18	3,086.29	www.comune.torino.it/statistica_	The surface of Mirafiori sud, for the calculation of the density, was found in the 1979 paper Yearbook (whose pdf version will be published shortly) - Km ^ 2 = 11.230
		1.1.3 Population growth rate /tasso di crescita della popolazione	Average annual rate of change of population size (%). Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	CITTÁ DI TORINO	1.1.3.a	%	0.13%	0.13%	-0.21%	-0.19%	0.55%	-0.75%	-0.70%	-0.72%	-0.38%	-0.47%	www.comune.torino.it/statistica_	Calculation obtained using the data present in point 1.1.1.a
				<MIRAFIORI SUD>	1.1.3.b	%	-0.77%	0.36%	-0.36%	-0.18%	0.17%	-0.64%	-1.12%	-0.76%	-0.69%	-0.86%	www.comune.torino.it/statistica_	Calculation obtained using the data present in point 1.1.1.b
		1.1.4 Migration rate /tasso di migrazione	Net number of migrants (immigrants – emigrants) per 1,000 population. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	CITTÁ DI TORINO	1.1.4.a	persons ‰	6,03 %	1,62 %	-0, 22 %	0,08 %	5, 03 %	- 7, 16 %	- 4, 74 %	- 3, 35 %	- 2, 63 %	- 4,84 %	www.comune.torino.it/statistica_	To calculate the migration rate, the data referred to in 1.1.4.a and the average population count were used (for which the data in point 1.1.1.a were used)
				<MIRAFIORI SUD>	1.1.4.b	persons ‰	- 5,6 %	- 2,6 %	- 5, 0 %	- 4, 55 %	- 2, 55 %	- 5,72 %	- 8, 10 %	- 3, 85 %	- 4 67 %	- 3 59 %	www.comune.torino.it/statistica_	To calculate the migration rate, ad hoc processing was carried out using a dataset available to the Statistical Service, containing a summary of the main personal data at 31/12 of each year and the average population count (for which we used the data present in point 1.1.1.b)
	1.2 Social and cultural inclusiveness	1.2.1 Material deprivation rate	Material deprivation rates gauge the proportion of people whose living conditions are severely affected by a lack of resources	CITTÁ DI TORINO	1.2.1.a	persons, total									1.25%		Internal data (Rapporto Rota 2017)	**What we have:Proxy to measure material deprivation (economic support provided by the local municipality, Caritas and Ufficio Pio); year 2016; territorial section: "ACE o Zona Statistica"**
				<MIRAFIORI SUD>	1.2.1.b	persons, total									1.37%			
		1.2.2 Work intensity	% employed out of total economically active population (15-64 years of age)	CITTÁ DI TORINO	1.2.2.a	persons				352044							https://www.istat.it/it/archivio/104317#accordions	Censimento popolazione 2011; years: 1991; 2001; 2011; territorial section: ACE and Sezioni di Censimento
				<MIRAFIORI SUD>	1.2.2.b	persons				24779								
		1.2.3 Diversity statistics	% foreign born residents (if available, for both scales, or) Population by ethnicity	CITTÁ DI TORINO	1.2.3.a	%				12.22%							https://www.istat.it/it/archivio/104317#accordions	1. Censimento popolazione 2011; years: 1991; 2001; 2011; territorial section: ACE and Sezioni di Censimento
				<MIRAFIORI SUD>	1.2.3.b	%				17.12%								
				CITTÁ DI TORINO	1.3.1.a	persons				244189								**What we have: 1) # of graduates out of the total population; 2) # with a high-school diploma; 3) #**

	1.3 Education and access to social and cultural services and amenities	1.3.1 Educational attainment	Average level of education completed by the 20-64 year-old population	<MIRAFIORI SUD>	1.3.1.b	persons				20114						https://www.istat.it/it/archivio/104317#accordions	with secondary education; # with primary education; year 2011; territorial section: ACE or Sezione di Censimento; source: Censimento della popolazione 2011
		1.3.2 Recreational or cultural facilities	Relevant for LL/regeneration level: no. and identification of recreational and / or cultural facilities	CITTÁ DI TORINO	1.3.2.a	areas	870	870	870	870	870	870	870	870	870	870	http://geoportale.comune.torino.it/web/	
				<MIRAFIORI SUD>	1.3.2.b													
	1.4 Housing	1.4.1 Housing quality	Average useful floor area per person, calculated in sqm	CITTÁ DI TORINO	1.3.3.a													
				<MIRAFIORI SUD>	1.3.3.b													
		1.4.2 Public housing	Percentage of residents in public housing	CITTÁ DI TORINO	1.4.2.a													
				<MIRAFIORI SUD>	1.4.2.b													
		1.4.3 Housing affordability	Homeownership rate	CITTÁ DI TORINO	1.4.3.a													
				<MIRAFIORI SUD>	1.4.3.b													
		1.4.4 Density of the built environment	Building Coverage Ratio, or if unavailable, Floor Area Ratio (Total residential floor area divided by total residential area surface)	CITTÁ DI TORINO	1.4.3.a	sqm	24,266,000	24,276,000	24,286,000	24,296,000	24,306,000	24,316,000	24,336,000	24,356,000	24,366,000	24,376,000	http://geoportale.comune.torino.it/web/	
				<MIRAFIORI SUD>	1.4.3.b											19.25%	Masterplan GIS extraction	
2. Human health and well-being,	2.1 Health	2.1.1 Incidence of cardio and respiratory diseases	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	CITTÁ DI TORINO	2.1.1.a		4.62565				4.258863						Hospital admissions	
				<MIRAFIORI SUD>	2.1.1.b		7.85				5.34108						Hospital admissions	
		2.1.2 Incidence of allergic disease	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	CITTÁ DI TORINO	2.1.2.a		4.007138				3.541922						Hospital admissions	
				<MIRAFIORI SUD>	2.1.2.b		4.6857				4.9135						Hospital admissions	
		2.1.3 Incidence of chronic stress, stress-related diseases, mental health diseases and NCDs	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	CITTÁ DI TORINO	2.1.3a		68.78297										Drugs Prescriptions	
				<MIRAFIORI SUD>	2.1.3.b		74.94										Drugs Prescriptions	
		2.1.4 Obesity rate	*Possibly available by region / in specific studies (or possibly at school level)	CITTÁ DI TORINO	2.1.4.a							5,7 (3,9-6,1)					Health Services (2013)	
				<MIRAFIORI SUD>	2.1.4.b													
		2.1.5 Life expectancy at birth	Average life expectancy (possibly available at higher levels / regional level)	CITTÁ DI TORINO	2.1.5.a		82										Turin longitudinal study	
				<MIRAFIORI SUD>	2.1.5.b		82										Turin longitudinal study	
	2.2 Wellbeing	Total of public/private green areas		CITTÁ DI TORINO			46,700,000	47,000,000	47,500,000	48,000,000	48,200,000	48,200,000	48,500,000	48,777,000	48,777,000	48,777,000	http://geoportale.comune.torino.it/web/	
				<MIRAFIORI SUD>												3139872	Masterplan GIS extraction	
		2.2.1 Green space per capita	Sqm of green space / person	CITTÁ DI TORINO	2.2.1.a	sqm	51	52	52	53	53	53	54	55	55	55	http://geoportale.comune.torino.it/web/	
				<MIRAFIORI SUD>	2.2.1.b											91	Masterplan GIS extraction	
		2.2.2 Urban safety – crime	Yearly number of reported crimes per 1,000 persons	CITTÁ DI TORINO	2.2.2.a	persons			96.40	99.93	101.89	102.18	103.25	98.67	91.30	85.40	istat	http://dati.istat.it - numero di delitti denunciati dalle forze di polizia all'autorità giudiziaria - in allegato file dati estratti dal portale istat il 9 novembre 2018 ore 10:02 utc da
				MIRAFIORI SUD	2.2.2.b													

		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	**CITTÁ DI TORINO**	**2.2.3.a**											twist	db sinistri stradali della polizia municipale di torino
				MIRAFIORI SUD	**2.2.3.b**	persons						30 pedestrian 14 cyclist	34 pedestrian 14 cyclist	26 pedestrian 6 cyclist	27 pedestrian 15 cyclist	19 pedestrian 11 cyclist	twist	db sinistri stradali della polizia municipale di torino
3. Ecological and environmental restoration	**3.1 Land use and Vegetation**	**3.1.1 % of green spaces**	% of total surface which is destined for green spaces	**CITTÁ DI TORINO**	**2.2.1.a**	sqm	36,195,000	36,195,000	36,100,000	36,100,000	36,050,000	36,016,000	36,016,000	36,000,000	35,648,000	35,648,000	http://geoportale.comune.torino.it/web/	
						%	44.46	44.46	44.46	44.46	44.46	44.46	44.46	44.46	45.15	45.15		
				MIRAFIORI SUD	**2.2.1.b**											1697845	Masterplan GIS extraction	
		3.1.2 structure of green spaces	% of tree covered areas	**CITTÁ DI TORINO**	**3.1.2.a**	sqm	36,195,000	36,195,000	36,100,000	36,100,000	36,050,000	36,016,000	36,016,000	36,000,000	35,648,000	35,648,000	http://geoportale.comune.torino.it/web/	
						%	44.46	44.46	44.46	44.46	44.46	44.46	44.46	44.46	45.15	45.15		
				MIRAFIORI SUD	**3.1.2.b**													
		3.1.3 structure of green spaces	% of shrub covered areas	**CITTÁ DI TORINO**	**3.1.3.a**	sqm	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	http://geoportale.comune.torino.it/web/	
						%	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00		
				MIRAFIORI SUD	**3.1.3.b**													
		3.1.4 structure of green spaces	% of meadow covered areas	**CITTÁ DI TORINO**	**3.1.4.a**													
				MIRAFIORI SUD	**3.1.4.b**													
		3.1.5 % Surface of brownfields	% of total surface which is destined for brownfield areas	**CITTÁ DI TORINO**	**3.1.5.a**	sqm	10,755,000	10,755,000	10,755,000	11,580,000	12,450,000	12,623,000	12,450,000	12,495,000	12,495,000	12,545,000	http://geoportale.comune.torino.it/web/	
						%	12.90	12.90	12.90	14.00	13.00	13.00	13.00	13.00	13.00	13.00		
				MIRAFIORI SUD	**3.1.5.b**													
		3.1.6 % Surface of polluted brownfield areas	% of polluted brownfield areas	**CITTÁ DI TORINO**	**3.1.6.a**													
				MIRAFIORI SUD	**3.1.6.b**													
		3.1.7 Canopy cover	The proportion of the forest covered by the vertical projection of the tree crowns	**CITTÁ DI TORINO**	**3.1.7.a**													
				MIRAFIORI SUD	**3.1.7.b**													
		3.1.8 Leaf Area Index	Leaf area index is defined as the projected area of leaves over a unit of land (m2 m−2), so one unit of LAI is equivalent to 10,000 m2 of leaf area per hectare. This index takes into account the leaf stratification within the canopy.	**CITTÁ DI TORINO**	**3.1.7.a**													
				MIRAFIORI SUD	**3.1.7.b**													
		3.1.9 NDVI	Normalized Difference Vegetation Index	**CITTÁ DI TORINO**	**3.1.7.a**													
				MIRAFIORI SUD	**3.1.7.b**													
	3.2 Climate / Meteorological data	**3.2.1 Precipitation**	Average annual precipitation (mm)	**CITTÁ DI TORINO**	**3.2.1.a**	mm	1166	904	1352	1196	881	1096	1309	962	1054	544		http://www.regione.piemonte.it/ambiente/aria/rilev/ariaday/ariaweb-new/
				MIRAFIORI SUD	**3.2.1.b**		986	919	1025	1008	734	996	998	859	882	488		
		3.2.2 Relative humidity	Relative humidity	**CITTÁ DI TORINO**	**3.2.2.a**	%	73	70	76	76	72	74	79	73	71	67		
				MIRAFIORI SUD	**3.2.2.b**		80	76	80	78	73	77	81	75	75	72		
		3.2.3 Air temperature	Annual mean temperature (°C)	**CITTÁ DI TORINO**	**3.2.3.a**	°C	13.5	13.9	12.6	13.8	13.5	12.9	13.8	14	14	14.3		
				MIRAFIORI SUD	**3.2.3.b**	°C	12.7	12.9	11.9	13.2	12.9	12.7	13.6	13.7	13.5	13.4		
		3.2.3 Air temperature	Winter mean temperature (°C)	**CITTÁ DI TORINO**	**3.2.3.a**	°C	4.4	2.7	2	4	2.3	3.2	5.1	4.3	4.8	3.4		
				MIRAFIORI SUD	**3.2.3.b**	°C	3.2	1.3	1	3.1	1.1	2.5	4.7	3.7	4	2.3		
		3.2.3 Air temperature	Spring mean temperature (°C)	**CITTÁ DI TORINO**	**3.2.3.a**	°C	13.4	14.7	12.8	14.9	14	12	13.9	14.1	13.7	15.2		
				MIRAFIORI SUD	**3.2.3.b**	°C	12.7	13.8	12.1	14.3	13.5	11.8	13.8	14	13.2	14.5		
		3.2.3 Air temperature	Summer mean temperature (°C)	**CITTÁ DI TORINO**	**3.2.3.a**	°C	22.9	24.3	23.2	22.5	24.1	23.1	21.6	24.7	23.7	25		
				MIRAFIORI SUD	**3.2.3.b**	°C	22.1	23.3	22.6	22.1	23.7	22.9	21.6	24.2	23.2	24		
		3.2.3 Air temperature	Fall mean temperature (°)	**CITTÁ DI TORINO**	**3.2.3.a**	°C	13.4	14	12.5	13.8	13.8	13.5	14.4	12.9	14	13.4		
				MIRAFIORI SUD	**3.2.3.b**	°C	12.7	13.1	11.9	13.2	13.4	13.6	14.4	12.7	13.6	12.6		
		3.2.4 Wind strength	Wind intensity (km/h)	**CITTÁ DI TORINO**	**3.2.4.a**	km/h	6.9	6.8	6.7	5.8	6.6	6.7	6.4	6.7	6.7	6.9		
				MIRAFIORI SUD	**3.2.4.b**	km/h	4.9	4	4.4	4.5	4.7	4.8	4.6	4.8	4.9	4.8		
		3.2.5 Wind direction	Main wind direction	**CITTÁ DI TORINO**	**3.2.5.a**		NNE	N	SSW	NNE	NNE/SSW	NNE	NNE	NNE	NNE	NNE		
				MIRAFIORI SUD	**3.2.5.b**		SE	E/NW	E	E	SE	SE	E	E/SE	E	E		
		3.3.1 Ozone concentration	µg/m3 / ppb	**CITTÁ DI TORINO**	**3.3.1.a**	µg/m3 / ppb	45	42	39	39	45	50	44.5	42	39.5	40.5	Until 2012 only the Lingotto station is present - From 2013 also the Rubino detection station is present.	
				MIRAFIORI SUD	**3.3.1.b**		45	42	39	39	45	41	47	43	40	39	Arpa Lingotto detection station - Average values of the daily averages	

3. Ecological and environmental restoration	**3.3 Air Quality**	**3.3.2 NOx concentration**	µg/m3 / ppb	**CITTÁ DI TORINO**	**3.3.2.a**	µg/m3 / ppb	134.75	142	126	137.25	124.75	118.5	115	121.75	108	110.5	Average values of the daily averages of the monitoring stations: Lingotto, Rubino, Rebaudengo and Consolata	
				MIRAFIORI SUD	**3.3.2.b**		105	102	89	114	91	89	87	86	91	80	Arpa Lingotto detection station - Average values of the daily averages	
		3.3.3 PM 2.5 concentration	µg/m3 / ppb	**CITTÁ DI TORINO**	**3.3.3.a**	µg/m3 / ppb	35	33	29	35	33	27.67	24	27.33	25	29	Until 2012 only the Lingotto station (Low Volume) is present - From 2013 also the detection stations of Rebaudengo (Beta) and Rubino (Beta) are present.	http://www.regione.piemonte.it/ambiente/aria/rilev/ariaday/ariaweb-new/
				MIRAFIORI SUD	**3.3.3.b**		35	33	29	35	33	29	24	27	23	27	Arpa Lingotto detection station - Average values of daily averages - Sampling method Low Volume	
		3.3.4 PM10 concentration	µg/m3 / ppb	**CITTÁ DI TORINO**	**3.3.4.a**	µg/m3 / ppb	49.75	48.25	41.5	51	47.25	39.55	36	41.4	36	42.6	Until 2013 there are only the Lingotto, Rubino, Consolata and Grassi stations. - From 2014 also the Rebaudengo detection station is present.	
				MIRAFIORI SUD	**3.3.4.b**		42.6	41	34	48	41	34.2	31	36	34	39	Arpa Lingotto detection station - Average values of the daily averages	
		3.3.5 VOC Concentration	µg/m3 / ppb	**CITTÁ DI TORINO**	**3.3.5.a**	µg/m3 / ppb												
				MIRAFIORI SUD	**3.3.5.b**													
		3.3.6 GHG inventory	Inventory of greenhouse gases (GHG) emission at city level and LL level	**CITTÁ DI TORINO**	**3.3.6.a**								3,496,157				Only available data for 2005, 2014 and the projection to 2020. Source: Monitoring report "Covenant of Mayors" - Year 2014	
				MIRAFIORI SUD	**3.3.6.b**													
	3.4 Soil	**3.4.1 Soil quality**	Concentration of C / Concentration of N/ bulk density / permeability / water retention capability	**CITTÁ DI TORINO**	**3.4.1.a**												Map of Piedmont soils 1: 50.000 scale - IPLA (Unit U0342 - csl2)	
				MIRAFIORI SUD	**3.4.1.b**													
	3.5 Water	**3.5.1 Water quality**	Free Cl/ Nutrients / Ph /eutrophication level / hydrocarbons / other polluntants	**CITTÁ DI TORINO**	**3.4.1.a**													
				MIRAFIORI SUD	**3.4.1.b**													
	3.6 Urban environment	**3.6.1 Heat island effect**	Difference (°C) between urban and rural surface temperatures	**CITTÁ DI TORINO**	**3.4.1.a**													
				MIRAFIORI SUD	**3.4.1.b**													
		4.1.1 GDP per capita	GDP (PPP), Euro	**CITTÁ DI TORINO**	**4.1.1.a**	euro	31,000	29,000	30,000	31,000	29,000	30,000	30,000	30,000			https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	Gross domestic product (GDP) at current market price and in PPS; per capita and per capita in percentage of the EU average
				MIRAFIORI SUD	**4.1.1.b**													
		4.1.2 Businesses in the area - Industrial	Amount of Industrial companies per 1,000 inhabitants	**CITTÁ DI TORINO**	**4.1.2.a**	companies												**What we have:CCIA data 2017, yet they have some issues to be solved before using them**
				MIRAFIORI SUD	**4.1.2.b**											2,732		
		4.1.3 Businesses in the area - Commercial	Amount of Industrial companies per 1,000 inhabitants	**CITTÁ DI TORINO**	**4.1.3.a**	companies												
				MIRAFIORI SUD	**4.1.3.b**													
		4.1.3 Public jobs	- Total number of jobs in public sector	**CITTÁ DI TORINO**	**4.1.3.a**	persons												
				MIRAFIORI SUD	**4.1.3.b**	persons												
		4.1.4 Businesses in the area - Offices	Total amount of offices companies per 1,000 inhabitants	**CITTÁ DI TORINO**	**4.1.4.a**	persons												
				MIRAFIORI SUD	**4.1.4.b**	persons												
		4.1.5 Public green jobs	- Total number of public green jobs	**CITTÁ DI TORINO**	**4.1.5.a**	persons												
				MIRAFIORI SUD	**4.1.5.b**	persons												
		4.1.6 Private green jobs	- Total number of private green jobs	**CITTÁ DI TORINO**	**4.1.6.a**	persons												
				MIRAFIORI SUD	**4.1.6.b**	persons												
		4.1.7 Qualified jobs	- Total number of qualified jobs	**CITTÁ DI TORINO**	**4.1.7.a**	persons												
				MIRAFIORI SUD	**4.1.7.b**	persons												
		4.1.8 Non-qualified jobs	- Total number of private green jobs	**CITTÁ DI TORINO**	**4.1.8.a**	persons												
				MIRAFIORI SUD	**4.1.8.b**	persons												
		4.1.9 Turnover in	Green companies' turnover in	**CITTÁ DI TORINO**	**4.1.9.a**	persons												

		4.1.9 Turnover in the green sector	Green companies turnover in EUR	**MIRAFIORI SUD**	**4.1.9.b**	persons												
		Economically active population	Number of economically active persons (20-64 years)	**CITTÁ DI TORINO**		persons		988.6	983.7	1,004.00	1,004.70	998	1,009.20	1,010.60	1,009.50	1,006.30	https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	**What we have:Number of economically active persons by age group (15-24 years; 15 years and over; 20-64 years; 25 years or over)**
				MIRAFIORI SUD														
		Unemployment females	Absolute number of females employed (20-64 years)	**CITTÁ DI TORINO**		Thousand persons		39.4	41.9	45.1	48.9	50.7	60.1	53.8	50.2	48.6	https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	
				MIRAFIORI SUD														
		Unemployment males	Absolute number of males employed (20-64 years)	**CITTÁ DI TORINO**		Thousand persons		39	46.2	44.1	47	58	67.9	62.4	53.5	42.2	https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	
				MIRAFIORI SUD														
	4.1 Market labour and economy indicators	**Employment females**	Absolute number of females employed (20-64 years)	**CITTÁ DI TORINO**		Thousand persons	420.4	401.2	399.9	414.2	415.2	406.8	402.8	403.7	415.2	420.9	https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	
				MIRAFIORI SUD														
		employment males	Absolute number of males employed (20-64 years)	**CITTÁ DI TORINO**		Thousand persons	518.3	508.2	494.3	499.4	493.5	481.6	477.2	490.7	488.9	493.7	https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	
				MIRAFIORI SUD														
		High growth enterprises	Number of high growth enterprises measured in employment (growth by 10% or more)	**CITTÁ DI TORINO**		Number enterprises	638	546	458	479	502	483	439	518			https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	
				MIRAFIORI SUD														
		Employees in enterprises	Number of employees in active enterprises	**CITTÁ DI TORINO**		persons	588,391	561,467	554,946	550,014	546,309	536,133	516,060	526,617			https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	**What we have: Number of employees in active, birth, death and newly born enterprises by NACE activity or size group (total; 1-9 employees; 10 or more)**
				MIRAFIORI SUD														
		Employment in enterprises	Number of persons employed in active enterprises	**CITTÁ DI TORINO**		persons	825,296	796,205	788,135	767,371	760,202	745,992	721,067	730,236			https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	
				MIRAFIORI SUD														
		Active Enterprises	Number of active enterprises	**CITTÁ DI TORINO**		Number enterprises	181,169	179,578	179,491	179,005	177,805	174,031	172,680	171,532			https://ec.europa.eu/eurostat/web/metropolitan-regions/data/database	**What we have:Number of active enterprises by NACE activity or size group (total; 1-9 employees; 10 or more)**
				MIRAFIORI SUD														
		4.2.1 Employment rate	the proportion of employed adults in the working age (20-64 years)	**CITTÁ DI TORINO**	**4.2.1.a**	persons				352044							https://www.istat.it/it/archivio/104317#accordions	Censimento popolazione 2011; years: 1991; 2001; 2011; territorial section: ACE and Sezioni di Censimento
				MIRAFIORI SUD	**4.2.1.b**	persons				24779								
		4.2.2 Unemployment rate	the proportion of unemployed adults in the working age (20-64 years)	**CITTÁ DI TORINO**	**4.2.1.a**	persons				28126							https://www.istat.it/it/archivio/104317#accordions	Censimento popolazione 2011; years: 1991; 2001; 2011; territorial section: ACE and Sezioni di Censimento
				MIRAFIORI SUD	**4.2.1.b**	persons				1982								
		4.2.3 Revenues by household	Average household disposable income	**CITTÁ DI TORINO**	**4.2.3.a**	persons											https://www.istat.it/it/archivio/104317#accordions	**What we have: "Popolazione residente - totale di 15 anni e più percettori di reddito da lavoro o**
				MIRAFIORI SUD	**4.2.3.b**	persons												

	4.2 Gentrification indicators	4.2.4a Current property sale value for residential use	Property value, average, EUR/sqm, for single- and collective housing, sale price	TORINO CITTA											2,269 €/sqm		
				MIRAFIORI SUD		Market value (€/mq)	1200- 2100					1650 - 2500				1300 - 1950 €/sqm	https://www.borsinoimmobiliare.it/menu/Guida_alla_consultazione_dei_Valori_immobiliari	Range: 1.300 - 1.950 €/sqm (https://wwwt.agenziaentrate.gov.it/servizi/Consultazione/risultato.php)
		4.2.4b Current property rental value for residential use	Property value, average, EUR/sqm, for single- and collective housing, renting (monthly)	TORINO CITTA											8.18 €/sqm/mo	https://www.borsinoimmobiliare.it/Torino/torino/quotazioni_mq_immobiliari/5239/2544	
				MIRAFIORI SUD		Location value(€/mq x mese)	5 - 8.5					6 - 10.5				5.58 €/sqm/mo	https://wwwt.agenziaentrate.gov.it/servizi/Consultazione/risultato.php	Range: 5-9 €/sqm/mo (https://wwwt.agenziaentrate.gov.it/servizi/Consultazione/risultato.php)
		4.2.5a Current property value for commercial/ industrial/ office use	Property value, average, EUR/sqm, sale price	TORINO CITTA											Offices 2009 €/sqm Business 2046 €/sqm	https://www.borsinoimmobiliare.it/menu/Guida_alla_consultazione_dei_Valori_immobiliari	
				MIRAFIORI SUD		Market value (€/mq)	1200 - 1600					1000 - 1800				700- 1400	https://wwwt.agenziaentrate.gov.it/servizi/Consultazione/risultato.php	Range: 1.300 - 1.950 €/sqm (https://wwwt.agenziaentrate.gov.it/servizi/Consultazione/risultato.php)
		4.2.5a Current property rental value for commercial/ industrial/ office use	Property value, average, EUR/sqm, renting (monthly)	TORINO CITTA											Offices: 8.56 €/sqm/m Business: 7.44€/sqm/	https://www.borsinoimmobiliare.it/Torino/Torino/quotazioni_mq_immobiliari/5239/2544	
				MIRAFIORI SUD		Location value(€/mq x mese)	6 - 9					6.7 - 12.8		6.1 - 11.7		5.4 - 10.8	https://wwwt.agenziaentrate.gov.it/servizi/Consultazione/risultato.php	Range: 5,4 - 10,8 €/sqm/mo (https://wwwt.agenziaentrate.gov.it/servizi/Consultazione/risultato.php)
		4.2.6 Free services	Total number of free services (parks, librairies, cycle trials, skate parks…)	CITTÁ DI TORINO			9,500,000	9,500,000	9,500,000	9,600,000	9,700,000	9,800,000	10,000,000	10,500,000	10,849,000	10,849,000	http://geoportale.comune.torino.it/web/	
				MIRAFIORI SUD														
		4.2.7 Basic utilities	Monthly cost of basic utilities (Electricity, water, Garbage…)	CITTÁ DI TORINO														
				MIRAFIORI SUD														
	4.3 Tourism and attractiveness indicators	4.3.1 Current number of tourists	Measured as average number of overnight stays in tourism accommodations	CITTÁ DI TORINO												3,700,000	http://www.sistemapiemonte.it/cms/privati/turismo/servizi/497_	
				MIRAFIORI SUD														
		4.3.2 Number of temporary events	Trade Fairs, Congresses, Symposiums, Concerts, Parades before NBS application (in number)	CITTÁ DI TORINO														
				MIRAFIORI SUD														
		4.3.3 No. of foreign students	% of foreign students out of total enrolled higher education students	CITTÁ DI TORINO												107,000	https://www.unito.it/ateneo/chi-siamo/unito-cifre https://www.polito.it/ateneo/colpodocchio/colpo_occhio_2017.pdf	
				MIRAFIORI SUD														
		4.3.4 Local expenses	Expenses in local retail businesses	CITTÁ DI TORINO														
				MIRAFIORI SUD														
	4.4 Taxes, Investment & Financing	4.4.1 Local taxes	Average local taxes per capita	CITTÁ DI TORINO		euro									671.6		Clty of Turin	
				MIRAFIORI SUD														
		4.4.2 Green investment programs/funds	Public investment programs, and investment funds	CITTÁ DI TORINO														
				MIRAFIORI SUD														

ANNEX 1.3: SPATIAL ANALYSIS INDICATOR DATABASE
FRONT RUNNER CITY ZAGREB

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	YEAR_2008	YEAR_2009	YEAR_2010	YEAR_2011	YEAR_2012	YEAR_2013	YEAR_2014	YEAR_2015	YEAR_2016	YEAR_2017	SOURCE_LINK	NOTE
1. Socio-cultural inclusiveness	1.1 Demographics	1.1.1 Total population	Total number of persons living in the specific area. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Zagreb	1.1.1.a	persons	783,135	785,506	788,557	790,017	793,057	795,505	798,424	799,565	802,338	802,762	National Statistics	
				District Sesvete	1.1.1.b	persons				70,009							National Statistics	
		1.1.2 Population density	Number of persons per square km of land area. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Zagreb	1.1.2.a	persons/ sqkm	1221.7	1225.4	1230.2	1232.5	1237.2	1241	1245.6	1247.4	1251.7	1252.4	National Statistics	
				LL / Regeneration area scale	1.1.2.b	persons/ sqkm				3050							National Statistics	
		1.1.3 Population growth rate	Average annual rate of change of population size (%). Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Zagreb	1.1.3.a	%				0.139						-0.5	National Statistics	
				LL / Regeneration area scale	1.1.3.b													
		1.1.4 Migration rate	Net number of migrants (immigrants – emigrants) per 1,000 population. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Zagreb	1.1.4.a	%	3.05	2.76	1.73	2.71	2.71	3.61	3.81	2.67	3.37	1.25	National Statistics	
				LL / Regeneration area scale	1.1.4.b													
	1.2 Social and cultural inclusiveness	1.2.1 Material deprivation rate	Material deprivation rates gauge the proportion of people whose living conditions are severely affected by a lack of resources	Zagreb	1.2.1.a												available only at national level	
				LL / Regeneration area scale	1.2.1.b													
		1.2.2 Work intensity	% employed out of total economically active population (15-64 years of age)	Zagreb	1.2.2.a												available only at national level	
				LL / Regeneration area scale	1.2.2.b													
		1.2.3 Diversity statistics	% foreign born residents (if available, for both scales, or)	Zagreb	1.2.3 a													
				LL / Regeneration area scale	1.2.3 b													
		1.2.3 Diversity statistics	Population by ethnicity	Zagreb	1.2.3 c	%				Croatian - 93,14% *							Bosnian-1,03%, Albanian – 0,54%, Roma – 0,35%, Slovenian – 0,27%, Montenegrin – 0,15%, Macedonian – 0,15%, Czech – 0,11%, Hungarian- 0,10%, Russian- 0,04%, Italian- 0,05%, German- 0,05%, Ukrainian- 0,04%, Slovakian- 0,03%, Bulgarian- 0,02%, Polish-0,02%, Rusyn-0,02%, Romanian- 0,01%, Turkish- 0,01%, Austrian- 0,01%, Vlachs -0,00%, Jews- 0,04%) Others- 0,30%	
				LL / Regeneration area scale	1.2.3 d													
	1.3 Education and access to social and cultural services and amenities	1.3.1 Educational attainment	Average level of education completed by the 20-64 year-old population	Zagreb	1.3.1.a													
				LL / Regeneration area scale	1.3.1.b													
		1.3.2 Recreational or cultural facilities	Relevant for LL/regeneration level: no. and identification of recreational and / or cultural facilities	Zagreb	1.3.2.a	number										332 facilities	Municipality ((187 cultural and 145 recreational)	*Yearly, since 2017
				LL / Regeneration area scale	1.3.2.b	number										5 facilities	Municipality	
		1.3.3 Accessibility of public urban green spaces	% population having access to green space within a 30 minutes walking distance or within 30 minutes travel time by public transportation.	Zagreb	1.3.3.a	%				76.8							National Statistics	*from the 2011 Census, every ten years
				LL / Regeneration area scale	1.3.3.b	%				63.3							National Statistics	
		1.4.1 Housing quality	Average useful floor area per person, calculated in sqm	Zagreb	1.4.1 a	sqm/perso n				26.8							National Statistics	
				LL / Regeneration area scale	1.4.1 b	sqm/perso n				23.7							National Statistics	
				Zagreb	1.4.2 b	%				1.03							Municipality	

	1.4 Housing	1.4.2 Public housing	Percentage of residents in public housing	LL / Regeneration area scale	1.4.2 b													
				Zagreb	1.4.3 b	%				95.2							Municipality	
		1.4.3 Housing affordability	Homeownership rate	LL / Regeneration area scale	1.4.3 b													
		1.4.4 Density of the built environment	Building Coverage Ratio, or if unavailable, Floor Area Ratio (Total residential floor area divided by total residential area surface)	Zagreb	1.4.4 a						0.22						Municipality	*Occasionally
				LL / Regeneration area scale	1.4.4 b						0.2						Municipality	*Occasionally
2. Human health and well-being	2.1 Health	2.1.1 Incidence of cardio and respiratory diseases	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Zagreb	2.1.1.a	number	38142	37788	35906	36114	33697	34242	37645	37758	39754		Public health centre	
				LL / Regeneration area scale	2.1.1.b													
		2.1.2 Incidence of allergic disease	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Zagreb	2.1.2.a	number and %											Public health centre	onward
				LL / Regeneration area scale	2.1.2.b													
		2.1.3 Incidence of chronic stress, stress-related diseases, mental health diseases and NCDs	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Zagreb	2.1.3a	number	19,168	19,689	17,032	18,509	18,186	16,721	14,414	16,246	15,520	16,289	Public health centre	*hospital admission for mental problems
				LL / Regeneration area scale	2.1.3.b													
		2.1.4 Obesity rate	*Possibly available by region / in specific studies (or possibly at school level)	Zagreb	2.1.4.a										14.3		Public health centre	*will be available from 2016 onward
				LL / Regeneration area scale	2.1.4.b													
		2.1.5 Life expectancy at birth	Average life expectancy (possibly available at higher levels / regional level)	Zagreb	2.1.5.a	years	77.2	77.2	77.6	78.1	78.8	79.1	79.2	79	79.6		Public health centre	
				LL / Regeneration area scale	2.1.5.b													
	2.2 Wellbeing	2.2.1 Green space per capita	Sqm of green space / person	Zagreb	2.2.1.a	sqm of green				42							Municipality	*from the 2011 Census, every ten years
				LL / Regeneration area scale	2.2.1.b					18.6							Municipality	
		2.2.2 Urban safety – crime	Yearly number of reported crimes per 1,000 persons	Zagreb	2.2.2.a	‰	8.4	7.91	9.19	9.01	7.55	6.56	5.16	4.24	4.14	3.94	Municipality/Police	
				LL / Regeneration area scale	2.2.2.b													
		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	Zagreb	2.2.3.a		12,366	11,473	10,221	9,792	8,830	7,362	6,524	6,262	5,882	6,255	Municipality/Police	
				LL / Regeneration area scale	2.2.3.b													
	3.1 Land use and Vegetation	3.1.1 % of green spaces	% of total surface which is destined for green spaces	Zagreb	3.1.1.a	%				37.3							Municipality	
				LL / Regeneration area scale	3.1.1.a	%				6.7							Municipality	*from the 2011 Census, every ten years
		3.1.2 structure of green spaces	% of tree covered areas	Zagreb	3.1.2.a													
				LL / Regeneration area scale	3.1.2.b													
		3.1.3 structure of green spaces	% of shrub covered areas	Zagreb	3.1.3.a													
				LL / Regeneration area scale	3.1.3.b													
		3.1.4 structure of green spaces	% of meadow covered areas	Zagreb	3.1.4.a													
				LL / Regeneration area scale	3.1.4.b													
		3.1.5 % Surface of brownfields	Total surface which is destined for brownfield areas	Zagreb	3.1.5.a	ha										271.4	Municipality	*Yearly, since 2017
				LL / Regeneration area scale	3.1.5.b	ha										13	Municipality	*Yearly, since 2017
		3.1.6 % Surface of polluted brownfield areas	% of polluted brownfield areas	Zagreb	3.1.6.a													
				LL / Regeneration area scale	3.1.6.b													
			the proportion of the forest	Zagreb	3.1.7.a													

		3.1.7 Canopy cover	the proportion of the forest covered by the vertical projection of the tree crowns	**LL / Regeneration area scale**	**3.1.7.b**													
		3.1.8 Leaf Area Index	Leaf area index is defined as the projected area of leaves over a unit of land (m2 m−2), so one unit of LAI is equivalent to 10,000 m2 of leaf area per hectare. This index takes into account the leaf stratification within the canopy.	**Zagreb**	**3.1.8.a**													
				LL / Regeneration area scale	**3.1.8.b**													
		3.1.9 NDVI	Normalized Difference Vegetation Index	**Zagreb**	**3.1.9.a**													
				LL / Regeneration area scale	**3.1.9.b**													
	3.2 Climate / Meteorological data	**3.2.1 Precipitation**	Average annual precipitation (mm)	**Zagreb**	**3.2.1.a**						812.7	1092.4	1233.8	823.9	853.8			
				LL / Regeneration area scale	**3.2.1.b**													
		3.2.2 Relative humidity	Relative humidity	**Zagreb**	**3.2.2.a**						64	69	73	67	69			
				LL / Regeneration area scale	**3.2.2.b**													
		3.2.3 Air temperature	Annual mean temperature (°C)	**Zagreb**	**3.2.3.a**						13.7	12.9	13.8	13.7	13.1			
				LL / Regeneration area scale	**3.2.3.b**													
		3.2.3 Air temperature	Winter mean temperature (°C)	**Zagreb**	**3.2.3.c**						3.8	2.4	6.2	4.3	3			*average temperature in January
				LL / Regeneration area scale	**3.2.3.d**													
		3.2.3 Air temperature	Spring mean temperature (°C)	**Zagreb**	**3.2.3.e**						13.3	14.1	14.1	12.9	13.8			*average temperature in April
				LL / Regeneration area scale	**3.2.3.f**													
		3.2.3 Air temperature	Summer mean temperature (°C)	**Zagreb**	**3.2.3.g**						25	24.5	22.4	25.4	24.2			*average temperature in July
				LL / Regeneration area scale	**3.2.3.h**													
		3.2.3 Air temperature	Fall mean temperature (°)	**Zagreb**	**3.2.3.i**						12.9	14.3	14.4	12	11.2			October
				LL / Regeneration area scale	**3.2.3.j**													
		3.2.4 Wind strength	Wind intensity (km/h)	**Zagreb**	**3.2.4.a**													
				LL / Regeneration area scale	**3.2.4.b**													
		3.2.5 Wind direction	Main wind direction	**Zagreb**	**3.2.5.a**													
				LL / Regeneration area scale	**3.2.5.b**													
3. Ecological and environmental restoration	**3.3 Air Quality**	**3.3.1 Ozone concentration**	µg/m3 / ppb	**Zagreb**	**3.3.1.a**						36	34	21	32	21			
				LL / Regeneration area scale	**3.3.1.b**													
		3.3.2 NOx concentration	µg/m3 / ppb	**Zagreb**	**3.3.2.a**						50	48	49	52	51			*NO2
				LL / Regeneration area scale	**3.3.2.b**													
		3.3.3 PM 2.5 concentration	µg/m3 / ppb	**Zagreb**	**3.3.3.a**						21	23	21.6	23.5	20.9			
				LL / Regeneration area scale	**3.3.3.b**													
		3.3.4 PM10 concentration	µg/m3 / ppb	**Zagreb**	**3.3.4.a**						32	32	31	33	31			
				LL / Regeneration area scale	**3.3.4.b**													
		3.3.5 VOC Concentration	µg/m3 / ppb	**Zagreb**	**3.3.5.a**						1.039	0.816	0.957	1.267	1.442			*Benzo[a]pyrene
				LL / Regeneration area scale	**3.3.5.b**													
		3.3.6 GHG inventory	Inventory of greenhouse gases (GHG) emission at city level and LL level	**Zagreb**	**3.3.6.a**													
				LL / Regeneration area scale	**3.3.6.b**													

	3.4 Soil	3.4.1 Soil quality	Concentration of C	Zagreb	3.4.1.a													
				LL / Regeneration area scale	3.4.1.b													
		3.4.1 Soil quality	Concentration of N	Zagreb	3.4.1.c													
				LL / Regeneration area scale	3.4.1.d													
		3.4.1 Soil quality	bulk density	Zagreb	3.4.1.e													
				LL / Regeneration area scale	3.4.1.f													
		3.4.1 Soil quality	permeability	Zagreb	3.4.1.g													
				LL / Regeneration area scale	3.4.1.h													
		3.4.1 Soil quality	water retention capability	Zagreb	3.4.1.i													
				LL / Regeneration area scale	3.4.1.j													
	3.5 Water	3.5.1 Water quality	- Free O	Zagreb	3.5.1 a													
				LL / Regeneration area scale	3.5.1 b													
		3.5.1 Water quality	- Nutrients	Zagreb	3.5.1 c													
				LL / Regeneration area scale	3.5.1 d													
		3.5.1 Water quality	- pH	Zagreb	3.5.1 e													
				LL / Regeneration area scale	3.5.1 f													
		3.5.1 Water quality	- eutrophication level	Zagreb	3.5.1 g													
				LL / Regeneration area scale	3.5.1 h													
		3.5.1 Water quality	- hydrocarbons	Zagreb	3.5.1 i													
				LL / Regeneration area scale	3.5.1 j													
		3.5.1 Water quality	- other pollutants	Zagreb	3.5.1 k													
				LL / Regeneration area scale	3.5.1 l													
	3.6 Urban environment	3.6.1 Heat island effect	Difference (°C) between urban and rural surface temperatures	Zagreb	3.6.1 a													
				LL / Regeneration area scale	3.6.1 a													
	4.1 Market labour and economy indicators	4.1.1 GDP per capita	GDP (PPP), Euro	Zagreb	4.1.1.a	Euro	19,625	18,369	19,320	19,008	18,588	18,292	18,138	18,579			National Statistics	
				LL / Regeneration area scale	4.1.1.b													
		4.1.2 Businesses in the area - Industrial	Amount of Industrial companies per 1,000 inhabitants	Zagreb	4.1.2.a													
				LL / Regeneration area scale	4.1.2.b													
		4.1.3 Businesses in the area - Commercial	Amount of commercial companies per 1,000 inhabitants	Zagreb	4.1.3.a													
				LL / Regeneration area scale	4.1.3.b													
		4.1.4 Businesses in the area - Offices	Total amount of offices companies per 1,000 inhabitants	Zagreb	4.1.4.a													
				LL / Regeneration area scale	4.1.4.b													
		4.1.5 Public jobs	- Total number of jobs in public sector	Zagreb	4.1.5.a						135,610	124,435	126,786	122,063	121,538			
				LL / Regeneration area scale	4.1.5.b													
		4.1.6 Private jobs	- Total number of jobs in private sector	Zagreb	4.1.6.a						176,625	173,593	173,771	184,431	211,718			
				LL / Regeneration area scale	4.1.6.b													

	4.1.7 Public green jobs	- Total number of public green jobs	**Zagreb**	**4.1.7.a**														
			LL / Regeneration area scale	**4.1.7.b**														
	4.1.8 Private green jobs	- Total number of private green jobs	**Zagreb**	**4.1.8.a**														
			LL / Regeneration area scale	**4.1.8.b**														
	4.1.9 Qualified jobs	- Total number of qualified jobs	**Zagreb**	**4.1.9.a**														
			LL / Regeneration area scale	**4.1.9.b**														
	4.1.10 Non-qualified jobs	- Total number of non-qualified jobs	**Zagreb**	**4.1.10.a**								13,596	12,771	11,890	11,345	11,991		
			LL / Regeneration area scale	**4.1.10.b**														
	4.1.11 Turnover in the green sector	Green companies' turnover in EUR	**Zagreb**	**4.1.11.a**														
			LL / Regeneration area scale	**4.1.11.b**														
4.2 Gentrification indicators	**4.2.1 Employment rate**	the proportion of employed adults in the working age (20-64 years)	**Zagreb**	**4.2.1.a**														
			LL / Regeneration area scale	**4.2.1.b**								0						
	4.2.2 Unemployment rate	the proportion of unemployed adults in the working age (20-64 years)	**Zagreb**	**4.2.2.a**	%	6.2	6.3	8.4	9.4	9.5	10.8	11.2	9.6	8.2	6.4	Municipality	
			LL / District Sesvete	**4.2.2.b**	%										7		
	4.2.3 Revenues by household	Average household disposable income	**Zagreb**	**4.2.3.a**	Euro/gross /montly										2,629	City Statistics	
			LL / Regeneration area scale	**4.2.3.b**														
	4.2.4a Current property sale value for residential use	Property value, average, EUR/sqm, for single- and collective housing, sale price	**Zagreb**	**4.2.4a.a**	Euro/sqm										1,556	City Statistics		
			LL / Regeneration area scale	**4.2.4a.b**														
	4.2.4b Current property rental value for residential use	Property value, average, EUR/sqm, for single- and collective housing, renting (monthly)	**Zagreb**	**4.2.4b.a**														
			LL / Regeneration area scale	**4.2.4b.b**														
	4.2.5a Current property value for commercial/ industrial/ office use	Property value, average, EUR/sqm, sale price	**Zagreb**	**4.2.5a.a**														
			LL / Regeneration area scale	**4.2.5a.b**														
	4.2.5b Current property rental value for commercial/ industrial/ office	Property value, average, EUR/sqm, renting (monthly)	**Zagreb**	**4.2.5b.a**														
			LL / Regeneration area scale	**4.2.5b.b**														
	4.2.6 Free services	Total number of free services (parks, librairies, cycle trials, skate parks…)	**Zagreb**	**4.2.6.a**														
			LL / Regeneration area scale	**4.2.6.b**														
	4.2.7 Basic utilities	Monthly cost of basic utilities (Electricity, water, Garbage…)	**Zagreb**	**4.2.7.a**														
			LL / Regeneration area scale	**4.2.7.b**														
4.3 Tourism and attractiveness	**4.3.1 Current number of tourists**	Measured as average number of overnight stays in tourism accommodations	**Zagreb**	**4.3.1.a**	number	1,183,000	1,048,000	1,032,000	1,128,000	1,182,000	1,376,000	1,542,000	1,746,000	1,972,000	2,263,758	National Statistics		
			LL / Regeneration area scale	**4.3.1.b**														
	4.3.2 Number of temporary events	Trade Fairs, Congresses, Symposiums, Concerts, Parades before NBS application (in number)	**Zagreb**	**4.3.2.a**	number	19	17	16	22	18	17	11	13	12	18	Municipality	*number of events at the Zagreb Fair	
			LL / Regeneration area scale	**4.3.2.b**														

	attractiveness indicators	**4.3.3 No. of foreign students**	% of foreign students out of total enrolled higher education students	**Zagreb**	**4.3.3.a**	number										770	University of Zagreb	
				LL / Regeneration area scale	**4.3.3.b**													
		4.3.4 Local expenses	Expenses in local retail businesses	**Zagreb**	**4.3.4.a**													
				LL / Regeneration area scale	**4.3.4.b**													
	4.4 Taxes, Investment & Financing	**4.4.1 Local taxes**	Average local taxes per capita	**Zagreb**	**4.4.1.a**													
				LL / Regeneration area scale	**4.4.1.b**													
		4.4.2 Green investment programs/funds	Public investment programs, and investment funds	**Zagreb**	**4.4.2.a**													
				LL / Regeneration area scale	**4.4.2.b**													

ANNEX 1.4: SPATIAL ANALYSIS INDICATOR DATABASE
FOLLOWER CITY CASCAIS

a. MULTIANNUAL INDICATORS

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	YEAR_2008	YEAR_2009	YEAR_2010	YEAR_2011	YEAR_2012	YEAR_2013	YEAR_2014	YEAR_2015	YEAR_2016	YEAR_2017	SOURCE_LINK	NOTE
1. Socio-cultural inclusiveness	1.1 Demographics	1.1.1 Total population	Total number of persons living in the specific area.	<CASCAIS> // <LISBON METROPOLITAN AREA >	1.1.1.a	persons	199432	203084	206449	207924	208321	208514	209376	210361	210889	211714	INE (National Statistics)	https://ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0008272&contexto=bd&selTab=tab2
		1.1.2 Population density	Number of persons per square km of land area.	<CASCAIS> // <LISBON METROPOLITAN AREA >	1.1.2.a	persons/km2	2048	2085.2	2119.6	2134.7	2138.8	2140.8	2149.6	2159.7	2165.2	2173.6	INE (National Statistics)	https://ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0008337&contexto=bd&selTab=tab2
		1.1.3 Population growth rate	Average annual rate of change of population size (%).	<CASCAIS> // <LISBON METROPOLITAN AREA >	1.1.3.a	%	1.82	1.81	1.64	0.71	0.19	0.09	0.41	0.47	0.25	0.39	INE (National Statistics)	https://ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0008262&contexto=bd&selTab=tab2
2. Increased human health and wellbeing	2.2 Wellbeing	2.2.2 Urban safety – crime	Yearly number of reported crimes per 1,000 persons	<CASCAIS> // <LISBON METROPOLITAN AREA >	2.2.2.a	yearly number of reported crimes	9244	9038	8667	8733	8758	6809	6693	7068	6477	6511	INE (National Statistics)	https://ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0008073&contexto=bd&selTab=tab2
		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	<CASCAIS> // <LISBON METROPOLITAN AREA >	2.2.3.b	roads accidents with vcitims	559	550	602	575	543	547	581	605	593	647	PORDATA	https://www.pordata.pt/DB/Municipios/Ambiente+de+Consulta/Tabela

b. SINGLE YEAR INDICATORS

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	VALUE	SOURCE	YEAR	NOTE
1.Socio-cultural inclusiveness	1.1 Demographics	1.1.1 Total population	Total number of persons living in the specific area. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Cascais Municipality	1.1.1.a	persons	206,479	National Statistics-Censos 2011	2011	
				Census Area	1.1.1.b	persons	2,333		2011	
		1.1.2 Population density	Number of persons per square km of land area. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Cascais Municipality	1.1.2.a	p /sq km	2,120		2011	
				Census Area	1.1.2.b	p /ha	57		2011	
		1.1.3 Population growth rate	Average annual rate of change of population size (%). Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Cascais Municipality	1.1.3.a	%	21.0		2011	
				Census Area	1.1.3.b	%	79		2011	
		1.1.4 Migration rate	Net number of migrants (immigrants – emigrants) per 1,000 population. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Cascais Municipality	1.1.4.a	migrants / 1.000	58		2011	
				Census Area	1.1.4.b	migrants / 1.000				
	1.2 Social and cultural inclusiviness	1.2.1 Welfare recipients: *Number of people receiving social assistance*	Material deprivation rates gauge the proportion of people whose living conditions are severely affected by a lack of resources	Cascais Municipality	1.2.1.a	persons	13,378.0	Social Security Services	2018	
				Census Area	1.2.1.b	persons				
		1.2.2 Work intensity	% employed out of total economically active population (15-64 years of age)	Cascais Municipality	1.2.2.a	%	64.0	National Statistics-Censos 20	2011	
				Census Area	1.2.2.b	%				
		1.2.3 Diversity statistics (percentage of residents with foreign nationality)	% foreign born residents (if available, for both scales, or) Population by ethnicity	Cascais Municipality	1.2.3.a	%	11.0	National Statistics-Censos 2011	2011	
				Census Area	1.2.3.b	%				
	1.3 Education and access to social and cultural services and amenities	1.3.1 Educational attainment: *% population aged 20 or over who completed required education*	Average level of education completed by the 20-64 year-old population	Cascais Municipality	1.3.1.a	%				
				Census Area	1.3.1.b	%	42.0	National Statistics-Censos 20	2011	
		1.3.2 Recreational or cultural facilities	Relevant for LL/regeneration level: no. and identification of recreational and / or cultural facilities	Cascais Municipality	1.3.2.a	number				
				Census Area	1.3.2.b	number	0.0			
		1.3.3 Accessibility of public urban green spaces		Cascais Municipality	1.3.3.a	%				
				Census Area	1.3.3.b	%	100.0			
	1.4 Housing	1.4.1 Housing quality	Average useful floor area per person, calculated in sqm	Cascais Municipality	1.4.1.a	sqm/person	33.0	National Statistics-Censos 2011	2011	
				Census Area	1.4.1.b	sqm/person	20.0	National Statistics-Censos 2011	2011	
		1.4.2 % Population in public housing units	Percentage of residents in public housing	Cascais Municipality	1.4.2.a	%	3	Municipality of Cascais	2018	
				Census Area	1.4.2.b	%	18	Municipality of Cascais	2018	
		1.4.3 Housing affordability	Homeownership rate	Cascais Municipality	1.4.3.a	%	68.7	Census 2011	2011	
				Census Area	1.4.3.b	%				
		1.4.4 Density of the built environment: *Floor area ratio*	Building Coverage Ratio, or if unavailable, Floor Area Ratio (Total residential floor area divided by total residential area surface)	Cascais Municipality	1.4.4.a	persons	0.12	Municipality of Cascais	2011	
				Census Area	1.4.4.b	persons	0.11	Municipality of Cascais	2011	
	2.1 Health	2.1.1 Incidence of cardio and respiratory diseases: *No. Deaths by heart diseases*	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Cascais Municipality	2.1.1.a	persons	233.0	INE	2016	
				Census Area	2.1.1.b	persons				
		2.1.2 *No. Of deaths by respiratory diseases*	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Cascais Municipality	2.1.2.a	persons	159.0	INE	2016	
				Census Area	2.1.2.b	persons				
		2.1.3 Incidence of chronic stress, stress-related diseases, mental health diseases and NCDs	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Cascais Municipality	2.1.3.a	persons				
				Census Area	2.1.3.b	persons				

b. SINGLE YEAR INDICATORS

2. Health & Wellbeeing		2.1.4 Obesity rate	*Possibly available by region / in specific studies (or possibly at school level)	Cascais Municipality	2.1.4.a	%	5.50	Municipality - Local Health Plan	2013	
				Census Area	2.1.4.b	%				
		2.1.5 Life expectancy	Average life expectancy (possibly available at higher levels / regional level)	Cascais Municipality	2.1.5.a	age / years	80.9	PORDATA	2016	
				Census Area	2.1.5.b					Only available at Metropolitan Level
	2.2 Wellbeing	2.2.1 Green space per capita	Sqm of green space / person	Cascais Municipality	2.2.1.a	*sq m / capita*	12.0	Municipality	2018	
				Census Area	2.2.1.b	*sq m/ capita*	5.0	Municipality	2018	
		2.2.2 Urban safety – crime	Yearly number of reported crimes per 1,000 persons	Cascais Municipality	2.2.2.a	no./1000	31	National Statistics	2017	
				Census Area	2.2.2.b					
		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	Cascais Municipality	2.2.3.a	events	132.0	PORDATA	2017	
				Census Area	2.2.3.b					
	3.1 Land use and Vegetation	3.1.1 % of green spaces	% of total surface which is destined for green spaces	Cascais Municipality	3.1.1..a	%	10.0	Municipality Data	2018	
				Census Area	3.1.1.b	%	29.0	Municipality Data	2018	
		3.1.2 structure of green spaces	% of tree covered areas	Cascais Municipality	3.1.2.a	%				
				Census Area	3.1.2.b	%				
		3.1.3 structure of green spaces	% of shrub covered areas	Cascais Municipality	3.1.3.a	%				
				Census Area	3.1.3.b	%				
		3.1.4 structure of green spaces	% of meadow covered areas	Cascais Municipality	3.1.4.a	%				
				Census Area	3.1.4.b	%				
		3.1.5 % Surface of brownfields - Derelict Land without current use	% of total surface which is destined for brownfield areas	Cascais Municipality	3.1.5.a	%				
				Census Area	3.1.5.b	%	19.0	Direct measurement in the Regeneration Area/Municipality data	2018	
		3.1.6 % Surface of polluted brownfield areas	% of polluted brownfield areas	Cascais Municipality	3.1.6.a	%				
				Census Area	3.1.6.b	%				
		3.1.7 Canopy cover	The proportion of the forest covered by the vertical projection of the tree crowns	Cascais Municipality	3.1.7.a	%				
				Census Area	3.1.7.b	%				
		3.1.8 Leaf Area Index	Leaf area index is defined as the projected area of leaves over a unit of land (m2 m−2), so one unit of LAI is equivalent to 10,000 m2 of leaf area per hectare. This index takes into account the leaf stratification within the canopy.	Cascais Municipality	3.1.6.a					
				Census Area	3.1.6.b					
		3.1.9 NDVI	Normalized Difference Vegetation Index	Cascais Municipality	3.1.7.a					
				Census Area	3.1.7.b					
	3.2 Climate / Meteorological data	3.2.1 Precipitation	Average annual precipitation (mm)	Cascais Municipality	3.2.1.a	mm	752			
				Census Area	3.2.1.b					
		3.2.2 Relative humidity	Relative humidity	Cascais Municipality	3.2.2.a					
				Census Area	3.2.2.b					
		3.2.3 Air temperature	Annual mean temperature (°C)	Cascais Municipality	3.2.3.a	°C	16.8	Municipality - Single study	2015	
			Winter mean temperature (°C)	Cascais Municipality	3.2.3.b	°C	12.0	Municipality - Single study	2015	
			Spring mean temperature (°C)	Cascais Municipality	3.2.3.c	°C	15.3	Municipality - Single study	2015	
			Summer mean temperature (°C)	Cascais Municipality	3.2.3.d	°C	21.7	Municipality - Single study	2015	

b. SINGLE YEAR INDICATORS

			Fall mean temperature (°)	Cascais Municipality	3.2.3.e	°C	18.0	Municipality - Single study	2015	
		3.2.4 Wind strength	Wind intensity (km/h)	Cascais Municipality	3.2.4.a					
				Census Area	3.2.4.b					
		3.2.5 Wind direction	Main wind direction	Cascais Municipality	3.2.5.a					
				Census Area	3.2.5.b					
	3.3 Air Quality	3.3.1 Ozone concentration	µg/m3 / ppb	Cascais Municipality	3.3.1.a					
				Census Area	3.3.1.b					
		3.3.2 NOx concentration	µg/m3 / ppb	Cascais Municipality	3.3.2.a	µg/m3 / ppb	29.9	Municipality Internal Information	2017	
				Census Area	3.3.2.b					
		3.3.3 PM 2.5 concentration	µg/m3 / ppb	Cascais Municipality	3.3.3.a	µg/m3 / ppb				
				Census Area	3.2.3.b					
		3.3.4 PM10 concentration	µg/m3 / ppb	Cascais Municipality	3.3.4.a	µg/m3 / ppb	11.2	Municipality Internal Information	2017	
				Census Area	3.3.4.b					
		3.3.5 VOC Concentration	µg/m3 / ppb	Cascais Municipality	3.3.5.a					
				Census Area	3.3.5.b					
		3.3.6 GHG inventory	Inventory of greenhouse gases (GHG) emission at city level and LL level	Cascais Municipality	3.3.6.a					
				Census Area	3.3.6.b					
	3.4 Soil	3.4.1 Soil quality	Concentration of C / Concentration of N/ bulk density / permeability / water retention capability	Cascais Municipality	3.4.1.a					
				Census Area	3.4.1.b					
	3.5 Water	3.5.1 Water quality	Free O/ Nutrients / Ph /eutrophication level / hydrocarbons / other polluntants	Cascais Municipality	3.5.1.a					
				Census Area	3.5.1.b					
	3.6. Urban enviorment	3.6.1 Heat island effect	Difference (*C) between urban and rural surface temperatures	Cascais Municipality	3.6.1.a	degrees	2	Carta Climatopos	2013	
				Census Area	3.6.1.b	degrees				
	4.1 Market labour and economy indicators	4.1.1 GDP per capita	GDP (PPP), Euro	Cascais Municipality	4.1.1.a	EUR / capita	23,614.0	PORDATA	2016	Gross domestic product (GDP) at current market price and in PPS; per capita and per capita in percentage of
				Census Area	4.1.1.b					
		4.1.2 Businesses in the area - Industrial	Amount of Industrial companies per 1,000 inhabitants	Cascais Municipality	4.1.2.a	persons				What we have:CCIA data 2017, yet they have some issues to be solved before using them
				Census Area	4.1.2.b					
		4.1.3 Businesses in the area - Commercial	Amount of Industrial companies per 1,000 inhabitants	Cascais Municipality	4.1.3.a	persons				
				Census Area	4.1.3.b					
		4.1.4 Businesses in the area - Offices	Total amount of offices companies per 1,000 inhabitants	Cascais Municipality	4.1.4.a	persons				
				Census Area	4.1.4.b					
		4.1.3 Public jobs - *Number of employees in public sector*	- Total number of public green jobs	Cascais Municipality	4.1.3.a	persons	1,792	PORDATA	2016	
				Census Area	4.1.3.b					
		4.1.4 Private jobs	- Total number of private green jobs	Cascais Municipality	4.1.4.a	persons				
				Census Area	4.1.4.b					
		4.1.9 Turnover in the green sector -	Green companies' turnover in EUR	Cascais Municipality	4.1.6.a	EUR / capita	64 €	INE - Total environmental income per habitant	2017	

b. SINGLE YEAR INDICATORS

		PER CAPITA	Green companies' turnover in EUR	**Census Area**	**4.1.6.b**					
4. 4. economy + labour market	**4.2 Gentrification indicators**	**4.2.1 Employment rate**	the proportion of employed adults in the working age (20-64 years)	**Cascais Municipality**	**4.2.1.a**	%	69	INE	2011	
				Census Area	**4.2.1.b**	%				
		4.2.2 Unemployment rate	the proportion of unemployed adults in the working age (20-64 years)	**Cascais Municipality**	**4.2.2.a**	%	9.0	INE	2011	
				Census Area	**4.2.2.b**	%				
		4.2.3 Revenues by household	Average household disposable income	**Cascais Municipality**	**4.2.3.a**	€ / capita*	1,160.30 €	INE	2016	
				Census Area	**4.2.3.b**	€ / capita*				
		4.2.4a Current property sale value for residential use	Property value, average, EUR/sqm, for single- and collective housing, sale price	**Cascais Municipality**	**4.2.4.a.a**	€/sqm	1,893.00 €	INE	2017	
				Census Area	**4.2.4.a.b**	€/sqm				
		4.2.4b Current property rental value for residential use	Property value, average, EUR/sqm, for single- and collective housing, renting (monthly)	**Cascais Municipality**	**4.2.4.b.a**	€/sqm	8.06 €	INE	2017	
				Census Area	**4.2.4.b.b**	€/sqm				
		4.2.5a Current property value for commercial/ industrial/ office use	Property value, average, EUR/sqm, sale price	**Cascais Municipality**	**4.2.5.a.a**	€/sqm				
				Census Area	**4.2.5.a.b**	€/sqm				
		4.2.5a Current property rental value for commercial/ industrial/ office use	Property value, average, EUR/sqm, renting (monthly)	**Cascais Municipality**	**4.2.5.a.a**					
				Census Area	**4.2.5.a.b**					
		4.2.6 Free services	Total number of free services (parks, librairies, cycle trials, skate parks…)	**Cascais Municipality**	**4.2.6.a**					
				Census Area	**4.2.6.b**					
		4.2.7 Basic utilities	Monthly cost of basic utilities (Electricity, water, Garbage…)	**Cascais Municipality**	**4.2.7.a**	€	1,220.00 €	https://www.eurodicas.com.br/morar-em-cascais/	2017	
				Census Area	**4.2.7.b**					
	4.3 Tourism and attractiveness indicators	**4.3.1 Current number of tourists**	Measured as average number of overnight stays in tourism accommodations	**Cascais Municipality**	**4.3.1.a**	stays / year	1,589,183	National Statistics	2017	
				Census Area	**4.1.3.b**					
		4.3.2 Number of temporary events	Trade Fairs, Congresses, Symposiums, Concerts, Parades before NBS application (in number)	**Cascais Municipality**	**4.3.2.a**		110.0	Municipality	2018	
				Census Area	**4.3.2.b**		2.0	Municipality	2018	a weekly market and an annual fair
		4.3.3 No. of foreign students	% of foreign students out of total enrolled higher education students	**Cascais Municipality**	**4.3.3.a**	students				
				Census Area	**4.3.3.b**					
		4.3.4 Local expenses	Expenses in local retail businesses	**Cascais Municipality**	**4.3.4.a**					
				Census Area	**4.3.4.b**					
	4.4 Taxes, Investment & Financing	**4.4.1 Local taxes**	Average local taxes per capita	**Cascais Municipality**	**4.4.1.a**	%	0.37	https://www.economias.pt/taxas-de-imi-por-concelho/	2018	
				Census Area	**4.4.1.b**					
		4.4.2 Green investment programs/funds	Public investment programs, and investment funds	**Cascais Municipality**	**4.4.2.a**	%	30.1	PORDATA	2016	
				Census Area	**4.4.2.b**					

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	YEAR_ 2008	YEAR_ 2009	YEAR_ 2010	YEAR_ 2011	YEAR_ 2012	YEAR_ 2013	YEAR_ 2014	YEAR_ 2015	YEAR_ 2016	YEAR_ 2017	SOURCE_LINK	NOTE
1.Socio-cultural inclusiveness	1.1 Demographics	1.1.1 Total population	Total number of persons living in the specific area.	Cluj Metropolitan Area	1.1.1.a	persons						409284.00	412761.00	417492.00	421978.00	427839.00	INSSE	http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table
				Analysis Area (Cluj-Napoca)	1.1.1.b	persons						320561.00	320547.00	321763.00	321965.00	323203.00	INSSE	http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table
		1.1.2 Population density	Number of persons per square km of land area.	Cluj Metropolitan Area	1.1.2.a	p /sq km						255.32	257.49	260.44	263.24	266.90		http://enciclopediaromaniei.ro/wiki/Cluj-Napoca
				Analysis Area (Cluj-Napoca)	1.1.2.b	p /sq km						1785.86	1785.78	1792.55	1793.68	1800.57	Enciclopedia Romana, SIDU	
		1.1.3 Population growth rate	Average annual rate of change of population size (%).	Cluj Metropolitan Area	1.1.3.a	%							0.85	1.15	1.07	1.39	Calculation, INSSE data	
				Analysis Area (Cluj-Napoca)	1.1.3.b	%							0.00	0.38	0.06	0.38	Calculation, INSSE data	
		1.1.4 Migration rate	Net number of migrants (immigrants – emigrants) per 1,000 population.	Cluj Metropolitan Area	1.1.4.a	net no. migrants / 1.000 inhabitans						-0.05	2.09	-0.16	-0.13	-0.07	Calculation, INSSE data	http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table
				Analysis Area (Cluj-Napoca)	1.1.4.b	net no. migrants / 1.000 inhabitans						-0.08	2.03	-0.19	-0.16	-0.18	Calculation, INSSE data	http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table
	1.2 Social and cultural inclusiveness	1.2.1 Material deprivation rate	Material deprivation rates gauge the proportion of people whose living conditions are severely affected by a lack of resources	North-West Development Region only	1.2.1	%						21.90	18.00	16.50	17.60	11.90	The rate of severe material deprivation, Region Nord-West	http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table
				Analysis Area (Cluj-Napoca)	1.2.1.b	%												
		1.2.2 Work intensity	% employed out of total economically active population (15-64 years of age)	Cluj County only	1.2.2	%						73.00	73.60	74.30	74.90	76.50	INSSE	
				Analysis Area (Cluj-Napoca)	1.2.2.b	%												
		1.2.3 Diversity statistics	% foreign born residents (if available, for both scales, or) Population by ethnicity	Cluj Metropolitan Area	1.2.3.a	%												
				Analysis Area (Cluj-Napoca)	1.2.3.b	%												
		1.3.1 Educational attainment Average level of education completed by the 20-64 year old	Tertiary education	Cluj Metropolitan Area	1.3.1.a1	%				32.05%							National Romanian Population and Household Census, 2011	Data on localities accesible via request
			Secondary education		1.3.1.a2	%				59.84%								
			Primary education		1.3.1.a3	%				6.70%								
			No education		1.3.1.a4	%				1.43%								
			Tertiary education		1.3.1.b1	%				35.63%								

	1.3 Education and access to social and cultural services and amenities	20-64 year-old population	Secondary education	Analysis Area (Cluj-Napoca)	1.3.1.b2	%				58.61%								
			Primary education		1.3.1.b3	%				4.75%								
			No education		1.3.1.b4	%				1.01%								
		1.3.2 Recreational or cultural facilities	Relevant for LL/regeneration level: no. and identification of recreational and / or cultural facilities	Cluj Metropolitan Area	1.3.2.a	%												
				Analysis Area (Cluj-Napoca)	1.3.2.b	%												
		1.3.3 Accessibility of public urban green spaces	% population having access to green space within a 30 minutes walking distance or within 10 minutes travel time by public transportation.	Cluj Metropolitan Area	1.3.3.a	%												
				Analysis Area (Cluj-Napoca)	1.3.3.b	%												
	1.4 Housing	1.4.1 Housing quality	Average useful floor area per person, calculated in sqm	Cluj Metropolitan Area	1.3.3.a	sqm/person	15.83	16.32	16.56	23.53	23.64	23.67					INSSE Tempo Online, total sqm living area; total inhabitants.	CMA Area data on the 18 communes taken from own databases for the SIDU Cluj (URBASOFIA)
				Analysis Area (Cluj-Napoca)	1.3.3.b	sqm/person	14.88	15.05	15.23	22.09	22.21	22.23	22.47	22.56	22.91	23.13		
		1.4.2 Public housing	MODIFIED - Public housing units	Cluj Metropolitan Area	1.4.2.a	units	2489	2449	2365	1247	1788	1966	3885	3885	3885	3885	INSSE tempo Online, existing dwellings by ownership.	http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table
				Analysis Area (Cluj-Napoca)	1.4.2.b	units	1960	1921	1835	939	1480	1624	2808	2808	2808	2808	INSSE tempo Online, existing dwellings by ownership.	
		1.4.3 Housing affordability	Homeownership rate (%private housing units)	Cluj Metropolitan Area	1.4.3.a	rate	98.42%	98.50%	98.58%	99.31%	99.03%	98.94%	97.95%	97.98%	98.03%	98.08%	INSSE tempo Online, existing dwellings by ownership.	
				Analysis Area (Cluj-Napoca)	1.4.3.b	rate	98.37%	98.42%	98.51%	99.31%	98.91%	98.81%	97.97%	97.98%	98.02%	98.07%	INSSE tempo Online, existing dwellings by ownership.	
		1.4.4 Density of the built environment	Building Coverage Ratio - REPLACED - Total covered area, ha	Cluj Metropolitan Area	1.4.4.a	hectares			6,207	6,215	6,221	6,222					SIDU CMA, URBASOFIA	
			Building Coverage Ratio - % built-up area covered with buildings	Analysis Area (Cluj-Napoca)	1.4.4.b	%			32.11%	32.20%	32.23%	32.24%					SIDU CMA, URBASOFIA - data extracted from general urban plan and INSSE Tempo	
2. Human health and well-being,	2.1 Health	2.1.1 Incidence of cardio and respiratory diseases	MODIFIED: Cases in evidence, percent. County data. Cardiopathies, Hypertension, Cerebro-vascular diseases, chronic pulmonary diseases, anomalies	Cluj County only	2.1.1.a	%	19.45%	19.79%	20.72%	21.56%	22.00%						DSP Cluj, 2002-2012	http://www.dspcluj.ro/HTML/statistica/boli_cronice.pdf
				Analysis Area (Cluj-Napoca)	2.1.1.b													
		2.1.2 Incidence of allergic disease	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Cluj Metropolitan Area	2.1.2.a													
				Analysis Area (Cluj-Napoca)	2.1.2.b													
		2.1.3 Incidence of chronic stress, stress-related diseases, mental health diseases and NCDs	MODIFIED: New cases per 1000 inhabitants of psychiatric diseases. County data only	Cluj County only	2.1.3a	‰	14.90	15.18	14.01	16.02	14.04						DSP Cluj, 2002-2012	http://www.dspcluj.ro/HTML/statistica/incidenta_DZ_cancer_boli_psihice.pdf
				Analysis Area (Cluj-Napoca)	2.1.3.b													
		2.1.4 Obesity rate	*Possibly available by region / in specific studies (or possibly at school level)	Cluj Metropolitan Area	2.1.4.a													
				Analysis Area (Cluj-Napoca)	2.1.4.b													
		2.1.5 Life expectancy at birth	Average life expectancy AT COUNTY LEVEL	Cluj County only	2.1.5.a							76.37	76.66	76.71	76.33	77.27	INSSE tempo Online	
				Analysis Area (Cluj-Napoca)	2.1.5.b													
		2.2.1 Green space per capita	Sqm of green space / person	Cluj Metropolitan Area	2.2.1.a													
				Analysis Area (Cluj-Napoca)	2.2.1.b	sqm / capita	18.21	17.56	28.85	26.31	28.76	28.70	25.39	25.30	25.28	25.19	Calculations made with INSSE tempo Online population and hectars of green space	Confrunted with own data (URBASOFIA) and GUP Cluj-Napoca

	2.2 Wellbeing	2.2.2 Urban safety – crime	MODIFIED: Infractionality rate // Yearly number of solved infractions per 1,000 persons	Cluj County only	2.2.2.a	no. / 1000	12.37	14.26	16.99	14.50	16.54	17.09	20.64	21.30	15.43	15.36	Calculations made with INSSE tempo Online - crime and infractionality rate	
				Analysis Area (Cluj-Napoca)	2.2.2.b													
		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	Cluj Metropolitan Area	2.2.3.a													
				Analysis Area (Cluj-Napoca)	2.2.3.b	persons												
3. Ecological and environmental restoration	3.1 Land use and Vegetation	3.1.1 % of green spaces	% of total surface which is destined for green spaces (for AA, it is calculated from the built-up area)	Cluj Metropolitan Area	2.2.1.a	%			88.98%	88.98%	88.97%	88.97%	89.39%				Calculations made with INSSE tempo Online	Contains agricultural surface and surface of woods and other forestry areas
				Analysis Area (Cluj-Napoca)	2.2.1.b	%	6.23%	5.99%	9.87%	9.02%	9.87%	9.87%	7.77%	7.77%	7.77%	7.77%	Calculations made with INSSE tempo Online	Percentage of green urban spaces out of total built-up (urban) area
		3.1.2 structure of green spaces	% of tree covered areas	Cluj Metropolitan Area	3.1.2.a	%			17.28%	17.28%	17.28%	17.28%	17.06%				Calculations made with INSSE tempo Online	
				Analysis Area (Cluj-Napoca)	3.1.2.b	%			15.74%	15.74%	15.74%	15.74%	15.74%				Calculations made with INSSE tempo Online	
		3.1.3 structure of green spaces	% of shrub covered areas	Cluj Metropolitan Area	3.1.3.a													
				Analysis Area (Cluj-Napoca)	3.1.3.b													
		3.1.4 structure of green spaces	% of meadow covered areas	Cluj Metropolitan Area	3.1.4.a													
				Analysis Area (Cluj-Napoca)	3.1.4.b													
		3.1.5 % Surface of brownfields	MODIFIED - degraded areas,%	Cluj Metropolitan Area	3.1.5.a	%			5.99%	5.99%	5.99%	5.99%	6.12%				Data request for SIDU strategy (URBASOFIA)	http://www.adizmc.ro/sidu.html
				Analysis Area (Cluj-Napoca)	3.1.5.b	%			8.87%	8.87%	8.87%	8.87%	8.87%					
		3.1.6 % Surface of polluted brownfield areas	% of polluted brownfield areas	Cluj Metropolitan Area	3.1.6.a													
				Analysis Area (Cluj-Napoca)	3.1.6.b													
		3.1.7 Canopy cover	The proportion of the forest covered by the vertical projection of the tree crowns	Cluj Metropolitan Area	3.1.7.a													
				Analysis Area (Cluj-Napoca)	3.1.7.b													
		3.1.8 Leaf Area Index	Leaf area index is defined as the projected area of leaves over a unit of land (m2 m−2), so one unit of LAI is equivalent to 10,000 m2 of leaf area per hectare. This index takes into account the leaf stratification within the canopy.	Cluj Metropolitan Area	3.1.7.a													
				Analysis Area (Cluj-Napoca)	3.1.7.b													
		3.1.9 NDVI	Normalized Difference Vegetation Index	Cluj Metropolitan Area	3.1.7.a													
				Analysis Area (Cluj-Napoca)	3.1.7.b													
		3.2.1 Precipitation	Average annual precipitation (mm)	Cluj County only	3.2.1.a	mm				509.8		806.3					APM Cluj	591.7 is the average precipitation over 100 years of data (Urban General Plan information)
				Analysis Area (Cluj-Napoca)	3.2.1.b													
		3.2.2 Relative humidity	Relative humidity	Cluj Metropolitan Area	3.2.2.a												APM Cluj	Average 68-89
				Analysis Area (Cluj-Napoca)	3.2.2.b	%								74	70	72	APM Cluj	Average 68-89
		3.2.3 Air temperature	Winter mean temperature (°C)	Cluj Metropolitan Area	3.2.3.a	°C												
				Analysis Area (Cluj-Napoca)	3.2.3.b	°C						3.05	1.05	3.05	-0.95	-0.28	National Meteoroloogical Authority	http://www.meteoromania.ro/clima/monitorizare-climatica/
		3.2.3 Air	Spring mean temperature (°C)	Cluj Metropolitan Area	3.2.3.a	°C												

	3.2 Climate / Meteorological data	temperature	Spring mean temperature (°C)	Analysis Area (Cluj-Napoca)	3.2.3.b	°C						4.72	6.38	4.75	9.05	3.05	National Meteoroloogical Authority	http://www.meteoromania.ro/clima/monitorizare-climatica/
		3.2.3 Air temperature	Summer mean temperature (°C)	Cluj Metropolitan Area	3.2.3.a	°C												
				Analysis Area (Cluj-Napoca)	3.2.3.b	°C						20.38	18.38	20.38	19	21.64	National Meteoroloogical Authority	http://www.meteoromania.ro/clima/monitorizare-climatica/
		3.2.3 Air temperature	Fall mean temperature (°)	Cluj Metropolitan Area	3.2.3.a	°C												
				Analysis Area (Cluj-Napoca)	3.2.3.b	°C						11.05	8.05	11.05	9.68	11.72	National Meteoroloogical Authority	http://www.meteoromania.ro/clima/monitorizare-climatica/
		3.2.4 Wind strength	Wind intensity (km/h)	Cluj Metropolitan Area	3.2.4.a	km/h												
				Analysis Area (Cluj-Napoca)	3.2.4.b	km/h						1.9	1.9	1.9	1.9	1.9	General Urban Plan for Cluj-Napoca Municipality, general report	
		3.2.5 Wind direction	Main wind direction	Cluj Metropolitan Area	3.2.5.a													
				Analysis Area (Cluj-Napoca)	3.2.5.b		N-V	N-V	N-V	N-V	N-V	N-V	N-V	N-V	N-V	N-V	General Urban Plan for Cluj-Napoca Municipality, general report	
	3.3 Air Quality	3.3.1 Ozone concentration	µg/m3 / ppb	CMA	3.3.1.a													
				Cluj Napoca	3.3.1.b									26.6				Suburban. CJ-3 http://apmcj.anpm.ro/
		3.3.2 NOx concentration	*TOTAL - t/year	CMA	3.3.2.a													
				Cluj Napoca	3.3.2.b	t/year					452.17	707.35	726.64					
		3.3.3 PM 2.5 concentration	GRAVIMETRIC // µg/m3 / ppb	CMA	3.3.3.a													
				Cluj Napoca	3.3.3.b							11.69					Single-study - Plan for air quality 2018. PM2.5 monitored urban, PM10 - suburban	https://storage.primariaclujnapoca.ro/userfiles/files/plan%20calitatea%20aerului%202018-2022.pdf
		3.3.4 PM10 concentration	GRAVIMETRIC µg/m3 / ppb	CMA	3.3.4.a							27.47						
				Cluj Napoca	3.3.4.b													
		3.3.5 VOC Concentration	µg/m3 / ppb	CMA	3.3.5.a													
				Cluj Napoca	3.3.5.b													
		3.3.6 GHG inventory	Inventory of greenhouse gases (GHG) emission at city level and LL level	CMA	3.3.6.a												Cluj-Napoca SEAP 2011-2020	https://storage.primariaclujnapoca.ro/userfiles/files/PAED%20final%20ro.pdf
				Cluj Napoca	3.3.6.b	t/year				964,387								
	3.4 Soil	3.4.1 Soil quality	Concentration of C / Concentration of N/ bulk density / permeability / water retention capability	CMA	3.4.1.a													
				Cluj Napoca	3.4.1.b													
	3.5 Water	3.5.1 Water quality	Free O/ Nutrients / Ph /eutrophication level / hydrocarbons / other polluntants	CMA	3.4.1.a													
				Cluj Napoca	3.4.1.b													
	3.6 Urban environment	3.6.1 Heat island effect	Difference (°C) between urban and rural surface temperatures	CMA	3.4.1.a													
				Cluj Napoca	3.4.1.b													
	4.1 Market labour and economy indicators	4.1.1 GDP per capita	GDP (PPP), Euro	Cluj County only	4.1.1.a	euro/p									11,050		Single-study	http://www.analizeeconomice.ro/2017/11/cum-arata-topul-judetelor-dupa-pib-
				Analysis Area (Cluj-Napoca)	4.1.1.b													
		4.1.3 Public jobs	- Total number of jobs in public sector	Cluj County only	4.1.3.a	persons										169096.00	INSSE tempo Online	
				Cluj Napoca	4.1.3.b	persons												
		Private jobs	Total amount of offices companies per 1,000 inhabitants	Cluj County only	4.1.4.a	persons										1204774.00	INSSE tempo Online	
				Cluj Napoca	4.1.4.b	persons												
		4.1.5 Public green jobs	- Total number of public green jobs	Cluj County only	4.1.5.a	persons										3691.00	INSSE tempo Online	
				Cluj Napoca	4.1.5.b	persons												
		4.1.6 Private	- Total number of private green	CMA	4.1.6.a	persons												

4. Economy and labor market		green jobs	jobs	Cluj Napoca	4.1.6.b	persons												
		Active Enterprises	Number of active enterprises	Cluj County only		Number enterprises	27,657	26,851	24,258	22,440	24,074	25,375	27,153	28,126	29754	32028	INSSE tempo Online	
	4.2 Gentrification indicators	4.2.1 Employment rate	the proportion of employed adults in the working age (20-64 years)	CMA	4.2.1.a													FOM104D
				Cluj Napoca	4.2.1.b	%	60.01%	58.07%	55.45%	57.16%	59.72%	61.28%	67.04%	68.77%	73.93%	77.92%	INSSE tempo Online	
		4.2.2 Unemployment rate	the proportion of unemployed adults in the working age (20-64 years)	CMA	4.2.1.a	%												SOM101F
				Cluj Napoca	4.2.1.b	%			2.00%	1.40%	1.40%	1.20%	0.90%	0.60%	0.70%	0.70%	INSSE tempo Online	
		4.2.3 Revenues by household	Average household disposable income (in RON - Romanian Lei)	N-W REGION	4.2.3.a1	RON	2193.69	2270.76	2307.85	2511.94	2523.17	2609.73	2641.9	2896.3	3150.06	3557.02	INSSE tempo Online	
				N-W REGION	4.2.3.a2	EUR	€ 466.74	€ 483.14	€ 491.03	€ 534.46	€ 536.84	€ 555.26	€ 562.11	€ 616.23	€ 670.23	€ 756.81	Calculation	
		4.2.4a Current prop. sale value for residential use	Property value, average, EUR/sqm, for single- and collective housing, sale price	CMA	4.2.4.a.a													
				Cluj Napoca	4.2.4.a.b	Market value (€/mq)	1463	1075	1023	989	936	940	895	1035	1209	1324	Cluj-Napoca property index - averages for available / listed data	https://www.imobiliare.ro/indicele-imobiliare-ro/cluj-napoca
		4.2.4b Current prop. rental value for residential use	Property value, average, EUR/sqm, for single- and collective housing, renting (monthly)	CMA	4.2.4.b.a													
				Cluj Napoca	4.2.4.b.b	Location value(€/mq x mo)									5-10			
		4.2.5a Current prop.value for commercial/ industrial/ office	Property value, average, EUR/sqm, sale price	CMA	4.2.5.a.a													
				Cluj Napoca	4.2.5.a.b	Market value (€/mq)									1200-1800		Businessmagazin property analysis, 2017	https://www.businessmagazin.ro/analize/imobiliare/cat-costa-sa-inchiriezi-un-
		4.2.5a Current prop. rental value for commercial/ industrial/ office	Property value, average, EUR/sqm, renting (monthly)	CMA	4.2.5.a.a													
				Cluj Napoca	4.2.5.a.b	Location value(€/mq x mo)									5-12		Businessmagazin property analysis, 2017	https://www.businessmagazin.ro/analize/imobiliare/cat-costa-sa-inchiriezi-un-
		4.2.6 Free services	Total number of free services (parks, librairies, cycle trials, skate parks…)	CMA	4.2.6.a													
				Cluj Napoca	4.2.6.b													
		4.2.7 Basic utilities	Monthly cost of basic utilities (Electricity, water, Garbage…)	N-W REGION	4.2.7.a	RON						389.33	401.51	462.99	484.76	537.78	INSSE tempo Online	
				N-W REGION	4.2.7.b	EUR						€ 82.84	€ 85.43	€ 98.51	€ 103.14	€ 114.42	INSSE tempo Online	
	4.3 Tourism and attractiveness indicators	4.3.1 Current number of tourists	Measured as average number of overnight stays in tourism accommodations	CMA	4.3.1.a	overnight stays / year						2113735	2287467	2713820	3088566	3337541	INSSE tempo Online	
				Cluj Napoca	4.1.3.b	overnight stays / year						582641	646020	856596	962918	1214377	INSSE tempo Online	
		4.3.2 Number of temporary events	Trade Fairs, Congresses, Symposiums, Concerts, Parades before NBS application (in number)	CMA	4.3.2.a													
				Cluj Napoca	4.3.2.b													
		4.3.3 No. of foreign students	% of foreign students out of total enrolled higher education students	CMA	4.3.3.a	students / year												
				Cluj Napoca	4.3.3.b													
		4.3.4 Local expenses	Expenses in local retail businesses	CMA	4.3.4.a													
				Cluj Napoca	4.3.4.b													
	4.4 Taxes, Investment & Financing	4.4.1 Local taxes	Average local taxes per capita	CMA	4.4.1.a	euro												
				Cluj Napoca	4.4.1.b													
		4.4.2 Green investment programs/funds	Public investment programs, and investment funds	CMA	4.4.2.a													
				Cluj Napoca	4.4.2.b													

a. MULTIANNUAL INDICATORS

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	YEAR_2008	YEAR_2009	YEAR_2010	YEAR_2011	YEAR_2012	YEAR_2013	YEAR_2014	YEAR_2015	YEAR_2016	YEAR_2017	SOURCE_LINK	NOTE
2. Increased human health and wellbeing	2.2 Wellbeing	2.2.2 Urban safety – crime	Yearly number of reported crimes per 1,000 persons	Piraeus // Attiki	2.2.2.a	number	6360	5983	5259	1953	2144	2537	2971	2910	2732	2988	Hellenic Police Directorate of Informatics, 2008-2017 Statistical Yearbook of Hellenic Police for the year 2008-2017	not available on-line
		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	Piraeus // Attiki	2.2.3.a1 total	number	58	49	71	63	57	47	59	60	33	41		not available on-line
					2.2.3.a2 cyclists	number	0	1	0	1	1	0	3	1	1	1		not available on-line
					2.2.3.a3 pedestrians	number	5	1	3	5	3	3	6	4	4	5		not available on-line
3. Ecological and environmental restoration	3.3 Air Quality	3.3.1 Ozone concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.1.a	µg/m^3	43	38	43	42	41	33	35	33	24	35	YPEN 2018. Annual report on the quality of the atmosphere 2017. Ministry of Environment and Energy, Gen. Directorate of Environmental Policy , Directorate of Climate Change and Atmospheric Quality, Department Atmospheric Quality .	http://www.ypeka.gr/LinkClick.aspx?fileticket=5%2fu3%2ft4nhE4%3d&tabid=490&language=el-GR
		3.3.2 NOx concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.2.a	µg/m^3	54	57	39	38	38	38	42	56	59	58		
		3.3.3 PM 2.5 concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.3.a	µg/m^3	28	28	22	27			20	21	20	18		
		3.3.4 PM10 concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.4.a	µg/m^3	33	35	44	44	39	37	34	45	43	41		
4. Economic and labour market	4.1 Market labour and economy indicators	4.1.2 Businesses in the area - Industrial	REPLACED: Total no.	Piraeus // Attiki	4.1.2.a	number							1,374	1,269			Hellenic Statistical Authority, nd. Statistical Business Register 2014-2015, Region of Attica, Piraeus Regional Area, Municipality of Piraeus.	based on the EU classification: NACE Rev. 2 (Section B, C, D, E). note: mining and quarrying data (Section B) are confidential and have not been included
		4.1.3 Businesses in the area - Commercial	REPLACED: Total no.	Piraeus // Attiki	4.1.3.a	number							8,158	7,865				based on the EU classification: NACE Rev. 2 (Section G, H, I)
		4.1.4 Businesses in the area - Offices	REPLACED: Total no.	Piraeus // Attiki	4.1.4.a	number							4,346	4,073				based on the EU classification: NACE Rev. 2 (Section M, N)
		4.1.5 Public jobs	REPLACED: Total no.	Piraeus // Attiki	4.1.5.a	number							1,695	1,651				NACE Rev. 2 (Section O, P, Q)
		4.1.7 Public green jobs	REPLACED: Total no.	Piraeus // Attiki	4.1.7.a	number							1374	1269				NACE Rev. 2 (Section A)
		4.1.11 Turnover in the green sector	- Total number of public green jobs	Piraeus // Attiki	4.1.11.a	number							5,177,595	4,766,591				NACE Rev. 2 (Section A)
	4.2 Gentrification indicators	4.2.3 Revenues by household	REPLACED: Total household revenue	Piraeus // Attiki	4.2.3.a	thousands of Euros (€)	5,201,687	5,409,804	5,494,667	5,313,819							Ministry of Finance, General Secretariat of Information Systems, 2008, 2009, 2010, 2011 Statistical Bulletin of Tax Dates 2008, 2009, 2010, 2011. Table 21 Total Teams, Declared Family Income.	http://www.gsis.gr/gsis/export/sites/default/gsis_site/PublicIssue/documents_Statistics/statdeltio2011.pdf http://www.gsis.gr/gsis/export/sites/default/gsis_site/PublicIssue/documents_Statistics/statdeltio2010v4.pdf http://www.gsis.gr/gsis/export/sites/d

a. MULTIANNUAL INDICATORS

	4.3 Tourism and attractiveness indicators	**4.3.1 Current number of tourists**	REPLACED: total number of overnight stays	**Piraeus // Attiki**	**4.3.1.a**	number			304,968	307,623	276,878	298,375	339,354	**376,996**	387,809	405,763	Hellenic Statistical Authority 2010-2017. Table 11. Overnight stays in hotel accommodation (excluding campsites) by Regional Unity and Municipality, 2010-2017	http://www.statistics.gr/el/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-2&p_p_col_count=4&p_p_col_pos=2
		4.3.3 No. of foreign students	REPLACED: total number of foreign students	**Piraeus // Attiki**	**4.3.3.a**	persons		1,175	1,115	1,119	1,023	960					Hellenic Statistical Authority 2009-13. Table 7. Tertiary Higher Education Foreign & Returning Students by educ. institution, gender,country of citizenship, end date of acad yr 2009 /10-2013 / 14	http://www.statistics.gr/el/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-
	4.4 Taxes, Investment & Financing	**4.4.1 Local taxes**	REPLACED: total value of taxes, EUR	**Piraeus // Attiki**	**4.4.1.a**	thousands of Euros (€)	457,188	469,431	460,852	363,232							Ministry of Finance, General Secretariat of Information Systems, 2008, 2009, 2010, 2011. Statistical Bulletin of Tax Data 2008, 2009, 2010, 2011	http://www.gsis.gr/gsis/export/sites/default/gsis_site/PublicIssue/documents_Statistics/statdeltio2011.pdf http://www.gsis.gr/gsis/export/sites/default/gsis_site/PublicIssue/documents_Statistics/statdeltio2010v4.pdf

b. SINGLE YEAR INDICATORS

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	VALUE	SOURCE	YEAR	SOURCE_LINK
1. Socio-cultural inclusiveness	1.1 Demographics	1.1.1 Total population	Total number of persons living in the specific area.	Piraeus // Attiki	1.1.1.a	persons	163,688	Hellenic Statistical Authority, Census	2011	https://www.statistics.gr/documents/20181/1210503/resident_population_census2011rev.xls/956f8949-513b-45b3-8c02-74f5e8ffl0230
		1.1.2 Population density	Number of persons per square km of land area.	Piraeus // Attiki	1.1.2.a	persons/km^2	14,624.14	Hellenic Statistical Authority, Census		http://www.statistics.gr/documents/20181/1204266/resident_population_urban_census2011.xls/9ca6ff51-ac1a-492d-a37d-72773f712394
		1.1.3 Population growth rate	Average annual rate of change of population size (%).	Piraeus // Attiki	1.1.3.a	%			2011	
		1.1.4 Migration rate	Net number of migrants (immigrants – emigrants) per 1,000 population.	Piraeus // Attiki	1.1.4.a	net (‰)	5.29	Hellenic Statistical Authority, Census	2011	http://www.statistics.gr/el/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-
	1.2 Social and cultural inclusiveness	1.2.1 Material deprivation rate	Material deprivation rates gauge the proportion of people whose living conditions are severely affected by a lack of resources	Piraeus // Attiki	1.2.1.a	%			2011	
		1.2.2 Work intensity	% employed out of total economically active population (15-64 years of age)	Piraeus // Attiki	1.2.2.a	%	79.20%	Hellenic Statistical Authority, Census	2011	nsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-
		1.2.3 Diversity statistics	% foreign born residents	Piraeus // Attiki	1.2.3.a	%	0.53%			
			Hellenic		1.2.3.a1	persons	368			
			EC countries		1.2.3.a2	persons	22			http://www.statistics.gr/el/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-2&p_p_col_count=4&p_p_col_pos=2&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_javax.faces.resource=document&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_ln=downloadResources&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_documentID=151557&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_locale=el
			other European countries		1.2.3.a3	persons	122			
			other countries		1.2.3.a4	persons	354			
			total		1.2.3.a5	persons	866			
	1.3 Education and access to social and cultural services and amenities	1.3.1 Educational attainment	Higher education	Piraeus // Attiki	1.3.1.a1	persons	30,914	Hellenic Statistical Authority, Census	2011	
			Graduates of post-secondary education		1.3.1.a2	persons	11,167			
			Graduates of lyceum		1.3.1.a3	persons	47,229			http://www.statistics.gr/el/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-2&p_p_col_count=4&p_p_col_pos=2&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_javax.faces.resource=document&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_ln=downloadResources&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_documentID=310568&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_locale=el
			Graduates of gymnasium		1.3.1.a4	persons	22,901			
			Graduates of primary school		1.3.1.a5	persons	28,034			
			Not completed primary school education		1.3.1.a6	persons	14,271			
		1.3.2 Recreational or cultural facilities	Relevant for LL/regeneration level: no. and identification of recreational and / or cultural facilities	Piraeus // Attiki	1.3.2.a	Number				
		1.3.3 Accessibility of public urban green spaces	% population having access to green space within a 30 minutes walking distance or within 30 minutes travel time by public transportation.	Piraeus // Attiki	1.3.3.a	%				
	1.4 Housing	1.4.1 Housing quality (replaced: number of dwelling per dwelling surface ranges)	Housing < 15m2	Piraeus // Attiki	1.4.1.a1	Number	2,156	Hellenic Statistical Authority, Census	2011	
			Housing 15-19m2		1.4.1.a2	Number	5,981			
			Housing 20-29m2		1.4.1.a3	Number	17,981			
			Housing 30-39m2		1.4.1.a4	Number	12,930			http://www.statistics.gr/el/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-2&p_p_col_count=4&p_p_col_pos=2&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_javax.faces.resource=document&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_ln=downloadResources&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_documentID=138659&_documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ_locale=el
			Housing 40-59m2		1.4.1.a5	Number	15,251			
			Housing 60-79m2		1.4.1.a6	Number	7,450			
			Housing 80+ m2		1.4.1.a7	Number	6,004			
		1.4.2 Public housing	Percentage of residents in public housing	Piraeus // Attiki	1.4.2.a	%				
		1.4.3 Housing affordability	REPLACED: Total households in private ownership	Piraeus // Attiki	1.4.3.a	Number	43,872	Hellenic Statistical Authority, Census	2011	nsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-
		1.4.2 Density of the built environment	Building Coverage Ratio	Piraeus // Attiki	1.4.4.a	%	34.60%	Calculated in ArcMap	2011	N/A
	2.1 Health	2.1.1 Incidence of cardio and respiratory diseases	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Piraeus // Attiki	2.1.1.a					
		2.1.2 Incidence of allergic disease	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Piraeus // Attiki	2.1.2.a					
		2.1.3 Incidence of chronic stress, stress-related diseases, mental health diseases and NCDs	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Piraeus // Attiki	2.1.3.a					

b. SINGLE YEAR INDICATORS

2. Human health and well-being		2.1.4 Obesity rate	*Possibly available by region / in specific studies* (or possibly at school level)	Piraeus // Attiki	2.1.4.a					
		2.1.5 Life expectancy at birth	Average life expectancy (possibly available at higher levels / regional level)	Piraeus // Attiki	2.1.5.a					
	2.2 Wellbeing	2.2.1 Green space per capita	Sqm of green space / person	Piraeus // Attiki	2.2.1.a	sq m / capita	0.83	Calculated by records held at the Municipality of Piraeus and for population 163,000 obtained by the Hellenic Statistical Authority for Census 2011.	2011	N/A
		2.2.2 Urban safety – crime	Yearly number of reported crimes per 1,000 persons	Piraeus // Attiki	2.2.2.a	*SEE MULTIANNUAL INDICATORS*				
		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	Piraeus // Attiki	2.2.3.a	*SEE MULTIANNUAL INDICATORS*				
3. Ecological and environmental restoration	3.1 Land use and Vegetation	3.1.1 % of green spaces	% of total surface which is destined for green spaces	Piraeus // Attiki	3.1.1..a					
		3.1.2 structure of green spaces	% of tree covered areas	Piraeus // Attiki	3.1.2.a					
		3.1.3 structure of green spaces	% of shrub covered areas	Piraeus // Attiki	3.1.3.a					
		3.1.4 structure of green spaces	% of meadow covered areas	Piraeus // Attiki	3.1.4.a					
		3.1.5 % Surface of brownfields	% of total surface which is destined for brownfield areas	Piraeus // Attiki	3.1.5.a					
		3.1.6 % Surface of polluted brownfield areas	% of polluted brownfield areas	Piraeus // Attiki	3.1.6.a					
		3.1.7 Canopy cover	the proportion of the forest covered by the vertical projection of the tree crowns	Piraeus // Attiki	3.1.7.a					
		3.1.6 Leaf Area Index	Leaf area index is defined as the projected area of leaves over a unit of land (m2 m−2), so one unit of LAI is equivalent to 10,000 m2 of leaf area per hectare. This index takes into account the leaf	Piraeus // Attiki	3.1.6.a					
		3.1.7 NDVI	Normalized Difference Vegetation Index	Piraeus // Attiki	3.1.7.a					
	3.2 Climate / Meteorological data	3.2.1 Precipitation	Average annual precipitation (l/m²)	Piraeus // Attiki	3.2.1.a	mm	30.4	National Meteorological Service 2018. Statistical data of the station in Elliniko, Region of Attica.	2018	http://www.hnms.gr/emy/el/climatology/climatology_city?perifereia=Attiki&poli=Athens_Hellinikon
		3.2.2 Relative humidity	Relative humidity	Piraeus // Attiki	3.2.2.a	%	60.50%		2018	
		3.2.3 Air temperature	Annual mean temperature	Piraeus // Attiki	3.2.3.a	°C	18.5		2018	
			Winter mean temperature	Piraeus // Attiki	3.2.3.b	°C	11.0			
			Spring mean temperature	Piraeus // Attiki	3.2.3.c	°C	11.9			
			Summer mean temperature	Piraeus // Attiki	3.2.3.d	°C	21.9			
			Fall mean temperature	Piraeus // Attiki	3.2.3.e	°C	15.7			
		3.2.4 Wind strength	Wind intensity / average wind speed	Piraeus // Attiki	3.2.4.a	m/s	7.1		2018	
		3.2.5 Wind direction	Main wind direction	Piraeus // Attiki	3.2.5.a	cardinal point	N		2018	
	3.3 Air Quality	3.3.1 Ozone concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.1.a	*SEE MULTIANNUAL INDICATORS*				
		3.3.2 NOx concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.2.a	*SEE MULTIANNUAL INDICATORS*				
		3.3.3 PM 2.5 concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.3.a	*SEE MULTIANNUAL INDICATORS*				
		3.3.4 PM10 concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.4.a	*SEE MULTIANNUAL INDICATORS*				
		3.3.5 VOC Concentration	µg/m3 / ppb	Piraeus // Attiki	3.3.5.a					
		3.3.6 GHG inventory	Inventory of greenhouse gases (GHG) emission at city level and LL level	Piraeus // Attiki	3.3.6.a					
	3.4 Soil	3.4.1 Soil quality	Concentration of C	Piraeus // Attiki	3.4.1.a					
			Concentration of N	Piraeus // Attiki	3.4.1.b					
			bulk density	Piraeus // Attiki	3.4.1.c					
			permeability	Piraeus // Attiki	3.4.1.d					
			water retention capability	Piraeus // Attiki	3.4.1.e					

b. SINGLE YEAR INDICATORS

	3.5 Water	3.5.1 Water quality	- Free O	Piraeus // Attiki	3.5.1.a					
			- Nutrients	Piraeus // Attiki	3.5.1.b					
			- pH	Piraeus // Attiki	3.5.1.c					
			- eutrophication level	Piraeus // Attiki	3.5.1.d					
			- hydrocarbons	Piraeus // Attiki	3.5.1.e					
			- other pollutants	Piraeus // Attiki	3.5.1.f					
	3.6 Urban environment	3.6.1 Heat island effect	Difference (°C) between urban and rural surface temperatures	Piraeus // Attiki	3.6.1.a					
4. Economy and Labor market	4.1 Market labour and economy indicators	4.1.1 GDP per capita	GDP (PPP), Euro	Piraeus // Attiki	4.1.1.a					
		4.1.2 Businesses in the area - Industrial	Amount of Industrial companies per 1,000 inhabitants	Piraeus // Attiki	4.1.2.a	*SEE MULTIANNUAL INDICATORS*				
		4.1.3 Businesses in the area - Commercial	Amount of commercial companies per 1,000 inhabitants	Piraeus // Attiki	4.1.3.a	*SEE MULTIANNUAL INDICATORS*				
		4.1.4 Businesses in the area - Offices	Total amount of offices companies per 1,000 inhabitants	Piraeus // Attiki	4.1.4.a	*SEE MULTIANNUAL INDICATORS*				
		4.1.5 Public jobs	- Total number of jobs in public sector	Piraeus // Attiki	4.1.5.a	*SEE MULTIANNUAL INDICATORS*				
		4.1.6 Private jobs	- Total number of jobs in private sector	Piraeus // Attiki	4.1.6.a					
		4.1.7 Public green jobs	- Total number of public green jobs	Piraeus // Attiki	4.1.7.a	*SEE MULTIANNUAL INDICATORS*				
		4.1.8 Private green jobs	- Total number of private green jobs	Piraeus // Attiki	4.1.8.a					
		4.1.9 Qualified jobs	- Total number of qualified jobs	Piraeus // Attiki	4.1.9.a					
		4.1.10 Non-qualified jobs	- Total number of non-qualified jobs	Piraeus // Attiki	4.1.10.a					
		4.1.11 Turnover in the green sector	Green companies' turnover in EUR	Piraeus // Attiki	4.1.11.a	*SEE MULTIANNUAL INDICATORS*				
	4.2 Gentrification indicators	4.2.1 Employment rate	the proportion of employed adults in the working age (20-64 years)	Piraeus // Attiki	4.2.1.a	%	80.40%	Greek Statistical Authority, Census	2011	http://www.statistics.gr/el/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-
		4.2.2 Unemployment rate	the proportion of unemployed adults in the working age (20-64 years)	Piraeus // Attiki	4.2.2.a	%	20%	Greek Statistical Authority, Census	2011	http://www.statistics.gr/el/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_VBZOni0vs5VJ&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-
		4.2.3 Revenues by household	REPLACED: Total household revenue	Piraeus // Attiki	4.2.3.a	*SEE MULTIANNUAL INDICATORS*				
		4.2.4a Current property sale value for residential use	Property value, average, EUR/sqm, for single- and collective housing, sale price	Piraeus // Attiki	4.2.4.a					
		4.2.4b Current property rental value for residential use	Property value, average, EUR/sqm, for single- and collective housing, renting (monthly)	Piraeus // Attiki	4.2.4.b					
		4.2.5a Current property value for commercial/ industrial/ office use	Property value, average, EUR/sqm, sale price	Piraeus // Attiki	4.2.5.a.a					
		4.2.5b Current property rental value for commercial/ industrial/ office use	Property value, average, EUR/sqm, renting (monthly)	Piraeus // Attiki	4.2.5.b.a					
		4.2.6 Free services	Total number of free services (parks, librairies, cycle trials, skate parks…)	Piraeus // Attiki	4.2.6.a					
		4.2.7 Basic utilities	Monthly cost of basic utilities (Electricity, water, Garbage…)	Piraeus // Attiki	4.2.7.a					
	4.3 Tourism and attractiveness indicators	4.3.1 Current number of tourists	REPLACED: total number of overnight stays	Piraeus // Attiki	4.3.1.a	*SEE MULTIANNUAL INDICATORS*				
		4.3.2 Number of temporary events	Trade Fairs, Congresses, Symposiums, Concerts, Parades before NBS application (in number)	Piraeus // Attiki	4.3.2.a					
		4.3.3 No. of foreign students	REPLACED: total number of foreign students	Piraeus // Attiki	4.3.3.a	*SEE MULTIANNUAL INDICATORS*				
		4.3.4 Local expenses	Expenses in local retail businesses	Piraeus // Attiki	4.3.4.a					
	4.4 Taxes, Investment & Financing	4.4.1 Local taxes	REPLACED: total value of taxes, EUR	Piraeus // Attiki	4.4.1.a	*SEE MULTIANNUAL INDICATORS*				
		4.4.2 Green investment programs/funds	Public investment programs, and investment funds	Piraeus // Attiki	4.4.2.a					

ANNEX 1.7: SPATIAL ANALYSIS INDICATOR DATABASE
FOLLOWER CITY ZENICA

REF. DOMAIN	SUBDOMAIN	INDICATOR	DESCRIPTION	SCALE	ID	UNIT	VALUE	SOURCE	YEAR	NOTE
1. Socio-cultural inclusiveness	1.1 Demographics	1.1.1 Total population	Total number of persons living in the specific area. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Zenica Municipality	1.1.1.a	persons	110663			
		1.1.2 Population density	Number of persons per square km of land area. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Zenica Municipality	1.1.2.a	p /ha	198.1			
		1.1.3 Population growth rate	Average annual rate of change of population size (%). Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Zenica Municipality	1.1.3.a	%	-0.6			
		1.1.4 Migration rate	Net number of migrants (immigrants – emigrants) per 1,000 population. Indicator should be collected for both the city/MA scale and the LL/regeneration area district scale.	Zenica Municipality	1.1.4.a					
	1.2 Social and cultural inclusiveness	1.2.1 Material deprivation rate	Material deprivation rates gauge the proportion of people whose living conditions are severely affected by a lack of resources	Zenica Municipality	1.2.1.a					
		1.2.2 Work intensity	% employed out of total economically active population (15-64 years of age)	Zenica Municipality	1.2.2.a	%	52.70%			
		1.2.3 Diversity statistics	% foreign born residents (if available, for both scales, or)	Zenica Municipality	1.2.3.a					
			Population by ethnicity	Zenica Municipality	1.2.3.a					
	1.3 Education and access to social and cultural services and amenities	1.3.1 Educational attainment	Average level of education completed by the 20-64 year-old population	Zenica Municipality	1.3.1.a					
		1.3.2 Recreational or cultural facilities	Relevant for LL/regeneration level: no. and identification of recreational and / or cultural facilities	Zenica Municipality	1.3.2.a					
		1.3.3 Accessibility of public urban green spaces	% population having access to green space within a 30 minutes walking distance or within 30 minutes travel time by public transportation.	Zenica Municipality	1.3.3.a					
	1.4 Housing	1.4.1 Housing quality	Average useful floor area per person, calculated in sqm	Zenica Municipality	1.4.1.a					
		1.4.2 Public housing	Percentage of residents in public housing	Zenica Municipality	1.4.2.a	%				
		1.4.3 Housing affordability	Homeownership rate	Zenica Municipality	1.4.3.a	%	73.68			
		1.4.2 Density of the built environment	Building Coverage Ratio, or if unavailable,	Zenica Municipality	1.4.4.a					
			Floor Area Ratio (Total residential floor area divided by total residential area surface)	Zenica Municipality	1.4.4.b					
2. Human health and well-being	2.1 Health	2.1.1 Incidence of cardio and respiratory diseases	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Zenica Municipality	2.1.1.a					
		2.1.2 Incidence of allergic disease	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Zenica Municipality	2.1.2.a					
		2.1.3 Incidence of chronic stress, stress-related diseases, mental health diseases and NCDs	Rate of new (or newly diagnosed) cases of the disease per 1,000 persons	Zenica Municipality	2.1.3.a					
		2.1.4 Obesity rate	*Possibly available by region / in specific studies* (or possibly at school level)	Zenica Municipality	2.1.4.a					
		2.1.5 Life expectancy at birth	Average life expectancy (possibly available at higher levels / regional level)	Zenica Municipality	2.1.5.a					
	2.2 Wellbeing	2.2.1 Green space per capita	Sqm of green space / person	Zenica Municipality	2.2.1.a	*sq m / capita*	113.79			
		2.2.2 Urban safety – crime	Yearly number of reported crimes per 1,000 persons	Zenica Municipality	2.2.2.a					
		2.2.3 Urban safety – accidents	Yearly number of reported road accidents involving pedestrians and / or bicyclists	Zenica Municipality	2.2.3.a					
	3.1 Land use and Vegetation	3.1.1 % of green spaces	% of total surface which is destined for green spaces	Zenica Municipality	3.1.1..a					
		3.1.2 structure of green spaces	% of tree covered areas	Zenica Municipality	3.1.2.a					
		3.1.3 structure of green spaces	% of shrub covered areas	Zenica Municipality	3.1.3.a					
		3.1.4 structure of green spaces	% of meadow covered areas	Zenica Municipality	3.1.4.a					
		3.1.5 % Surface of brownfields	% of total surface which is destined for brownfield areas	Zenica Municipality	3.1.5.a					
		3.1.6 % Surface of polluted brownfield areas	% of polluted brownfield areas	Zenica Municipality	3.1.6.a					
		3.1.7 Canopy cover	the proportion of the forest covered by the vertical projection of the tree crowns	Zenica Municipality	3.1.7.a					
		3.1.6 Leaf Area Index	Leaf area index is defined as the projected area of leaves over a unit of land (m2 m−2), so one unit of LAI is equivalent to 10,000 m2 of leaf area per hectare. This index takes into account the leaf stratification within the canopy	Zenica Municipality	3.1.6.a					
		3.1.7 NDVI	Normalized Difference Vegetation Index	Zenica Municipality	3.1.7.a					
		3.2.1 Precipitation	Average annual precipitation (l/m²)	Zenica Municipality	3.2.1.a	mm	865.12			

3. Ecological and environmental restoration	**3.2 Climate / Meteorological data**	**3.2.2 Relative humidity**	Relative humidity	Zenica Municipality	**3.2.2.a**		76 (2016)			
		3.2.3 Air temperature	Annual mean temperature	Zenica Municipality	**3.2.3.a**	°C	10.6 °C			
			Winter mean temperature	Zenica Municipality	**3.2.3.b**	°C	0.9 °C			
			Spring mean temperature	Zenica Municipality	**3.2.3.c**	°C				
			Summer mean temperature	Zenica Municipality	**3.2.3.d**	°C	19.8 °C			
			Fall mean temperature	Zenica Municipality	**3.2.3.e**	°C				
		3.2.4 Wind strength	Wind intensity / average wind speed	Zenica Municipality	**3.2.4.a**	m/s	2			
		3.2.5 Wind direction	Main wind direction	Zenica Municipality	**3.2.5.a**	cardinal point	S			
	3.3 Air Quality	**3.3.1 Ozone concentration**	µg/m3 / ppb	Zenica Municipality	**3.3.1.a**					
		3.3.2 NOx concentration	µg/m3 / ppb	Zenica Municipality	**3.3.2.a**	µg/m3 / ppb	22			
		3.3.3 PM 2.5 concentration	µg/m3 / ppb	Zenica Municipality	**3.3.3.a**					
		3.3.4 PM10 concentration	µg/m3 / ppb	Zenica Municipality	**3.3.4.a**	µg/m3 / ppb	55			
		3.3.5 VOC Concentration	µg/m3 / ppb	Zenica Municipality	**3.3.5.a**					
		3.3.6 GHG inventory	Inventory of greenhouse gases (GHG) emission at city level and LL level	Zenica Municipality	**3.3.6.a**					
	3.4 Soil	**3.4.1 Soil quality**	Concentration of C	Zenica Municipality	**3.4.1.a**					
			Concentration of N	Zenica Municipality	**3.4.1.b**					
			bulk density	Zenica Municipality	**3.4.1.c**					
			permeability	Zenica Municipality	**3.4.1.d**					
			water retention capability	Zenica Municipality	**3.4.1.e**					
	3.5 Water	**3.5.1 Water quality**	- Free O	Zenica Municipality	**3.5.1.a**					
			- Nutrients	Zenica Municipality	**3.5.1.b**					
			- pH	Zenica Municipality	**3.5.1.c**					
			- eutrophication level	Zenica Municipality	**3.5.1.d**					
			- hydrocarbons	Zenica Municipality	**3.5.1.e**					
			- other pollutants	Zenica Municipality	**3.5.1.f**					
	3.6 Urban environment	**3.6.1 Heat island effect**	Difference (°C) between urban and rural surface temperatures	Zenica Municipality	**3.6.1.a**					
	4.1 Market labour and economy indicators	**4.1.1 GDP per capita**	GDP (PPP), Euro	Zenica Municipality	**4.1.1.a**	EUR / capita	3240			
		4.1.2 Businesses in the area - Industrial	Amount of Industrial companies per 1,000 inhabitants	Zenica Municipality	**4.1.2.a**					
		4.1.3 Businesses in the area - Commercial	Amount of commercial companies per 1,000 inhabitants	Zenica Municipality	**4.1.3.a**					
		4.1.4 Businesses in the area - Offices	Total amount of offices companies per 1,000 inhabitants	Zenica Municipality	**4.1.4.a**					
		4.1.5 Public jobs	- Total number of jobs in public sector	Zenica Municipality	**4.1.5.a**					
		4.1.6 Private jobs	- Total number of jobs in private sector	Zenica Municipality	**4.1.6.a**					
		4.1.7 Public green jobs	- Total number of public green jobs	Zenica Municipality	**4.1.7.a**					
		4.1.8 Private green jobs	- Total number of private green jobs	Zenica Municipality	**4.1.8.a**					
		4.1.9 Qualified jobs	- Total number of qualified jobs	Zenica Municipality	**4.1.9.a**					
		4.1.10 Non-qualified jobs	- Total number of non-qualified jobs	Zenica Municipality	**4.1.10.a**					

4. Economy and Labor market		4.1.11 Turnover in the green sector	Green companies' turnover in EUR	Zenica Municipality	4.1.11.a					
	4.2 Gentrification indicators	4.2.1 Employment rate	the proportion of employed adults in the working age (20-64 years)	Zenica Municipality	4.2.1.a	%	28.40%			
		4.2.2 Unemployment rate	the proportion of unemployed adults in the working age (20-64 years)	Zenica Municipality	4.2.2.a	%	48%			
		4.2.3 Revenues by household	Average household disposable income	Zenica Municipality	4.2.3.a					
		4.2.4a Current property sale value for residential use	Property value, average, EUR/sqm, for single- and collective housing, sale price	Zenica Municipality	4.2.4.a					
		4.2.4b Current property rental value for residential use	Property value, average, EUR/sqm, for single- and collective housing, renting (monthly)	Zenica Municipality	4.2.4.b					
		4.2.5a Current property value for commercial/ industrial/ office use	Property value, average, EUR/sqm, sale price	Zenica Municipality	4.2.5.a.a					
		4.2.5b Current property rental value for commercial/ industrial/ office use	Property value, average, EUR/sqm, renting (monthly)	Zenica Municipality	4.2.5.b.a					
		4.2.6 Free services	Total number of free services (parks, librairies, cycle trials, skate parks…)	Zenica Municipality	4.2.6.a					
		4.2.7 Basic utilities	Monthly cost of basic utilities (Electricity, water, Garbage…)	Zenica Municipality	4.2.7.a					
	4.3 Tourism and attractiveness indicators	4.3.1 Current number of tourists	Measured as average number of overnight stays in tourism accommodations	Zenica Municipality	4.3.1.a					
		4.3.2 Number of temporary events	Trade Fairs, Congresses, Symposiums, Concerts, Parades before NBS application (in number)	Zenica Municipality	4.3.2.a					
		4.3.3 No. of foreign students	% of foreign students out of total enrolled higher education students	Zenica Municipality	4.3.3.a					
		4.3.4 Local expenses	Expenses in local retail businesses	Zenica Municipality	4.3.4.a					
	4.4 Taxes, Investment & Financing	4.4.1 Local taxes	Average local taxes per capita	Zenica Municipality	4.4.1.a					
		4.4.2 Green investment programs/funds	Public investment programs, and investment funds	Zenica Municipality	4.4.2.a					

ANNEX 2.1 – Additional Information for the FRC Dortmund

For the LL area, the following formal plans enforced by the City of Dortmund are of importance:

Flächennutzungsplan der Stadt Dortmund (Zoning Plan, City of Dortmund)

The zoning plan was adopted in 2004 by Dortmund´s city council. The plan (1:20,000) and its explanatory report point out development goals for future land use in Dortmund. The area north of former Hansa coking plant is planned as an economic site.

Since 2004, the “Landschaftsbauwerk” (landscaping of landfill site Deusenberg) has been built and the polluted soils of the eastern half have been rehabilitated. Against plan declaration, this part will be used as green space. Only the western part will be developed as an economic site. Plans are in process of substantiation. The zoning plan will be changed once the corresponding development plan for the economic site will be legalized.

As per its provisions, Deusenberg landfill is supposed to be developed as an open space with emphasis on nature-oriented measures and as a park. Surrounding areas in the north and west shall be developed as a forest. Former Hansa coking plant will target on the development of office space, as a museum and a place for leisure facilities. The Emscher river and its adjacent banks will serve as water management sites, also with focus on water retention.

The HSP-site is still presented as an industrial site, which shows the land use at time of plan adoption. Here, the zoning plan will be changed towards housing, green spaces and economic sites once development plans are worked out.

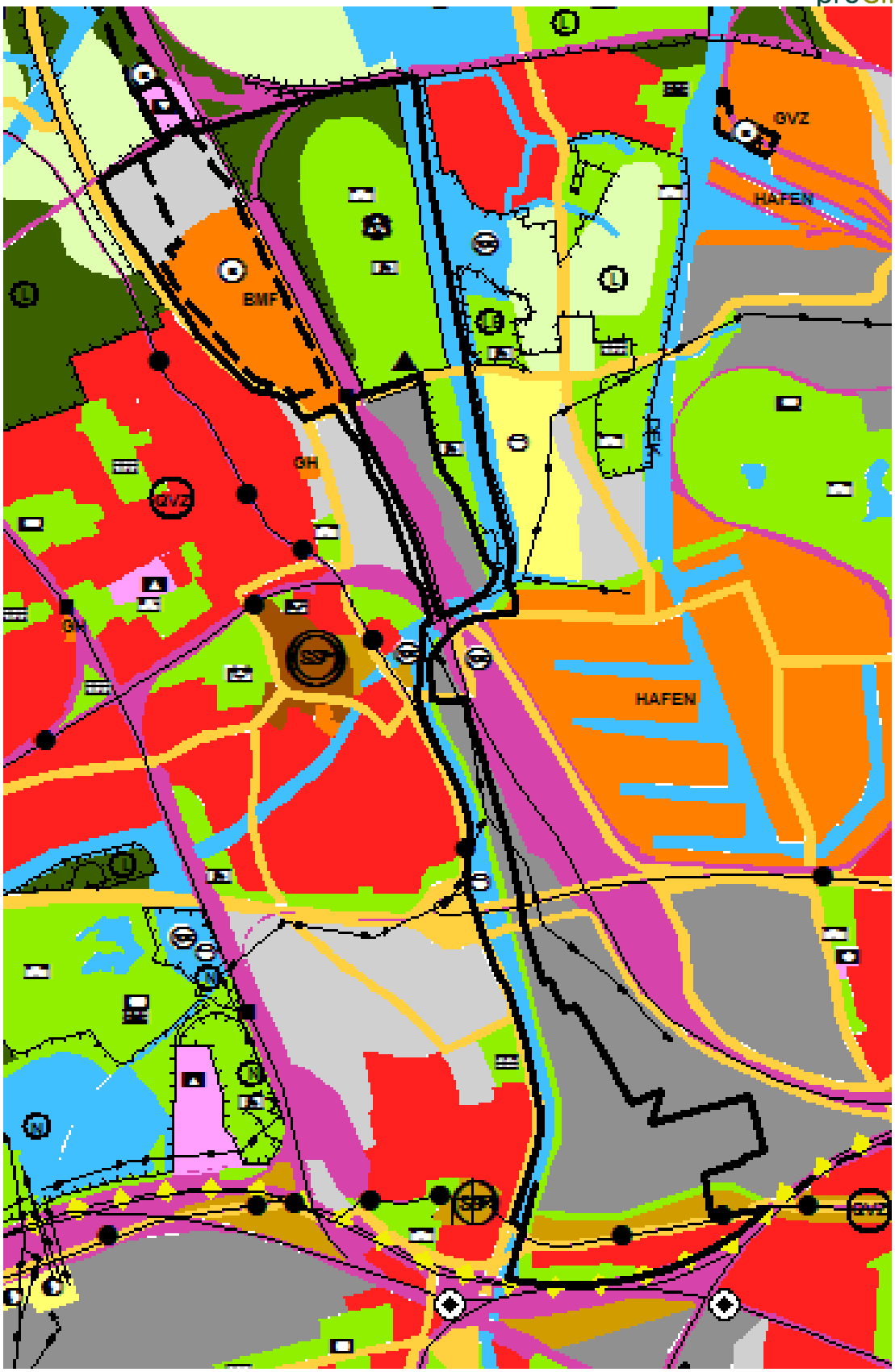

Figure 1 - Extract of Zoning Plan featuring boundary of LL in black (Source: City of Dortmund)

Development Plans (Bebauungspläne)

Development plans (1:1,000) substantiate qualitative requirements, which are binding for construction and defined parcels of land.

Within the Living Lab several development plans are effective:

- **Bebauungsplan InW 217 Rheinische Straße, Teilbereich West** (effective since 2009): This plan excludes retail within its area of application. Statements regarding urban quality are not fixed.

The following development plans qualify streets or crossings:

- **Bebauungsplan InW 210 Unterdorstfeld** (effective since 1997): This plan includes qualitative regulations for adjacent settlement Unterdorstfeld west of Living Lab, but also qualifies the cross-road of Emscherallee and Rheinische Straße in the southern part of the Living Lab.

- **Bebauungsplan InN 204 verlängerte Mallinckrodtstraße/ Hafenbrücke** (effective since 1989): Qualitative requirements are defined for the bridge crossing the Living Lab (Mallinck-rodtstraße) and the crossroad Mallinckrodtstraße/ Emscherallee.

- **Bebauungsplan Hu 124 Huckarder Straße, 1. Änderung** (effective since 1990): The plan in-cludes qualitative statements for the crossroad Huckarder Straße/ Franziusstraße.

- **Bebauungsplan Hu 126/1 Gewerbepark Hansa.** The southeastern edge of the Bebauungsplan is part of the Living Lab where parking space is planned. South of former Hansa coking plant and north of Parsevalstraße an economic site is assigned.[1]

As the mentioned development plans mostly qualify streets or exclude retail there are only few bind-ing regulations regarding lots with green infrastructure within Dortmund Living Lab.

The development plan for the economic site “Kokerei Hansa Nord” will start in 2019.

Informal Plans

The informal thematic plans mentioned below should be considered as parts of an integrated develop-ment process on different spatial levels with specific planning focuses, supporting and guiding devel-opment of the NBS implementation in proGIreg:

Position Emscher Landschaftspark 2020+ (2013)

The development of green infrastructure will remain in focus during the current third planning decade of the Emscher Landschaftspark (ELP), a green space network for the whole Ruhr area. Moreover, new ideas evolved, among others the concepts of Productive Parks.

Productive Parks are characterised by active design and use of park areas by different players. They combine different uses like urban agriculture or environmental education and upgrade urban life in the Ruhr area in a social, cultural, ecologic, and economic way. Inhabitants and visitors of the ELP are regarded as temporary or permanent guests. Thus, it is intended to integrate people into park develop-ment more intensely via participation processes.

ELP 2020+ focuses on several themes, among others:

- **climate protection:** the provision of areas for alternative energy production is one possibility to support this goal

[1] As Hansa coking plant needs more parking space for its events, the economic site is now used as an un-paved parking lot. In order to support the further development of Hansa coking plant the site will not be used as an economic site in forseeable future.

- **urban agriculture** is important for food production and at the same time contributes to maintenance and preservation of the landscape
- **green infrastructure** for leisure, recreation, sports and services: green spaces close to residential areas need to be developed regarding specific needs of local residents and with up-do-date infrastructure like installation of trend sports infrastructure or barrier-free access
- **economic power of the park supports structural change**: the green infrastructure of the ELP increases quality of life. “Working in the Park” (Arbeiten im Park) is a qualitative goal for the development of economic sites within ELP

Having secured the beacon projects during the past two decades, the ELP currently concentrates more and more on designing and upgrading the green infrastructure in between. Essential parts within the realisation process are among others:

- the integration of inhabitants of the Ruhr region
- environmental education
- improvement of existing institutional and infrastructure networks

To realize these goals, ELP projects will be financed by the EU, the state of North-Rhine Westphalia, the Regionalverband Ruhr, and the respective cities.

nordwärts/ “going north” (2015-2025) and Emscher nordwärts Dortmund

In 2015, the city council approved “nordwärts” as a local initiative and decade-project. Its area covers seven northern districts of Dortmund. Via dialogue und participation processes and evolving projects, quality of life is intended to be harmonized within all twelve districts in Dortmund.

Currently, 234 projects are involved in nordwärts – some already in realisation, others in early planning stages.

During **“Nordforum Huckarde”** (July 2015) the following proposals – among others – were given for the area of the LL area:

- development of Hansa coking plant with functions for culture, leisure, sport and potentiall commercial activities;
- improvement of access to Hansa coking plant at crossroad Emscherallee
- a connecting path between Huckarde, Hansa coking plant and Deusenberg
- preservation of green infrastructure
- intensification of education partnerships, e.g. with Hansa coking plant
- establishing a green network by connecting existing green infrastructure and creation of new parks

The following projects within the LL area are currently listed:

- **Vision: Creation of a beacon on Deusenberg (number 032)**
- **Hansa Brückenzug: integration in local path network (number 521)**
- **Restoration of Hansa coking plant´s Salzlager (number 713)**
- **Integrated Action Plan Huckarde-Nord (number 752)**
- **Development of HSP-site/ Rheinische Straße (numbers 497, 843)**
- **Emscher nordwärts/ IGA Ruhr 2027 (number 928)**

Emscher nordwärts Dortmund as part of the nordwärts-project family has an identical project area as proGIreg Living Lab. Goal is to develop a green axis next to the Emscher, which combines traditional and modern elements as well as history of coal and steel industry with forward-looking living environments. Thus, an attractive green corridor shall be realized which helps to improve the general living conditions for the citizens of the neighboring residential areas and beyond as the Emscher path is an important bicycle route for Dortmund and the region.

The development of the Emscher green corridor offers the unique chance to improve connections to adjacent areas as well as the quality and attractiveness of its area. Integrative planning is essential for the realisation process.

Similar to the Living Lab described above, the project area of “Emscher nordwärts” is divided into three parts. For each part, certain project goals have been established:

Subarea North (Hansa coking plant, Deusenberg, Mooskamp):

- bridge for pedestrians and bikers from Hansa coking plant to Deusenberg
- increase of attractiveness of Hansa coking plant as a place for events and meetings
- new business park as a supplement to Hansa coking plant
- supplement of sports and leisure infrastructure on Deusenberg and improvement of connectivity
- upgrade of Mooskamp infrastructure

Central Subarea (Emscher, Hansa Brückenzug):

- path connection along Emscher dam
- Mooskamp train connection via Hansa Brückenzug on existing tracks
- skywalk on existing blast furnace gas pipes and on top of Hansa Brückenzug
- extension of parks on brownfields as parks for International Garden Exhibition 2027

Subarea South (Union quarter, HSP-site)

- urban quarter for living, working, and leisure
- preservation of old characteristic buildings
- construction of an artificial lake
- train stop for Mooskamp train at local public transport station U43

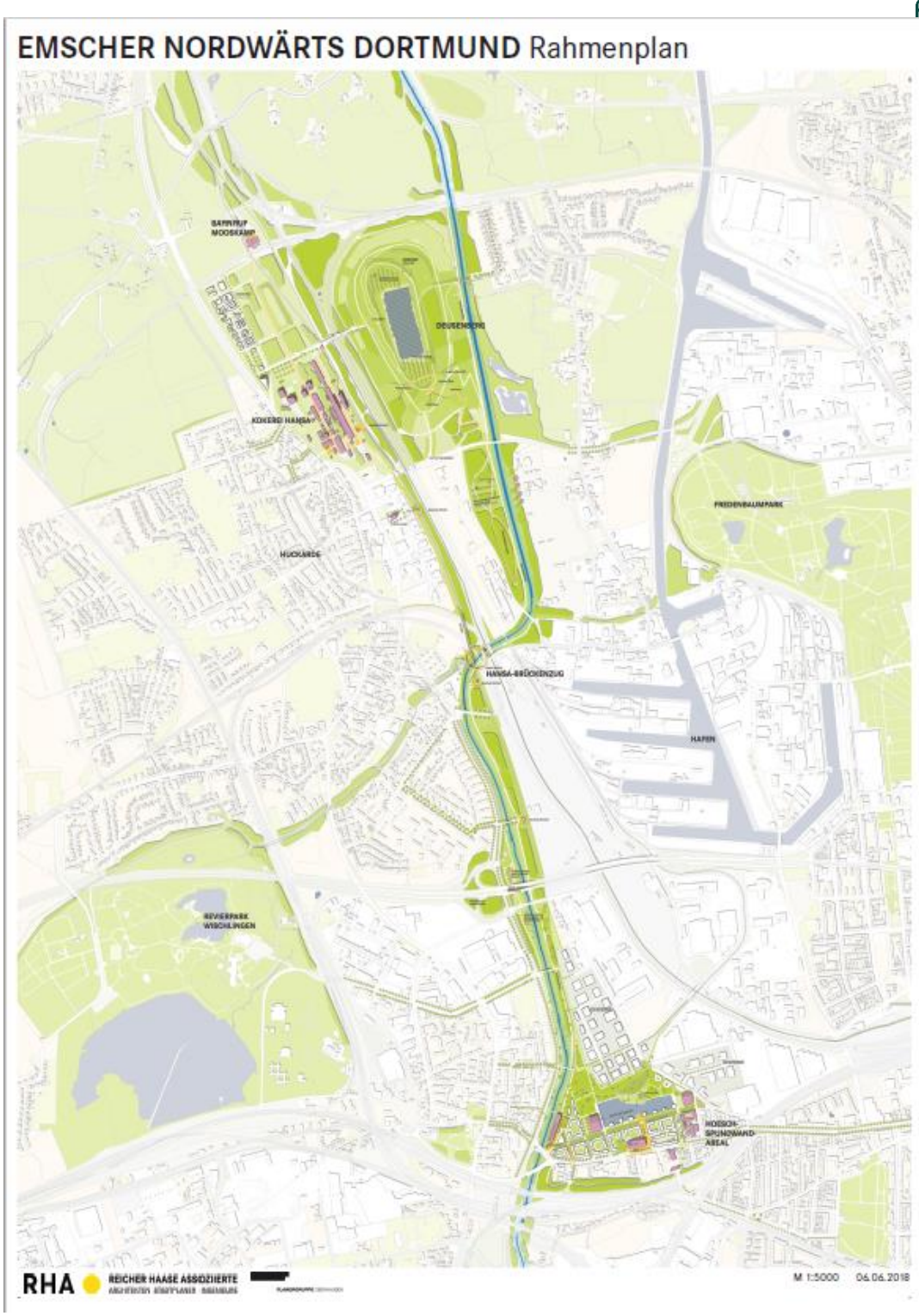

Figure 2 - Framework plan "Emscher nordwärts Dortmund" (Source: Reicher Haase Associates, 2018)

Next to improvements within its project area the framework plan „Emscher nordwärts Dortmund" also shows possible connections to adjacent green areas thus integrating the Emscher more intensely into the existing local green network.

To be able to estimate costs it is necessary to further substantiate plans for the mentioned projects integrated into *Emscher nordwärts Dortmund*. A first estimation states public costs of about 50 million €.

International Garden Exhibition Ruhr 2027 (IGA Ruhr 2027)

Specific concepts for the International Garden Exhibition (IGA) Ruhr 2027 are in a early preparation phase.
Nevertheless, the planning results of *Emscher nordwärts Dortmund* have been an important and convincing basis for the IGA application process. Dortmund will be one of the three cities of the Ruhr region with future gardens as main attractions of the IGA. Dortmund´s second future garden "Parkkreuz PHOENIX" is located in Dortmund´s south connecting and further enhancing the green spaces of PHOENIX lake, PHOENIX West, Westfalenpark and Rombergpark.

Five "future gardens" focusing on the question "How do we want to live tomorrow?" will be the core of the IGA Ruhr 2027. Dortmund´s "future garden Emscher going north" (Zukunftsgarten Emscher nordwärts) is supposed to cover the area of "Emscher nordwärts Dortmund" respectively of proGIreg Living Lab thus giving the realized NBS the chance to be proceeded after proGIreg project end in 2023 and to be presented in 2027 during IGA.

Stadtumbaugebiet „Huckarde-Nord" (2016)

As the settlement of Huckarde still is deprived, an urban renewal project for the area Huckarde-Nord has been determined in 2016 concentrating – among others – on the following goals:

- increase of quality of life and housing conditions for Huckarde inhabitants
- use of existing development potentials
- upgrading and development of "Hansa Revier Huckarde" (Hansa coking plant, Deusenberg, light train museum Mooskamp) and improvement of path connections towards Huckarde settlement west of it
- increase of image and overall strengthening of Huckarde district
- enhancing Huckarde-Nord by installing tourism infrastructure

To substantiate these goals an **Integrated Action Plan (Integriertes Handlungskonzept IHK**) has been worked out as a strategic instrument. Several analysis results are also substantial for the implementation of NBS within proGIreg Living Lab:

For **Hansa coking plant** the following goals and projects have been identified:

- strengthening the coking plant for educational, cultural, social and gastronomic purposes
- improvement of surrounded foot and bike path network
- optimization of traffic situation (cars, parking, public transport)
- establishing the coking plant as a place for culture, leisure, and sports
- application for UNESCO world heritage (in combination with Hansa Brückenzug, already occurred for the industrial heritage of the Ruhr area in 2016/2017)
- opening a facility for children and teenagers at the coking plant (e.g. Schalthaus)
- supplement the existing climbing gym e.g. by installing a high ropes course, a fitness trail or a hotel

Overall, there is a focus on an increase of public access and use of existing buildings also to create additional reasons to visit Hansa coking plant thus supporting Huckarde to grow together.

The **green space north of Hansa coking plant** is planned to be used as

- an economic site for technology companies in the western part
- as public green space offering path connections between Huckarde settlement and green space north of it in the eastern part

For **train depot Mooskamp** expansion plans are existing:

- extension of usable train tracks as well as installation of further train stops

The **Deusenberg** still offers potential for improvement:

- increase of intensity of leisure use for population of Huckarde settlement and Huckarde district, e.g. by establishing further trend sport infrastructure
- integrated plan to increase environmental quality and quality of life by designing public green spaces close to settlements (also a nordwärts-project)

In addition, Huckarde´s green infrastructure is supposed to be upgraded within its settlement. Overall goal is to strengthen a green corridor in north-south-extension by combining already existing green spaces and by qualifying them via different uses. Moreover, connections towards adjacent local recreation areas like Rahmer Wald, Rossbachtal and Emscher green corridor are intended as well as improved opportunities to cross the Emscherallee. Currently a **green infrastructure plan** for Huckarde is in work.

Climate Data

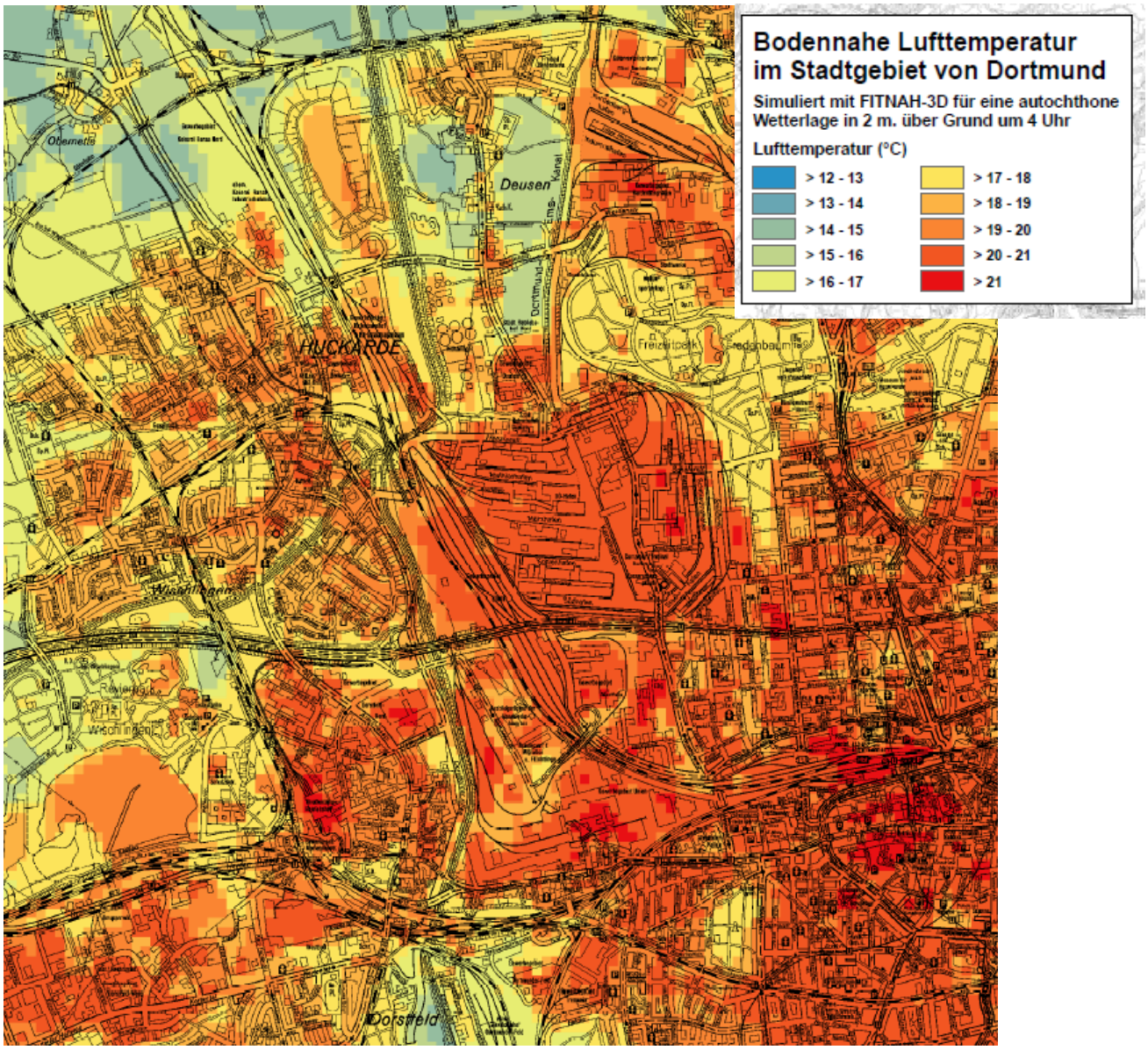

Figure 3 - Dortmund - Close-to-ground air temperature (Source: Regionalverband Ruhr)

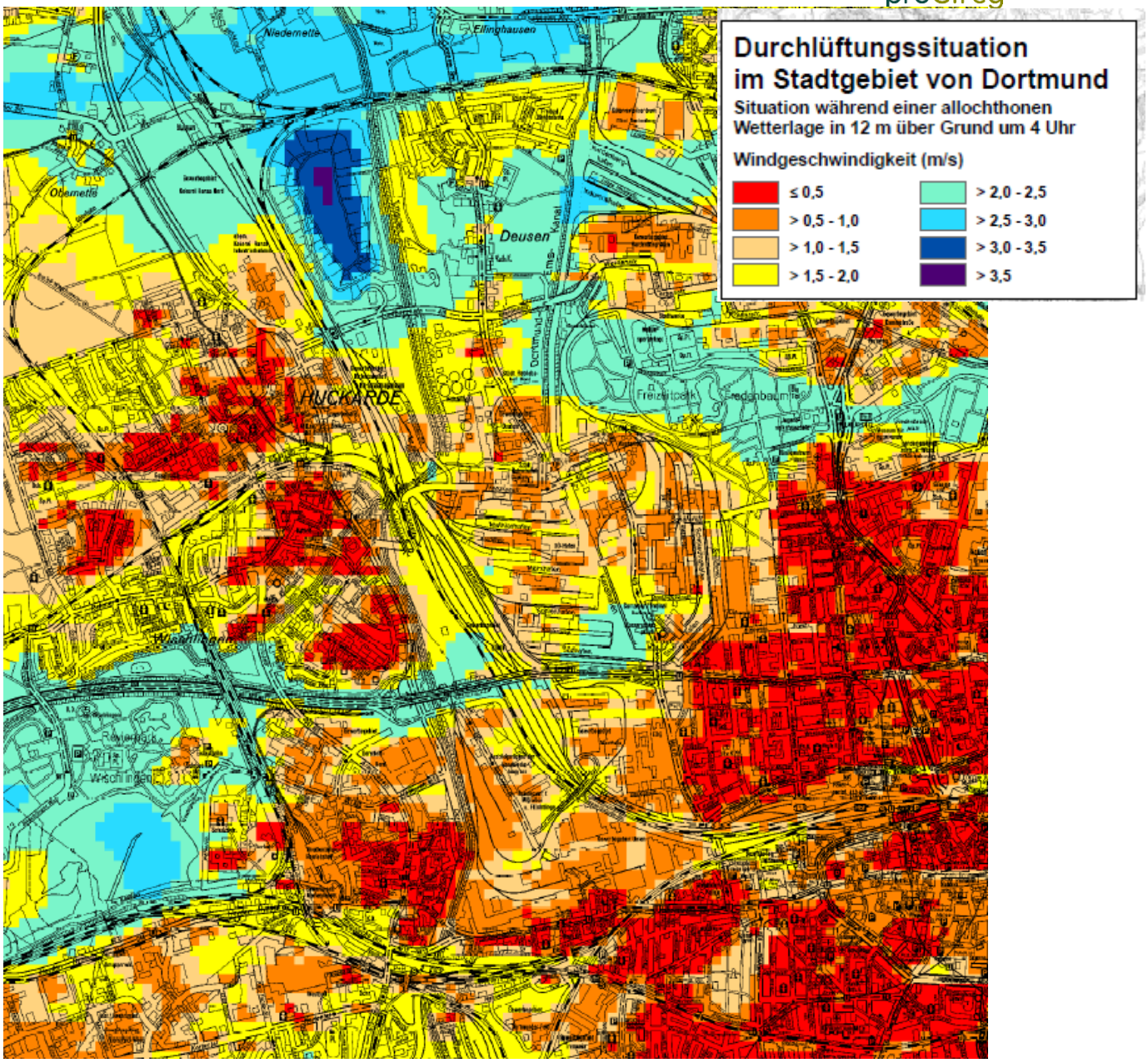

Figure 4 - Dortmund - Ventilation (Source: Regionalverband Ruhr)

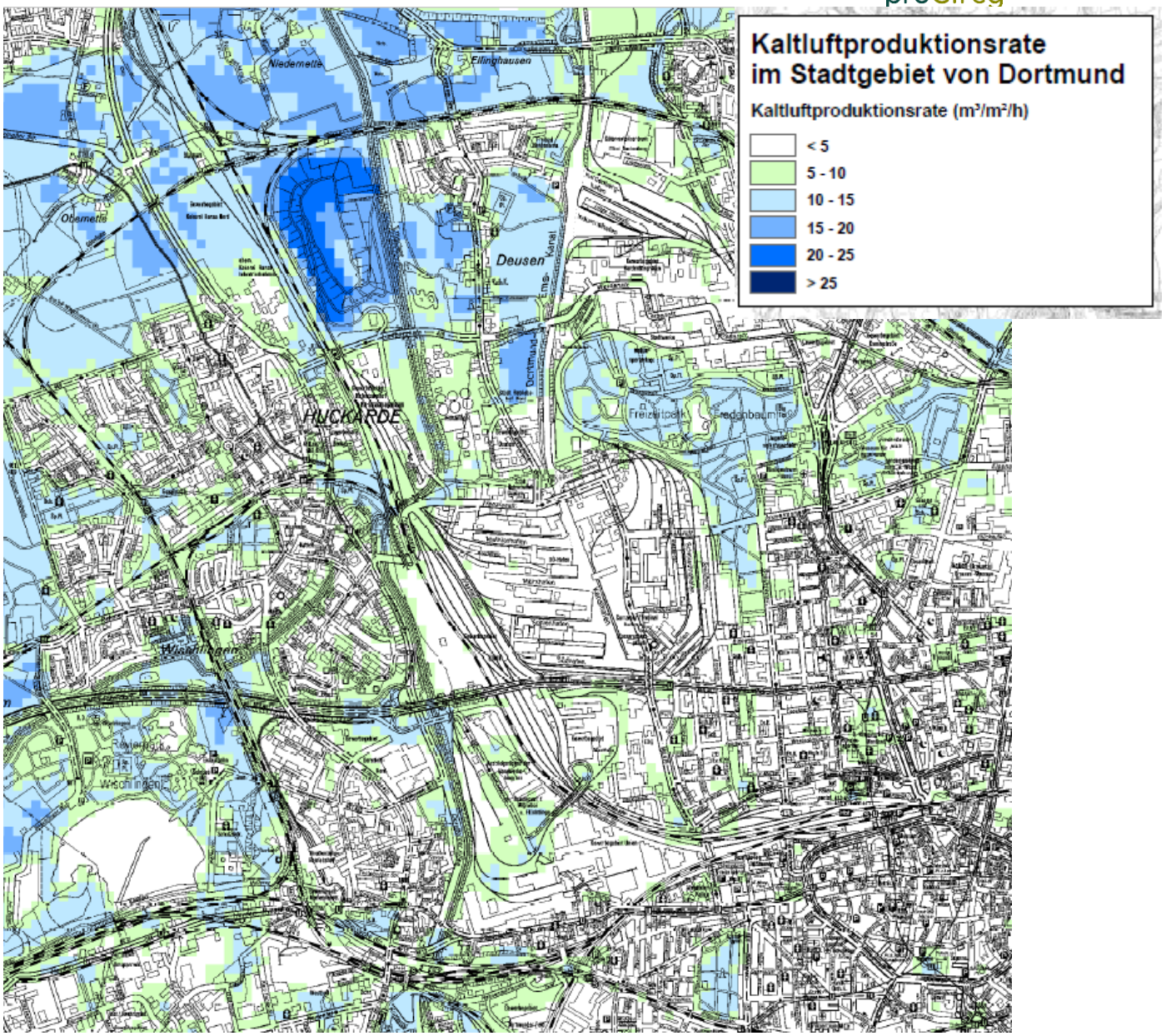

Figure 5 - Cold air production (Source: Regionalverband Ruhr)

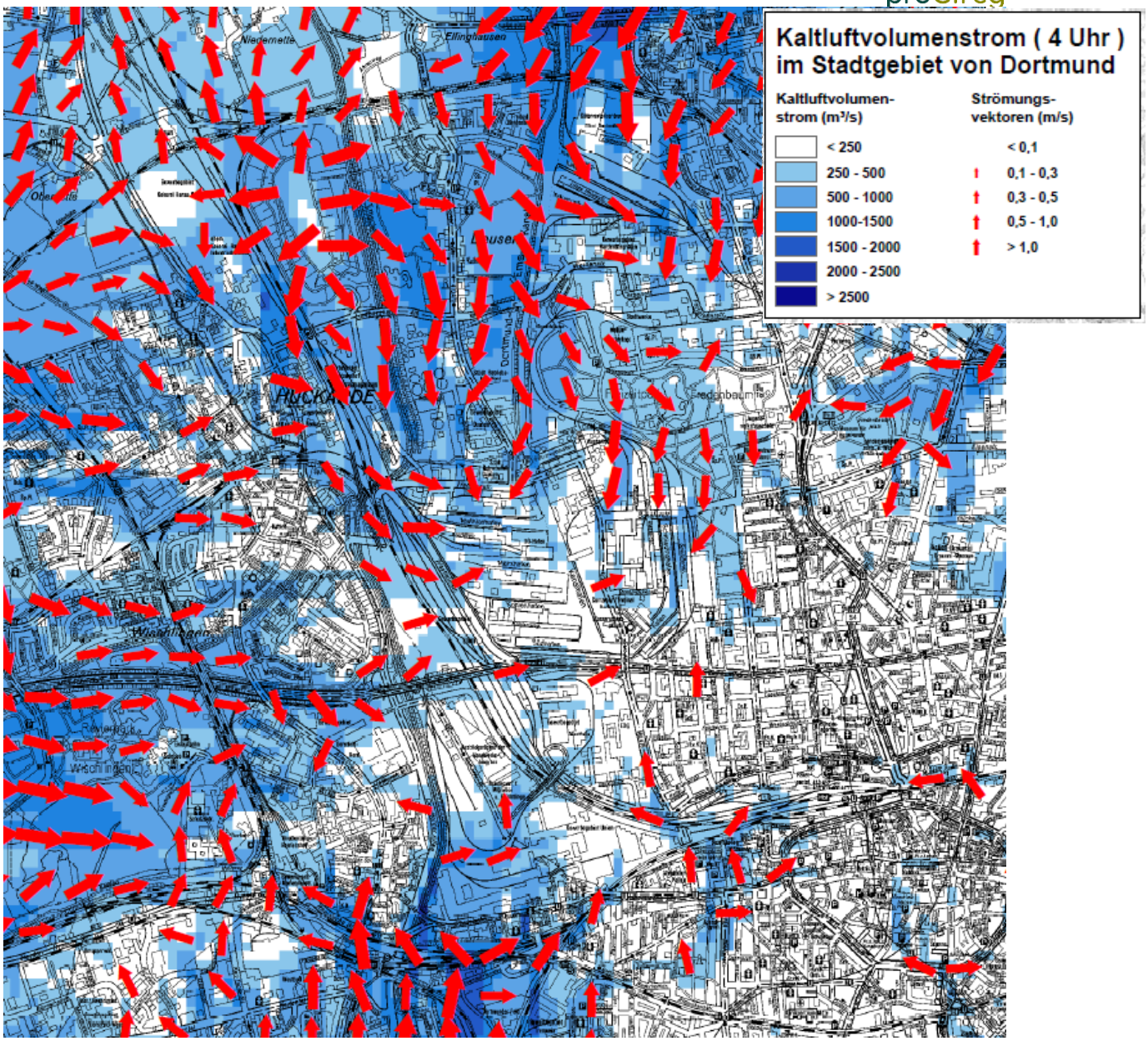

Figure 6 - Dortmund - Cold air production (Source: Regionalverband Ruhr)

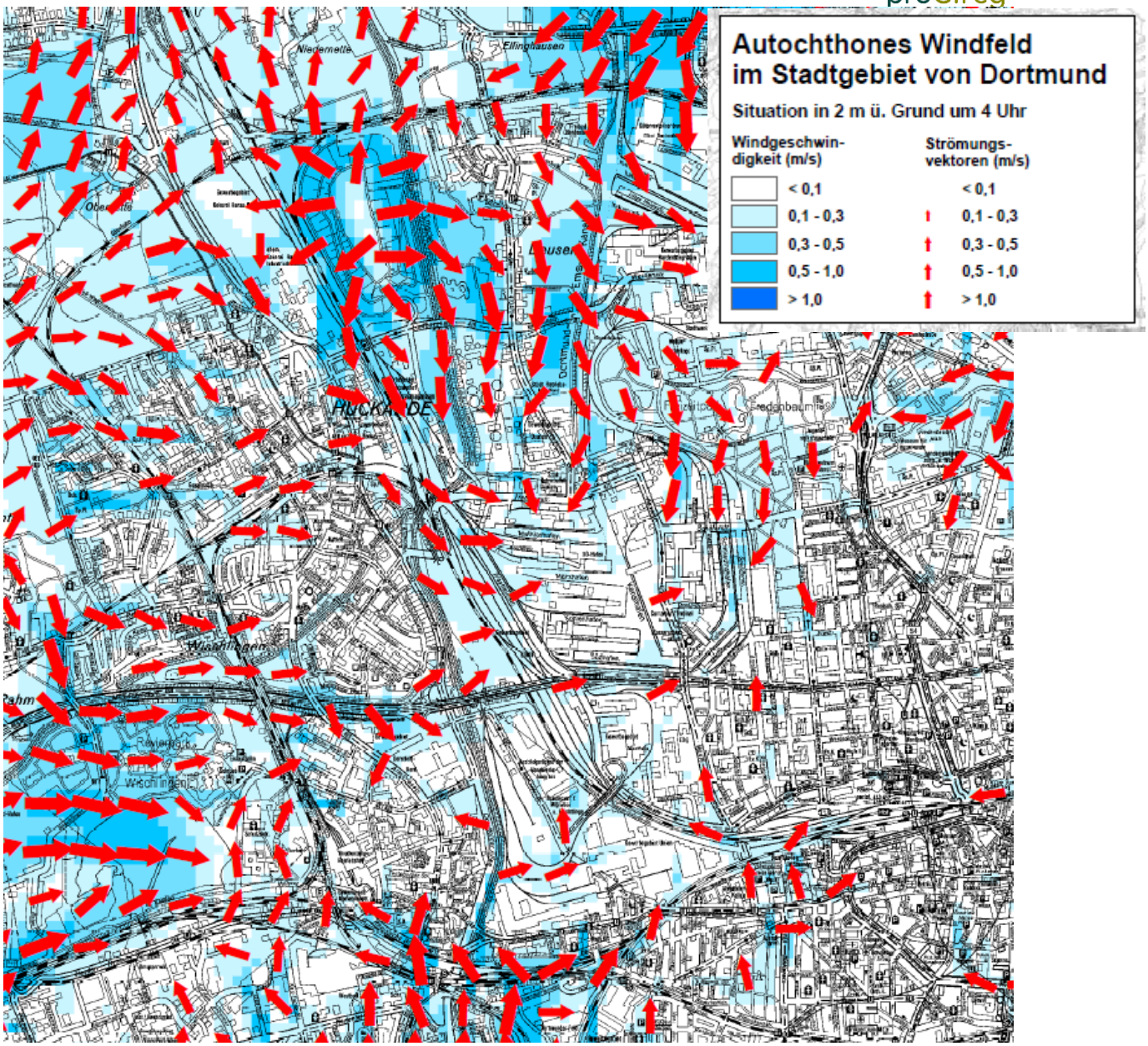

Figure 7 – Dortmund - local windfield (Source: Regionalverband Ruhr)

ANNEX 2.2 – Additional information for FC Piraeus

Piraeus was inhabited since 2,600 B.C. by the Pelasgoi, Phynicians, Thraces, Kares, Leleges and Cretes (Hatzimanolakis, 2005). Originally, it was attached to the mainland through a narrow isthmus (6750–5550 B.C.), due to sea-level rise it evolved into an island in the centre of a wide, shallow marine bay (4850–3450 B.C.) (Goiran et al., 2011). Following, Piraeus gradually re-connected to the mainland (between 1050 B.C. – 6th century B.C.) as the deltaic fans of the Cephissus and Korydallos Rivers periodically filled in the bay (Goiran et al., 2011). In classical antiquity, Piraeus served as the seaport of Athens that hosted a powerful commercial and military fleet and fortified the city (Anagnostopoulou and Bafouni, 2007). The defeat of Athens in the Peloponnesian war (404 B.C.), initiated the decline Piraeus through a series of attacks by the Romans (85 B.C), Goths (395), Francs (1205), Ottomans (1456) and Venetians (1687-1688) (Anagnostopoulou and Bafouni, 2007). The Venetian naval commander Morosini bombarded the Parthenon and looted Piraeus port including the white marble seated lion statue sculpted in 360 B.C. which was transferred to Venice and at present day constitutes one of the four lions in front of the Arsenal (Vermeule, 1972). The prominence of the lion at Piraeus port granted during medieval years its name "Porto Draco" and "Porto Leone" (Anagnostopoulou and Bafouni, 2007). Following the liberation of Piraeus and Athens from the Ottomans in 1828 and the founding of the Greek State in 1830, the Municipality of Piraeus in 1833 was established (Hatzimanolakis, 2005; Anagnostopoulou and Bafouni, 2007)

The relocation of the capital of Greece from Nafplio to Athens in 1834 played a pivotal role to its future development (Anagnostopoulou and Bafouni, 2007). Residents from the Peloponnese, Chios, Hydra, migrate to Piraeus in search for employment and a better life (Anagnostopoulou and Bafouni, 2007). The first urban plan of Piraeus was developed in 1834 by the architects Kleanthis and Schaubert, which was based on the “Hippodamian Plan” by Hippodamus of Miletus, ancient greek architect (498-408 B.C.) and “the father of European urban planning” (Malikouti, 2004a, 2004b ; Glaeser, 2011). Failure in the implementation land policy and unstable economy lead to many revisions and alterations of the original plan that included changes in the lay-out of land uses, the size of building plots and the proportion between building height and street width (Malikouti, 2004). The economic development of Piraeus and the development of the Athens-Piraeus railway line in 1869 lead to a rapid population increase after the mid-1960s. The development of the railway link between Piraeus and the Peloponnese and northern Greece, as well as the development of the Corinth Canal in 1893 contributed in increasing the Piraeus port traffic and initiated industrial development (Malikouti, 2004a).

The Municipality of Piraeus, which is a public body, has adopted a strategic plan for the forthcoming years and is committed to making Piraeus a competitive, sustainable and attractive European seaport city. The strategy is based upon robust, long-term planning principles, which combine effectively a dynamic business environment with the concern for social inclusion towards a new model of growth, job creation and quality of life for the citizens and the visitors to the city. The vision is to make the city of Piraeus an international business, touristic, cultural, maritime and commercial destination. Currently, the city is divided into the 5 districts discussed in chapter 3 – A’-E’. A brief overview of them is enclosed below.

A’ City District

The A’ City District (area 2,358,748 m²) is surrounded mainly by sea, containing a small section of the city centre along the north coast. It is mainly characterised by residential areas (the most affluent ones in Piraeus, along the S coast) and small neighbourhood commercial areas.

Regarding **socio-cultural inclusiveness,** the A’ City District hosts four child day care centres, 11 nurseries, 14 primary schools, 6 gymnasiums and 4 lyceums. It also hosts 1 municipal library.

The three bays (Palaskas, Aphrodites, Louviari) and various facilities (Hellenic Naval Academy, Zeas Marine, the cruise terminals of the port, the Hellenic Maritime Museum, the exhibition centre of Piraeus

Port Authority S.A. (PPA), Freattydos beach, as well as archaeological findings) constitute the main strengths of the district as they constitute a pole of attraction to both locals and visitors. Stations to the tramline, urban rail and future metro system are not located within this district, and that constitutes a weakness. There are no cycle routes located within this district and there is only one cycle shop, which could provide opportunity for development.

Regarding **human health and well-being**, within the A' City District, the two hospitals of Piraeus (Metaxa Cancer Hospital of Piraeus and Tzaneio Prefecture General Hospital of Piraeus) and two private clinics (In Vitro Fertilization Clinic Mitosis, Yagos General Clinic) are located.

Increased building density and limited in number and size green spaces have an impact on health and are identified as the main weaknesses. The presence of the sea and beaches contribute to recreation and human health thus they are considered as strengths.

Pertaining to **the ecological and environmental restoration**, the A' City District with approx. 14,722 m² total green space contains only one moderate size square 2,500 m² and a couple of moderate size pedestrian areas (2,200 - 4,000 m²) containing planting beds. Smaller size (≤ 500 m²) green spaces include squares, urban gardens and planting beds on roads and pedestrian areas.

B' City District

The B' City District (2,058,999 m²) constitutes Piraeus' city centre and contains the high street of Piraeus as well as the Piraeus Justice Court, Administrative Court of First Instance, Administrative Appeal Court, Magistrates' Court and County Court, the main theatres such as the Municipal Theatre, and Veakio theatre, the municipal gallery, 11 churches, and several archaeological findings located throughout the district. The city centre occupies nearly half of the surface area of the district; the remaining half is mainly residential with small local neighbourhood commercial areas. Only a small area along the north boundary is industrial, but not particularly obtrusive. Along the west coast are the terminals of the passenger port connecting Piraeus with other ports, Athens, the Airport, Corinth. Along the south coast there are two main marines (Zea and Microlimano), and Votsalakia beach.

Regarding **socio-cultural inclusiveness,** the B' City District hosts four child day care centres, 12 nurseries, 14 primary schools, 8 gymnasiums and 10 lyceums. It hosts also 1 municipal library, 10 playgrounds, and a main attraction (hill of Profitis Ilias, offering panoramic views of the Saronic golf).

Both the metro line and suburban railway system (proastiakos) terminate near the northwest boundary of the district. Bus lines constitute the main transport system and are distributed throughout most of the district's area. Works are underway to develop a tramline along the north boundary of the district. There are no cycle paths located within this district and there is only one cycle shop.

There are a few weaknesses, such as increased traffic during rush hours and a few abandoned industrial sites. Private ownership of the industrial sites impose a potential threat. The development of both the new tram and metro line are expected to mitigate the problem of increased traffic (identified also as a threat). Opportunities include the development of cycle routes that could be linked to the tramline, metro, urban and suburban railway and maritime system.

Regarding **human health and well-being**, District B' is confronted with the ubiquitous problem of having a limited number of green spaces, with an impact on health.

Pertaining to **the ecological and environmental restoration,** this is the "greenest" district with approximately 56,405 m² of green space, and the largest in size green spaces and main squares throughout Piraeus, ranging between 27,000 – 1,000 m². The largest in size green space (27,000 m²) is located on a hill with prominent views of the city, planted mainly with pine trees and containing archaeological ruins.

The B' City District also contains several moderate sized green spaces ranging between <1,000 m² located mainly in pedestrian areas comprised mainly of planting beds as well as islets along main roads. In commercial pedestrian areas, some of the planting beds seem to have been destroyed deliberately.

Along some commercial roads, the planting beds have been used as small pocket gardens encouraging social interaction. The B' City District contains the second largest in number trees growing >10 m as well the second largest in number trees found in tree avenues. Furthermore, it contains the largest area of turf (18,480 m²).

The main economic and labour market of Piraeus is located mainly in B' City District.

C' City District – Regeneration area

The C' City District is the smallest district area of the Municipality of Piraeus (1,770,164 m²) and is mainly residential with small local neighbourhood commercial areas. The east boundary runs along Kifissos river (ground level) and Kifissos highway (above).

Pertaining to **socio-cultural inclusiveness,** The C' City District hosts three child day care centres, 2 nurseries, 6 primary schools, 3 gymnasiums, 2 lyceums and 1 public vocational training school. Both stadiums (Karaiskaki and Peace and Friendship Stadium) have local, regional and national significance; there is also the Athina marine, 3 churches and 6 playgrounds.

The metro line and bus lines constitute the main transport system. Currently the metro line serves the district with one station and the bus lines are limited along the main roads. Work is underway to develop also a tram line. Currently there are no cycle routes located within the district and no cycle shops (shown in OpenStreetMap).

The main weakness identified within the district are the abandoned industrial sites. The current use of Kifissos river is mainly functional to avoid floods and provides opportunities for recreation and the development of a green network. The development of cycle routes also creates opportunities. The main threats identified include private ownership and potential soil contamination of industrial sites.

For the **human health and wellbeing component**, within the C' City District is located one private hospital (Metropolitan Hospital).

As far as **the ecological and environmental restoration** component goes, the C' City District possesses approx. 14,050 m² total green space and contains very few moderate size green spaces (1,200-4,500 m²) and many smaller in size (≤ 900 m²). The latter green spaces include squares, urban gardens, playgrounds, planting beds on roads and pedestrian areas and islets.

Limited **economic and labour market** elements are located in the south region of the C' City District (near the Peace and Friendship Stadium, Karaiskaki Stadium and marine). The north boundary runs along the National Highway connecting Piraeus with Athens is scheduled for regeneration where several industries are located such as Xropei (paint), Elais (olive oil), and Ion (chocholate).

D' City District

The D' City District (2,211,691 m²) is located on the main land and is mainly residential with small local neighbourhood commercial areas.

As concerns the **socio-cultural inclusiveness** component, the D' City District hosts four child day care centres, 13 nurseries, 13 primary schools, 3 gymnasiums, 5 lyceums, and 2 public vocational training schools. It also hosts the Child Protection Shelter "Kalos Poiimenas", 4 churches and 14 playgrounds.

The bus lines are limited along the main roads and constitute the main transport system. There are no cycle routes within the district, however there are two cycle shops (shown in OpenStreetMap). The suburban railway serves the district through "Lefka" station.

The relatively large area of abandoned industrial sites including the presence of the suburban railway track that dissects the district in two, constitute the main weaknesses. Both private ownership of the

industrial sites and potential soil contamination are identified as the main threats. The development of cycle routes creates opportunities to link with the sea and the stations to the urban rail and tramline located in the other districts (B' and C').

Pertaining to **human health and well-being**, District D' is also confronted with the problem of having limited open space amenities, with an impact on health. The district is land locked and does not benefit from the immediate proximity of beaches.

As far as **the ecological and environmental restoration** component goes, the D' City District is the second "greenest" district with approximately 31,215 m² of green space that includes several moderate sized green spaces ranging between 1,000-2,700 m² comprised mainly of parks and squares. The remaining smaller in size green spaces include urban gardens as well as planting beds located in pedestrian areas. At places the planting beds in the pedestrian areas have been subjected to interventions by people that have planted a variety of ornamental plants and also used them to provide shelter to animals mainly cats. The D' City District also contains the largest number of tall trees (298) with a height >10 m as well as the largest number of trees found growing in tree avenues (5,130).

For the **economic and labour market**, industrial areas characterised as not particularly obtrusive are located along the south boundary of the district (Mikras Asias and Piraios). The regeneration of former industrial sites provides opportunities for economic development. The schedules development of additional transport lines provides opportunities for further economic development and catering a larger number of peoples transport. Private ownership of former derelict sites is identified as the main threat.

E' City District – Regeneration area

The E' City District is the largest district area of the Municipality of Piraeus (2,769,769 m²). With the exception of the passenger port, located on the south boundary, the remaining district is located on the mainland. The facilities of the former Papastratos industry are located within the district and the area is scheduled for regeneration. The former Dilaveri Clay brick factory is also located within the district, which has been converted into a park where the main features of the industry such as the chimneys and clay brick machine Hoffman oven have been preserved as landmarks and some of the buildings have been allocated new use. The district is mainly residential with small local neighbourhood commercial areas. The district contains 7 churches and thirteen playground. The bus lines constitute the main transport system and they are distributed throughout the district. There are no cycle paths or cycle shops located within the district (shown in OpenStreetMap). The E' City District also possesses the only cemetery of Piraeus and is located within the boundaries of the Municipality of Drapetsona.

For **the socio-cultural inclusiveness component**, the E' City District hosts four child day care centres (1 infant - preschool and 3 preschool age >2.5 years), 15 nurseries (12 public that include 1 special nursery and 3 private), 11 primary schools (9 public that include 2 special and 5 reform schools and 2 private schools), 7 gymnasiums (all public that include 1 music and 1 night school), 8 lyceums (all public that include 1 music, 1 professional, and 1 night professional school), and 1 public vocational training school.

Regarding the ecological and environmental restoration aspect, the E' City District possesses 18,605 m² of green space comprised mainly of moderate sized parks and squares, ranging between 1,200-5,000 m². The cemetery of Piraeus although located outside the site boundaries of the Municipality of Piraeus, forms part of the E' City District and includes a moderate size green space (1,650 m²) adjacent to the children's section of graves. Smaller sized green spaces (<1,000 m²) include mainly urban gardens and planting beds located in pedestrian areas. At places the planting beds in the pedestrian areas have been subjected to interventions by people that have planted a variety of ornamental plants and also used them to provide shelter to animals mainly cats.

The **economic and labour market** concentration of activities is mainly localized near the passenger port. The few remaining industrial sites constitute the main weaknesses within the district. The scheduled for development former industrial sites create opportunities for regeneration. Private ownership of the industrial sites and potential soil contamination are identified as the main threats. The development

of cycle routes creates opportunities to link with the sea and the tramline and metro stations located in the B' City District.

ANNEX 2.3 – Additional Information for the FC Zenica

City of Zenica has developed its **Master Plan for period 2016-2036** according to the guidelines and in alignment with plans of higher governmental levels, detailing these rules and applying them to the city scale. This Master Plan has been adopted by the City Council and is yet to be adopted by Zenica-Doboj cantonal Council.

This document is an obligatory planning document, which guides usage, construction, spatial planning and protection of space and goods on entire territory of City of Zenica, reflecting all guidelines for territorial interventions in City of Zenica.

Zenica Master Plan is not only a land use plan but also a strategic guideline for local development, with several axes concerning the main focus expected for this territory. Territorial cohesion, social inclusion and sustainable development are to be promoted. Master plan also defines obligation for preparation of other development plans and detailed development plans. The Urban Plan for the urban area of the City of Zenica is yet to be updated, aligned with a Master Plan and adopted, since the existing plan originates from 1985.

Zenica Master Plan shows a list of the categories and territorial planning status of the Kamberovića's Urban Regeneration area**:**

All urban interventions must promote new landscapes, connect pre-existing urbanized areas, and promote the use and recovery of abandoned areas. Thirty years ago, this area was classified as a meadow, lacking infrastructure. Development of the area has started with the construction of outdoor sport fields and parking. Later on, other sports facilities have been built, along with a two hanging pedestrian bridges. These bridges connect Kamberovića field with the city center, an area populated by approx. 50, 000 citizens.

Productive and leisure green space areas:

Green space areas are part of the urban ecological structure, with important ecological roles or productive capacity, as well as relevant for recreational uses. All interventions must respect cultural heritage and landscape characteristics, and agricultural holdings must be preserved. These green areas are perceived as a "lung" of the city.

One of the regulations pertaining to the green areas such as the Urban Regeneration Area is that, for each removed tree, two new ones should be planted instead.

Protected green space / riparian areas:

Kamberovića field area is frequently flooded because the right side riverbank is not protected. Flooding presents a threat to the local population and further development of infrastructure, affects the structure of soil and produces direct effects of air pollution. Therefore, these green spaces are crucial for urban environmental quality, and must be protected for ecological and landscape reasons. Any interventions like buildings, destruction of vegetation and changes in soil topography are interdicted.

Social equipment area:

This category concerns public parcels, which may be converted to various kinds of social equipment: education, sports and culture.

Lastly, at a lower level than the Masterplan, municipal regulations foresee that before any intervention on-site, all pre-existing trees must be evaluated. Tree-cutting can only be done with previous municipal authorization.