WPT 1 Activity 1.1

Deliverable D.T1.1.5

Baseline study on the status quo of regional UGS governance and European good practices

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Contents

1 EXECUTIVE SUMMARY

The Urban Green Belts (UGB) project's main objective is to improve planning, management and decision-making capacities of the public sector in Functional Urban Areas (FUA) related to urban green spaces, thus creating sustainable UGS management systems. This will be achieved through establishing a systematic co-working between public bodies on all levels and relevant non-governmental stakeholders involving community groups into co-creation and maintenance processes, financial, organisational and human resource capacities related to UGS governance.

In order to reach the main project objectives, as a first step, a thorough baseline survey is being elaborated by the project partners, forming the basis for the development of Smart Models for integrated UGS management and roadmaps later in the project. The baseline study presents a synthesis of the results of the European level analysis and seven local assessments undertaken by local project partners. Though the overall scope of the local assessments covered functional urban areas (FUAs), the primary focus of the assessments in the majority of the cases was on the current situation of territorial units under public administration.

Policies on EU level, trends, practices

Urban green space management is a cross-cutting issue that is addressed by a range of policy fields. Most important EU policies can be associated with three broad areas, i.e. management of natural resources; sustainable urban development; and spatial development.

The general policy framework for the EU environment policy, the 7th Environmental Action Programme (EAP) among others aims to protect, conserve and enhance the Union's natural capital; and to make the cities of the EU more sustainable. The action programme promotes incorporating green infrastructure into plans and programmes related to energy and transport infrastructure.

The most fundamental EU level policy document in terms of relevance for urban green space governance is the EU-wide strategy on Green Infrastructure, officially titled, Green Infrastructure (GI) – Enhancing Europe's Natural Capital and adopted in 2013. The overall goal of this strategy is to ensure that the protection, restoration, creation and enhancement of green infrastructure become an integral part of spatial planning and territorial development whenever it offers a better alternative (or is complementary) to standard grey choices. In line with the strategy the Commission will promote green infrastructure in a range of relevant policy areas (including regional or cohesion, climate change and environmental policies, disaster risk management, health and consumer policies and the Common Agricultural Policy), and will develop technical guidance setting out how green infrastructure will be integrated into the policy implementation across relevant policy areas. It is also asserted in the strategy that the Commission will improve data and expertise to facilitate the deployment of green infrastructure; and explore innovative financing mechanisms to support investments in green infrastructure projects.

In 2011 the European Commission has adopted the 2020 Biodiversity Strategy with an overall objective to halt the loss of biodiversity and ecosystem services in the EU by 2020. In the context of urban green space governance the strategy stipulates that ‘by 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems’. The strategy sets a number of relevant aspects from the perspective of urban green space governance.

In the Roadmap to a Resource Efficient Europe it is highlighted that the Member States with the Commission will work towards the objectives of the Biodiversity Strategy by integrating the value of ecosystem services into policymaking. As regards land and soil the Roadmap sets a milestone, according to which by 2050 the rate of land take is on track with an aim to achieve no net land take.

In the proposals by the European Commission for the Cohesion Fund and the European Regional Development Fund (ERDF), biodiversity and green infrastructures are identified as one of the investment priorities.

The Toledo Declaration on Urban Development sets out the EU political commitment to applying integrated urban regeneration as the key tool for achieving the EU 2020 Strategy objectives. The policy document, as opposed to the limitless growth of cities or urban sprawl, promotes land recycling through urban regeneration, redevelopment or reuse of abandoned, derelict or unused areas. Furthermore, it strongly encourages the protection of nature, landscape, forestry, water resources around cities; the strengthening of their links with cities; and also renaturing of existing cities.

The European Spatial Development Perspective (ESDP) aims at protecting and developing urban green spaces and natural areas in cities. The document also emphasises the great importance of prudent management of urban ecosystems.

The Territorial Agenda of the European Union 2020 identifies territorial priorities that have direct relevance for urban green space governance, such as encouraging integrated development in cities; improving territorial connectivity for individuals, communities and enterprises; and managing and connecting ecological, landscape and cultural values of regions.

The study identifies and briefly discusses a number of trends that are associated with urban green space governance, including application of complex approaches; use of green spaces as outdoor community centers; conversion of derelict land into green space; increasing uptake of approaches aiming at participatory governance; re-naturing cities; establishment of business improvement districts; expansion of urban agriculture; development of green roofs and vertical gardens; use of digital solutions to support UGS governance; and activism, protest groups.

Chapter 3 of the study consists of a brief presentation of outstanding practices, initiatives and approaches targeting at urban green space governance from across Europe and also from project partners. Practices from across Europe are grouped into the following themes: complex approaches integrating UGS governance; participatory governance; community gardens; business involvement in management of green spaces; and policies on green roofs and green walls.

Synthesis of local assessments

Chapter 4 of the study contains an executive summary of partners’ local assessments, with a special focus on: key urban landscape characteristics; strategic documents of a specific nature; other relevant aspects (community gardening, green roofs and walls); use of GIS tools;

participatory planning; UGS governance; and difficulties, obstacles and challenges related to UGS development and management.

Under chapter 5 the key findings of the seven local assessment are synthesised with a specific focus on key characteristics of urban landscape, other specific aspects (community gardening, green roofs/walls), use of GIS tools, participatory planning, UGS governance, and difficulties, obstacles and challenges related to UGS development and management.

The public administrative territorial units, which were the starting point of the local assessments, slightly differ in size and administrative level. Hegyvidek and Prague 6 are self-governing districts within the larger municipalities of Budapest and Prague respectively and their larger conurbation. Padua, Maribor, Zadar and Krakow are municipalities, representing the main urban core in their functional areas. In contrast, the local assessment of Upper Salzach Valley was undertaken on the level of FUA.

In all seven partner areas there are a great diversity of green infrastructure – among and within partner areas. In each area, there is at least one urban green space type that stands out in terms of higher level of responsibility (national or regional) and significance. The area with the largest number of significant green space elements is Hegyvidek with its protected areas of nature. Zadar is the only partner area which stands out with its sea coast; in Padua, very significant urban green spaces are riverbanks, and surface waters. Upper Salzach Valley is characterized by its agricultural areas and areas under local protection; in Maribor the river Drava and protected areas are of particular importance. Prague 6 stands out with its Sarka Valley Nature Park, the largest park in Prague and also probably the most preserved one. Krakow has significant green elements including Błonia, a vast meadow directly adjacent to the historic centre of the city; the Kościuszko Mound; the Botanical Garden of the Jagiellonian University; and the Zoological Garden.

The assessments showed that on the city/municipal level the most significant types of green areas are parks, protected areas, green playgrounds and tree alleys followed by street green and green verge, neighborhood green and public institutional green space. Botanical/zoological gardens, wetlands, and bio swales are among the least significant types. Agricultural areas are of particular significance in Padua, and to a lesser extent also in Upper Salzach Valley. In line with the findings of the local assessments private gardens can be considered very significant in Hegyvidek and fairly significant in Maribor and Upper Salzach Valley.

There are numerous examples of community gardening schemes in the partners' public administrative territorial units and functional urban areas, which can serve as a good starting point to further develop participatory approaches, community involvement and UGS governance. The largest number of community gardens is in Padua (16). There are six community gardens in the city of Salzburg and five sites in Prague 6. In a group of cities (Maribor, Zadar, Krakow) community gardens are scarce, though related activities and also plans do exist. Though in Hegyvidek there is a relatively low number of community gardens (2), but on the other hand Budapest is one of the leading cities in this field in Europe.

While green roofs and walls are becoming an important element of green infrastructure in a growing number of European cities and towns, their development across UGB partners' areas are in initial stage despite their great potential. There are only some isolated examples of such initiatives, limited to certain institutions, buildings and walls in Krakow and Padua (and one planned in Zadar), and these are rather spontaneously planed, not related to any formal strategies or action plans. In Upper Salzach Valley green roofs are funded within the scope of a housing subsidy.

The assessments indicated that e-tools are in use in most project partners' public administrative territorial units by municipal authorities and their respective offices or departments. In 6 of 7 territorial units, there is georeferenced data available as polygons, lines or points on different types of urban green areas regarding their function: as protected areas, trees, parks, forests etc. In most cases, the use of GIS is an essential part of the daily work of the employees: it can provide support in decision-making about the urban development and management, in preparing development and regulation plans, analysis, monitoring, etc. The administrators use GIS for their daily work, for instance, for inspecting the building regulation, tree-cadastre, maps of public utilities. Most partners expect to upgrade GIS databases in near future.

The analysis showed that participatory approaches applied differ in intensity, success and techniques, but in general participatory planning practices are quite developed. We can distinguish between the involvement of citizens on wider, municipal/city/regional level (mostly for creating strategic documents) and the involvement of citizens on smaller, neighbourhood level, where citizens can express their views and opinions on different projects, especially about revitalizing and designing urban green spaces. On both levels, opinions of citizens are taken into consideration in most of the partners' areas. A wide range of participatory tools has been used in partners' areas: among the most common are workshops and public meetings, followed by surveys and internet platforms. Among less frequent methods used (but also successful), social media, laboratories, exhibitions, and cleaning actions can be highlighted. There are examples of participatory budgeting schemes implemented on the local level in Maribor, Prague 6 and Krakow.

A trend of integrated development already became evident in some partners' territorial units, where in UGS management, a very wide range of stakeholders of different profiles and from different fields is being involved. In Hegyvidék the Green Office of the Municipality was explicitly established with an aspiration for an intensive cooperation with different bodies and stakeholders, on the local and the regional and national level. A high level of internal and external cooperation between different bodies on both – horizontal and vertical level, has been established in Upper Salzach Valley, District of Prague 6, and Padua.

Project partners have highlighted a number of difficulties, obstacles and challenges regarding areas associated with UGS planning, development and maintenance. Governance and management related difficulties strongly stood out. These were followed by issues related to green space degradation, while public participation and communication, maintenance and lack of spatial data were problematic only in certain territorial units. Analysis shows that one of the greatest challenges within the UGB project will be to establish a smart model for UGS governance and management.

Main conclusions

The local assessments show that although e-tools are already in use in most project partners' public authorities and their respective offices or departments, there is a clear indication that the majority of the partners intend to upgrade GIS databases in near future, and plan to take into account a participatory approach in doing so.

The local assessment analysis revealed many successful participatory practices applied by partners which can be transferred together with the learnings from good practices from wider Europe. These can serve as a firm basis for better and more inclusive UGB governance and also for designing UGB smart models in later stages of the project.

The analysis confirms that the establishment of multi-stakeholder governance related practices is one of the most demanding issues concerning urban green spaces. The highest number of challenges in partners' areas is related to governance and management, mostly associated with inadequate horizontal and vertical cooperation. Though partners apply some promising practices, there is still plenty of room for improvement in terms of internal, vertical and cross-sectoral cooperation; applicable rules and procedures and coordination mechanisms; and innovative forms of collaboration.

2 INTRODUCTION

Urban Green Spaces (UGS) provide various environmental, social and economic benefits to cities and their population. UGS have a basic role in making residential and working environments more liveable places, improving environmental performance (e.g. filtering pollutants and CO_2 from the air) and climate resilience. The importance of urban green spaces for human health and well-being is increasingly recognised. Urban green spaces can bring about numerous benefits, including the alleviation of the impacts of climate change; better rain absorption; increasing biodiversity; stronger community life; contribution to traffic calming; positive psychological effects, green space can encourage feelings of security and can contribute to lower crime rates. The benefits of high quality green environments to physical health, mental and social well-being, and improved quality of life can be substantial.

However, because of the ongoing (sub)urbanisation processes, (semi-)natural environment and all types of green spaces are increasingly getting under pressure, which leads to fragmentation of ecosystem networks and biodiversity loss.

As green spaces and their thoughtful development and management enable us to tackle a series of harmful environmental impacts, climate change related risks, low quality of living environment, loss of community attachment, and social exclusion, there is a common demand for better functioning operational models for Urban Green Space governance.

The Urban Green Belts (UGB) project's main objective is to improve planning, management and decision-making capacities of the public sector in Functional Urban Areas (FUA) related to urban green spaces, thus creating sustainable UGS management systems. This will be achieved through establishing a systematic co-working between public bodies on all levels and relevant non-governmental stakeholders involving community groups into co-creation and maintenance processes, financial, organisational and human resource capacities related to UGS governance. As innovative solutions will be consciously developed, following the principles of replicability, knowledge transfer through (trans)national networks will enable authorities beyond the partnership to adapt the results as well.

2.1 Objectives and contents

In order to reach the main project objectives, as a first step, a thorough baseline survey is being elaborated by the project partners in the frame of Thematic Work Package 1. The structure of Thematic Work Package 1 is presented in *Figure 1*.

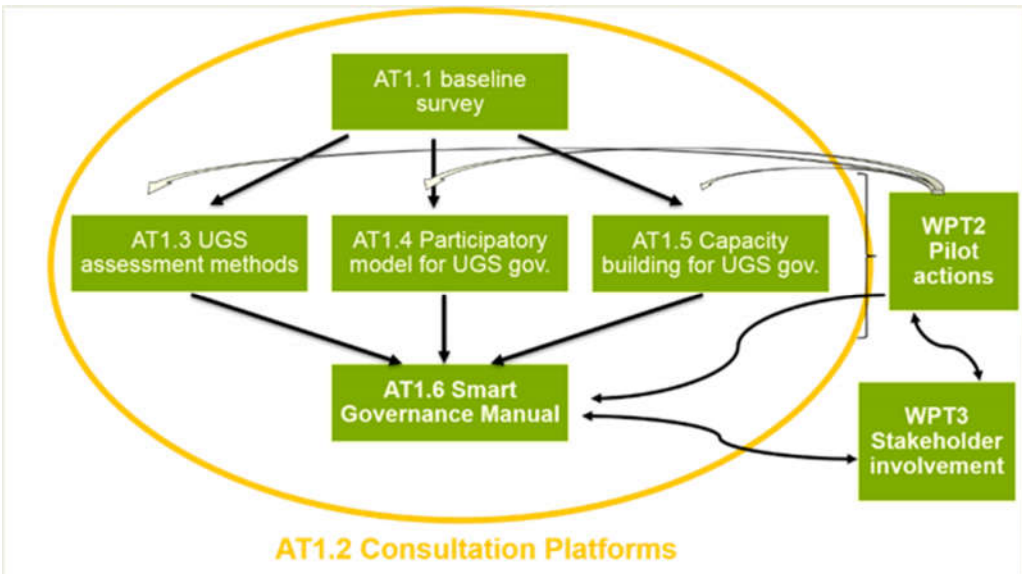

Figure 1 Structure of Thematic Work Package 1 of the UGB project

As a starting point, an EU policy (focusing on Central Europe), initiatives, and innovative practices related to urban governance infrastructure and participative processes in UGS were analysed (Deliverable D.T1.1 1). Furthermore, a common methodology for local assessment and analysis on UGS governance policies and practices were prepared and harmonised between all knowledge provider partners (Deliverable D.T1.1.2). On the basis of a harmonised methodology, project partners mapped and analysed the status quo, gaps and needs in UGS management of their respective Function Urban Area (Deliverable D.T1.1.3). Based on main findings of the local assessment, partners prepared summary of the local assessment in national language, serving as a basic input for the multi-stakeholder co-creation processes at the Stakeholder platforms (Deliverable D.T1.1.4). As the last step in Activity AT1.1, the **Baseline Study** (Deliverable T1.1.5) was prepared, which presents a synthesis of the results of the European level analysis and the seven local assessments done by local project partners, and the main result of the baseline survey. This forms the basis for the development of the Smart Models for integrated UGS management and the roadmaps later in the project. The flowchart of activities leading to the Baseline study is shown on *Figure 2*.

Flowchart of Activity A T1.1: Baseline survey on the status quo of UGS governance in the EU and in the partner regions

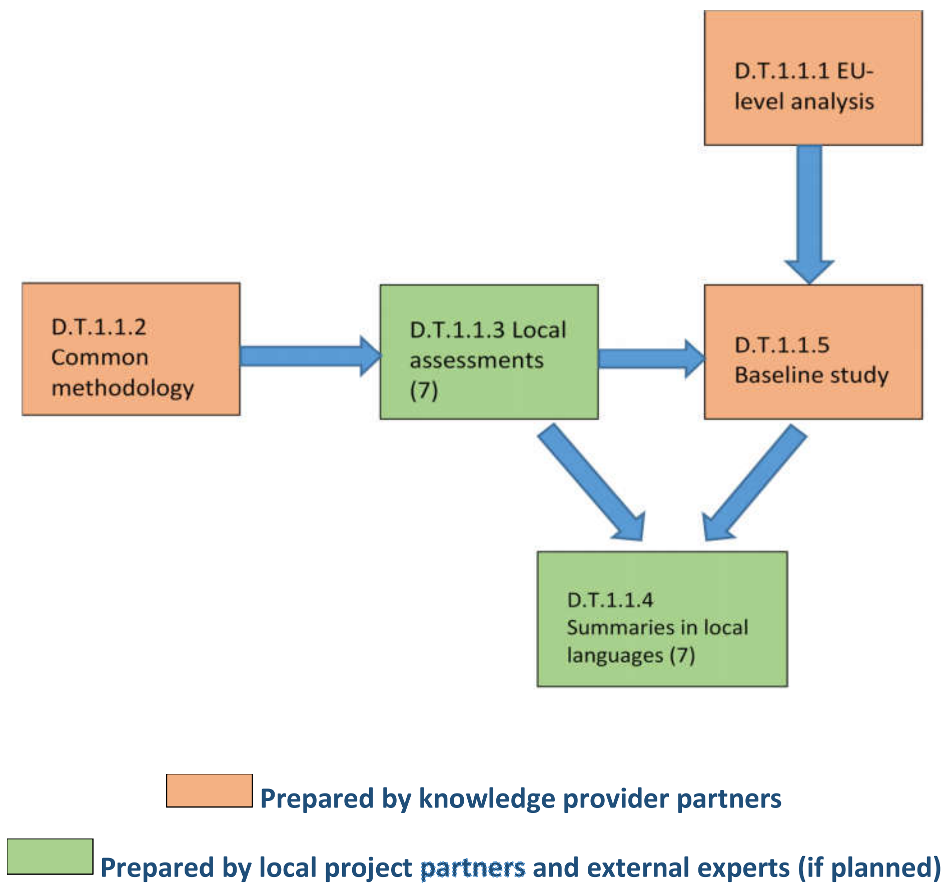

Figure 2 Flowchart of Activity A T1.1

It should be mentioned that the UGB project seeks solutions to be applied at FUA level. The starting point, however, was the study of current situation that project partners are facing as public administration territorial units involved in the Project activities, which in most of the cases are only a segment of the FUA. The reason behind this is that project partners represent Public Administration Territorial Units, while the FUA is defined on a different theoretical approach, namely, economic functions of the area.

Figure 3 shows a possible connection among Public Administration Territorial Units and Functional Urban Area. Moreover, local assessment included a separate section with an outlook to the pilot area. Pilot activities within the UGB project will be elaborated in pilot areas that cover different administrative units, while the focus of the pilot action will be always on smart and sustainable urban green governance solutions, which are relevant, transferable or replicable at FUA level in other European regions and territories.

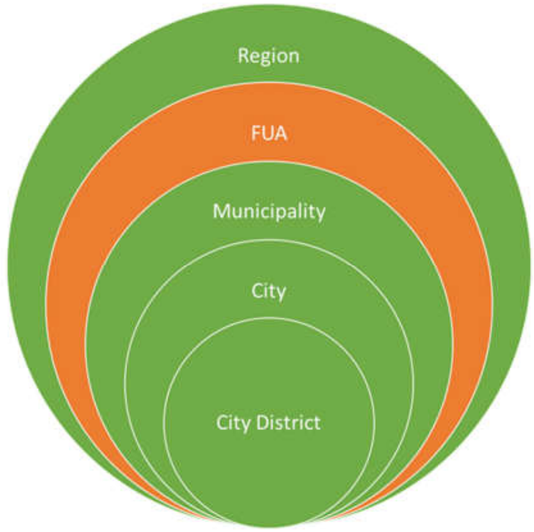

Figure 3 Relation between FUA and different public administration territorial units

The structure of baseline study is as follows: Chapter 2 presents the results of the analysis of governance of urban green spaces in Europe, focusing on EU policy background and trends in urban green space governance. Chapter 3 deals with most common and innovative practices for urban green space governance from across Europe and partners' areas. Chapter 4 features an executive summary of local assessment of seven territorial partners. In chapter 5, findings of the local assessments are analysed and synthesised, corresponding to key building blocks of the common methodology. The concluding Chapter 6 provides a view to smart models, which will be developed in later stages of the UGB project.

3 GOVERNANCE OF URBAN GREEN SPACES IN EUROPE

The overall objective of this chapter is to provide a firm basis for the elaboration of the Baseline Study through a comprehensive assessment of EU policies affecting urban green space governance and identification of the most relevant emerging trends that shape urban green governance in Europe.

3.1 An overview of the most relevant EU level policies

3.1.1 EU policy background

According to the European environment – state and outlook 2015 report (SOER)[1] since the 1970s a broad range of environment legislation has been put in place in Europe, implementing the most comprehensive modern standards in the world. The EU environmental acquis amounts to some 500 directives, regulations and decisions. This large body of environmental legislation has helped to address some of the most serious environmental concerns of citizens and businesses in the Union.

However, as it is stated in the 7th Environmental Action Programme (EAP)[2] 'many environmental trends in the Union continue to be a cause for concern, not least due to insufficient implementation of existing Union environment legislation'.

The EAP also states that '30 % of the Union's territory is highly fragmented, affecting the connectivity and health of ecosystems and their ability to provide services as well as viable habitats for species. Urban areas contribute most significantly to these fragmentation'.

Nearly 73% of the European population lives in cities, and this figure is projected to increase to 82% in 2050.[3] Urban development in Europe can intensify pressures on the environment and human health, among others through landscape fragmentation and air emissions from transport.

SOER 2015 highlights that 'Environmental impacts on human health and well-being are particularly pronounced in urban settings where multiple pressures coexist. This can affect large populations, including vulnerable groups, such as the very young and the elderly. Potential exacerbation of those impacts due to climate change points to a need for dedicated adaptation actions'.

Urbanisation leads to an increase in land take and soil sealing. SOER 2010[4] states that between 2000 and 2006 about 1000 km^2 of land was covered every year by artificial surfaces. *Figure 4* shows the share of sealed and artificial surfaces in EU Member States. Reusing of land (e.g. rehabilitating industrial sites or contaminated land) could effectively reduce land take, but only an insignificant share of the increase in artificial surfaces are linked to the recycling of already developed land in Europe. In line with a study on soil sealing[5] in several EU New Member

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[1] EEA, 2015, The European environment – state and outlook 2015 (SOER)
[2] Decision No 1386/2013/EU
[3] UN, 2011, Population distribution, urbanization, internal migration and development: an international perspective, United Nations Department of Economic and Social Affairs.
[4] EEA, 2010, The European environment — state and outlook 2010 (SOER)
[5] EC, 2011, Report on best practices for limiting soil sealing and mitigating its effects. Technical Report - 2011 – 050

States the index "artificial surface per capita" continued to increase between 2000 and 2006 due to major population losses.

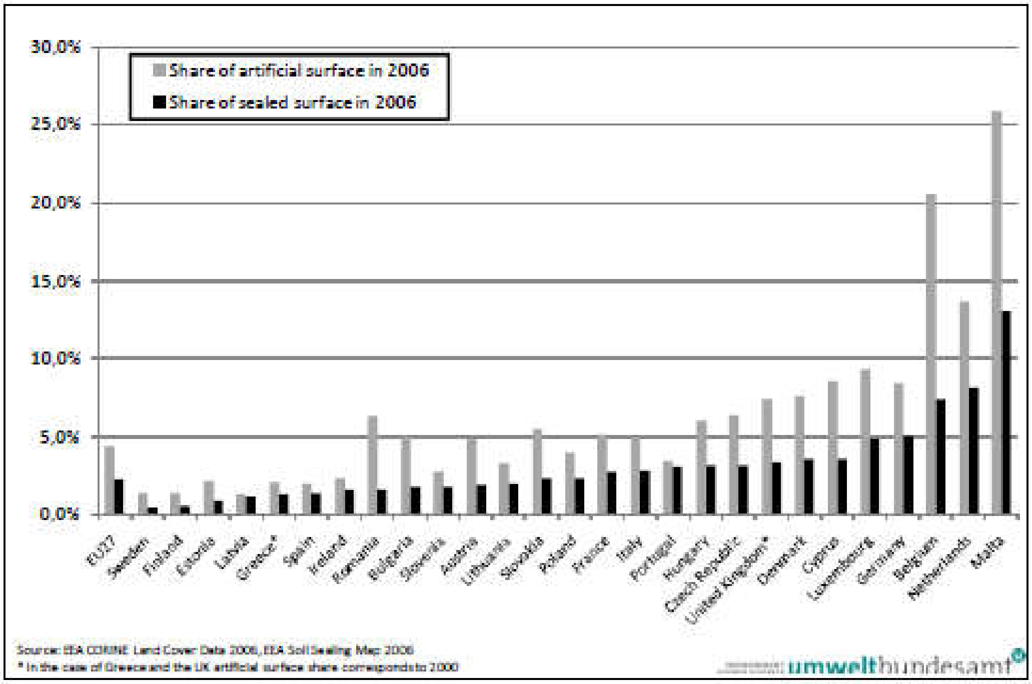

Figure 4 Share of sealed surfaces and artificial surfaces in the EU Member States.

Source: CORINE Land Cover layer 2006, EEA soil sealing map 2006, [3], [4]

In built-up cities, green spaces, from trees to large parks, contribute to the improvement of health and well-being of residents. Green infrastructure is widely regarded as a cost-effective and efficient tool to combat the impacts of the climate change, to increase disaster resilience and to deliver health-related benefits.

The proportion of urban green space differs among European cities (see *Figure 5*). In line with a report of EEA[6] the actual use of green spaces however, depends predominantly on their accessibility, quality, safety, and size. In addition, there are marked cultural and socio-demographic variations in the perception of green space and attitudes towards its use.

[6] EEA/JRC, 2013, Environment and human health, EEA Report No 5/2013, European Environment Agency and the European Commission's Joint Research Centre

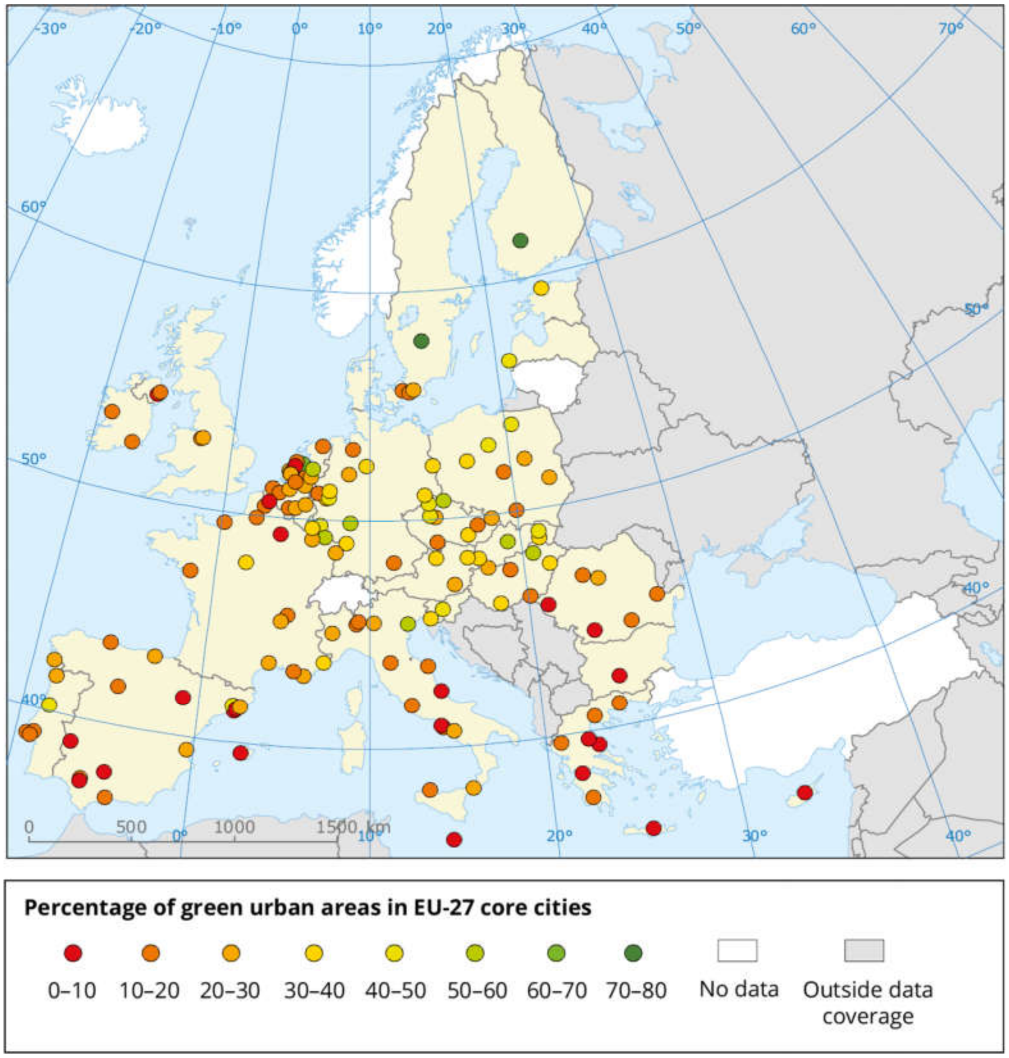

Figure 5 Share of green urban areas in EU-27 core cities

Note: Cities in their administrative borders (Eurostat, 2014i).
Source: EEA, 2010e.

Urban green space management is a cross-cutting issue that is addressed by a range of policy fields. Most important policies can be associated with three broad areas, i.e. management of natural resources; sustainable urban development; and spatial development.

3.1.2 Policies targeting management of natural resources

EU-wide strategy on Green Infrastructure

The most fundamental EU level policy document in terms of relevance for urban green space governance is the **EU-wide strategy on Green Infrastructure**, officially titled, *Green*

Infrastructure (GI) – Enhancing Europe's Natural Capital[7] and adopted in 2013. The EU *Biodiversity Strategy to 2020* and the *Roadmap to a Resource Efficient Europe* included commitments for the Commission to draw up a *Green Infrastructure Strategy*. The overall goal of this strategy is to ensure that the protection, restoration, creation and enhancement of green infrastructure become an integral part of spatial planning and territorial development whenever it offers a better alternative (or is complementary) to standard grey choices.

The policy document provides a definition for green infrastructure: a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, green infrastructure is present in rural and urban settings.

Green infrastructure solutions are particularly important in urban environments in which more than 60% of the EU population lives, as the features of green infrastructure contribute to health-related benefits such as clean air and better water quality; create a greater sense of community; help combating social exclusion and isolation; provide physical, psychological, emotional and socio-economic benefits; create opportunities to connect urban and rural areas and provide appealing places to live and work. It is also highlighted that urban food production and community gardens are efficient tools to educate school children and engage the interest of young people.

In line with the strategy the Commission will:

- promote green infrastructure in a range of relevant policy areas, including regional or cohesion, climate change and environmental policies, disaster risk management, health and consumer policies and the Common Agricultural Policy;
- develop technical guidance setting out how green infrastructure will be integrated into the policy implementation across relevant policy areas;
- increase awareness of green infrastructure among key stakeholder groups, promote best practice, and develop a dedicated IT platform for exchanging information;
- improve data and expertise to facilitate the deployment of green infrastructure; and
- explore innovative financing mechanisms to support investments in green infrastructure projects.

EU Biodiversity Strategy

In 2011 the European Commission has adopted the **2020 Biodiversity Strategy**,[8] (officially entitled, *Our life insurance, our natural capital: an EU biodiversity strategy to 2020*) with an overall objective to halt the loss of biodiversity and ecosystem services in the EU by 2020.

In the context of urban green space governance among the 6 targets of the strategy Target 2 is the most relevant, which stipulates that 'by 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and *restoring at least 15% of degraded ecosystems*'.

Each target of the strategy is broken down into a package of actions designed to respond to the specific challenge addressed by the target. From the perspective of urban green space governance Action 6 on 'Setting priorities to *restore and promote the use of green*

[7] COM(2013) 249 final
[8] COM(2011) 244 final

infrastructure' and Action 7 on 'Ensuring *no net loss of biodiversity and ecosystem services*' are the most relevant. Action 6 requires the Commission to develop a Green Infrastructure Strategy. In line with Action 7 the Commission will develop, in collaboration with the Member States, a methodology for assessing the impact of EU funded projects, plans and programmes on biodiversity; it will propose an initiative to ensure there is no net loss of ecosystems and their services (e.g. through compensation or offsetting schemes).

In terms of Geographic Information System (GIS) based methods and tools for urban green space and green infrastructure planning and assessment Action 5 under Target 2 has a direct relevance, calling Member States with the assistance of the European Commission to *map and assess the state of ecosystems and their services* in their national territory, to assess the economic value of such services, and to promote the integration of these values into accounting and reporting systems at EU and national level by 2020. In order to deliver Action 5 the MAES (Mapping and Assessment of Ecosystems and their Services) Working Group was established in 2012.

7th Environmental Action Programme

The **7th Environmental Action Programme** (EAP)[9] provides a general policy framework for the EU environment policy, setting out in a basic strategy and establishing priority objectives for 2020, in line with a clear long-term vision for 2050. The 7th EAP entered into force in January 2014.

Out of the nine priority objectives identified in the programme, two are directly related to urban green spaces:

- to protect, conserve and enhance the Union's natural capital;
- to make the cities of the European Union more sustainable.

The action programme promotes incorporating green infrastructure into plans and programmes related to energy and transport infrastructure. It underlines that 'action under the EU Biodiversity Strategy to restore at least 15% of degraded ecosystems in the Union and to expand the use of Green Infrastructure (a tool for providing ecological, economic and social benefits through natural solutions, incorporating green spaces, aquatic ecosystems and other physical features in terrestrial and marine areas) will help to overcome land fragmentation'.

Roadmap to a Resource Efficient Europe

The *Roadmap to a Resource Efficient Europe*,[10] adopted in January 2011, is one of the main building blocks of the Resource Efficiency Flagship of the Europe 2020 Strategy. The Roadmap sets out a framework for the design and implementation of future actions with a view to increase resource productivity and decouple economic growth from resource use and its environmental impact in Europe. Apart from actions it also includes milestones to be reached by 2020.

[9] Decision No 1386/2013/EU
[10] COM(2011) 571

The Roadmap emphasises that ensuring a long-term supply of essential ecosystem goods and services implies that nature capital needs to be properly valued. It also asserts that 'investing in natural capital – like green infrastructure – often brings higher returns than constructed or manufactured alternatives, with lower up-front costs'. The policy document focuses on a number of areas, such as ecosystem services, biodiversity, land and soils, which are closely linked to urban green spaces and green infrastructure.

In accordance with the Roadmap, the Commission will put forward proposals to foster investments in natural capital, to seize the full growth and innovation potential of green infrastructure and the 'restoration economy', through a Communication on Green Infrastructure, and a 'No Net Loss' initiative.

In the context of biodiversity, it is highlighted that the Member States, with the Commission, will work towards the objectives of the Biodiversity Strategy by integrating the value of ecosystem services into policymaking.

As regards land and soil the Roadmap sets a milestone, according to which by 2050 the rate of land take is on track with an aim to achieve no net land take. In line with this Member States are required:

- to better integrate direct and indirect land-use and its environmental impacts in their decision making and limit land take and soil sealing to the extent possible;
- to implement the actions needed for reducing erosion and increasing soil organic matter; and
- to set up an inventory of contaminated sites, and a schedule for remedial work.

Birds Directive

Urban green infrastructure is addressed indirectly by the **Birds Directive**[11] through Article 3, which stipulates that the preservation, maintenance and re-establishment of biotopes and habitats shall include, among others, the following measures:

- management of habitats in accordance with the ecological needs of habitats;
- re-establishment of destroyed biotopes;
- creation of biotopes.

The new EU Forest Strategy

In September 2013, the Commission adopted a new **EU Forest Strategy**.[12] The strategy provides a framework in response to the substantial societal and political changes that have affected forests over the last 15 years as well as to the generally growing demands on and threats to forests.

The strategy promotes the integration of green infrastructure into forestry planning and management with the aim to contribute to defragmentation and restoration of forests. In line with the policy document 'protection efforts should aim to maintain, enhance and restore forest ecosystems' resilience and multi-functionality as a core part of the EU's green infrastructure, providing key environmental services as well as raw materials'.

[11] Directive 2009/147/EC
[12] COM(2013) 659 final

Regional policy

In the proposals by the European Commission for the Cohesion Fund[13] and the European Regional Development Fund (ERDF),[14] biodiversity and green infrastructures are identified as one of the investment priorities.

EU Draught Policy

In 2007 the Commission presented a **Communication on Water Scarcity and Drought**,[15] titled 'Addressing the challenge of water scarcity and droughts in the European Union' that included a range of policy options to increase water efficiency and water savings based on an in-depth assessment of water scarcity and droughts in the European Union. In November 2012, a **Report on the Review of the European Water Scarcity and Droughts Policy**[16] was completed on the basis of follow-up reports, studies and other information available. The review highlights that green infrastructures solutions can play a very positive role in enhancing drought management in Europe.

EU policy on Soil Protection

The Commission adopted a **Soil Thematic Strategy**[17] in form of a Communication in 2006 with the overall objectives to prevent further soil degradation and to restore degraded soils. One of the key pillars of the strategy is the integration of soil protection in national and Community policies. In the context of urban green space management Member States are required to take appropriate measures to limit soil sealing by rehabilitating brownfield sites.

With an aim to support achieving the objectives of the Soil Thematic Strategy a report, titled ***Overview of best practices for limiting soil sealing or mitigating its effects in EU-27*** was produced for the European Commission by the Austrian Environment Agency in 2011. The document provides an overview of existing Member State policies to reduce and mitigate soil sealing, as well as detailed description of possible thematic measures targeting soil sealing mitigation (including binding sealing limits, green roofs, permeable surfaces, tax incentives, etc.).

EU Strategy on Adaptation

The **EU Adaptation Strategy**[18] was presented with an overall aim to contribute to a more climate-resilient Europe. It is highlighted in the document that among other policy initiatives, green infrastructure policy is expected to consider adaptation.

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[13] COM(2011) 614 final
[14] COM(2011) 614 final
[15] COM(2007) 414 final
[16] COM(2012) 672 final
[17] COM(2006) 231 final
[18] COM(2013) 216 final

3.1.3 Sustainable Urban Development

The Leipzig Charter on Sustainable European City

The *Leipzig Charter on Sustainable European City* (2007), signed by 27 European Ministers in charge of urban planning and urban development, contributes to the overall improvement of living conditions in urban areas of the EU. The charter outlined an ideal model for the European Sustainable City and laid the foundations for an integrated urban policy. With this strategic document the signatory countries have agreed on strategies and principles for sustainable urban development.

The *Reference Framework for Sustainable European Cities* (RFSC, 2008) is an online tool translating the goals of the Leipzig Charter into practice. The tool aims to provide support to key city actors for developing and implementing integrated plans and strategies for sustainable urban development, through a framework of 30 sustainable objectives linked to five dimensions (i.e. governance, economy, environment, and spatial and social perspectives). It encourages the dialogue and exchange of information within and among cities of Europe.

Toledo declaration

The Toledo Declaration on Urban Development (2010), adopted by the European Ministers in charge of urban planning and urban development, sets out the EU political commitment to applying *integrated urban regeneration* as the key tool for achieving the EU 2020 Strategy objectives.

The policy document, as opposed to the limitless growth of cities or urban sprawl, promotes land recycling through urban regeneration, redevelopment or reuse of abandoned, derelict or unused areas. Furthermore, it strongly encourages the protection of nature, landscape, forestry, water resources around cities; the strengthening of their links with cities (e.g. with green belts and/or corridors connected to and in continuity with the network of public parks and other type of urban green spaces); and also renaturing of existing cities.

The EU Urban Agenda

The *European Urban Agenda* is a joint effort by the European Commission, Member States and European Cities Networks to strengthen the recognition of the urban dimension by European and national policy actors. It contributes to the development of strong partnerships between cities, the European Commission and other stakeholders with an aim (1) to promote the involvement of cities in EU policy making and the development, of more ´urban friendly´ European legislation; (2) to ensure better access to and utilisation of European funds; and (3) to improve the European urban knowledge base and stimulate the sharing of good practices and cooperation between cities. One of the twelve priority themes of the Urban Agenda is ‘Sustainable use of land and Nature-Based solutions’.

EU Research and Innovation policy agenda on Nature-Based Solutions and Re-Naturing Cities

The *EU Research and Innovation policy agenda on Nature-Based Solutions and Re-Naturing Cities* aims to position the EU as a leader in 'innovating with nature' for more sustainable and resilient societies. The main goals of the policy agenda are to:

- strengthen the framework conditions for nature-based solutions at EU policy level;
- develop the European Research and Innovation Area (ERIA) for nature-based solutions;
- provide evidence and knowledge base for nature-based solutions;
- advance the development, uptake and upscale of innovative nature-based solutions;
- foster cooperation on nature-based solutions within the international research community.

3.1.4 Spatial development

European Spatial Development Perspective (ESDP)

The *European Spatial Development Perspective (ESDP)*[19] is a document approved by the Informal Council of Ministers of Spatial Planning of European Commission in Potsdam in 1999. The strategic aim of this policy document is to achieve a balanced and sustainable spatial development strategy. The ESDP provides a policy framework with common objectives and concepts and specific 60 policy options for the sectoral policies of the EU and the Member States that have spatial impacts, as well as for regional and local authorities.

The ESDP aims at protecting and developing urban green spaces and natural areas in cities. It asserts that 'through integration of urban functions in the city, all citizens should have appropriate access to basic services and facilities, open spaces, general and professional education and health care. This includes the conservation and development of small planted areas in urban green spaces, which have both ecological and important social functions'.

The document also emphasises the great importance of prudent management of urban ecosystems, highlighting that 'the expansion of natural areas in the cities, the conservation of biodiversity and common energy systems for households and industry are examples of measures which belong to a prudent environment policy'.

EU 2020 Territorial Agenda

The *Territorial Agenda of the European Union 2020* – towards an inclusive, smart and sustainable Europe of diverse regions – was agreed by the Ministers responsible for Spatial Planning and Territorial Development in May 2011. It supports the smart, inclusive and sustainable growth objectives put forward by the Europe 2020 Strategy providing territorial directions and priorities in this regard.

The document identifies six territorial priorities for the development of the European Union, three of which have direct relevance in the context of urban green space governance:

[19] EC, 1999, European Spatial Development Perspective (ESDP). Towards Balanced and Sustainable Development of the Territory of the European Union.

- Encouraging integrated development in cities, rural and specific regions;
- Improving territorial connectivity for individuals, communities and enterprises;
- Managing and connecting ecological, landscape and cultural values of regions.

3.1.5 International initiatives targeting sustainable urban development

European Green Capital Award, European Green Leaf

The *European Green Capital Award (EGCA)* is the result of an initiative taken by 15 European cities and the Association of Estonian cities in 2006 in Tallinn, Estonia. In 2008, the initiative was taken up by the European Commission. The first award was given to Stockholm for the year 2010.

The goal of the initiative is to recognise cities that are leading the way in environmentally friendly urban living, to provide a role model to inspire other cities, and to promote the sharing examples of good practices.

Cities in EU Member States, EU Candidate Countries, Iceland, Liechtenstein, Norway and Switzerland with more than 100,000 inhabitants are eligible for European Green Capital award.

Applications are assessed on 12 indicators: local contribution to global climate change, transport, green urban areas, noise, waste production and management, nature and biodiversity, air, water consumption, waste water treatment, eco-innovation and sustainable employment, environmental management of the local authority, and energy performance.

Following the success of the European Green Capital Award the European Commission has launched a new pilot *European Green Leaf (EGL)* initiative in 2015.The European Green Leaf is aiming at cities, with between 20,000 and 100,000 inhabitants, that are committed to better environmental outcomes and are making efforts to generate green growth and new jobs.

The European Green Cities Network

The *European Green Cities Network (EGCN)* is a network of cities, organisations and companies focusing on contributing to sustainable development in Europe. It aims to provide a forum for dissemination of sustainable urban housing initiatives.

The network was established in 1996 as part of the EU Thermie project European Green Cities. It seeks to facilitate interaction between innovation projects, provides consultancy and promotes knowledge exchange, benchmarking and transferring good practice examples. The EGCN is comprised of members from 14 European countries. The network and is managed by EGC Aps with offices in Aarhus and Copenhagen, Denmark.

WHO European Healthy Cities Network

The *WHO European Healthy Cities Network* consists of cities around the WHO European Region that are committed to health and sustainable development. The network includes nearly a 100 cities and towns from 30 countries. A city can join the network based on criteria that are renewed every five years. Each five-year phase focuses on priority themes and is launched with a political declaration and a set of strategic goals. The overarching goal of the current Phase

VI (2014–2018) is implementing Health 2020 at the local level. Healthy Cities is a global movement, with networks established in all six WHO regions.

3.2 Trends in urban green space governance

3.2.1 Application of complex approaches

There is an increasing number of examples across Europe where urban green space governance is an integrated element of a wider, complex urban development design. In such comprehensive approaches, green space management can be linked to other fields relevant for sustainability, i.e. renewable energy, new traffic solutions and circular economy. In certain cases, UGS development and management is an organic part of a targeted climate adaptation policy tackling also mobility and housing issues.

In case of even broader holistic systems, UGS governance can be addressed together with a wide range of other areas, such as business, social cohesion, transport systems, housing, energy solutions, education, culture, health and environment. In these cases UGS management is part of an integrated urban policy or an integrated urban regeneration policy.

3.2.2 Green spaces as outdoor community centers

It is increasingly recognised that green spaces are fulfilling important social and/or cultural roles: parks, for example, historically offer a meeting place for locals or visitors, they provide a platform for the performance of a range of cultural and social activities and they are often a site for cultural arte-facts. Parks are more and more regarded as outdoor community centers, specific spaces by which quality of life can be effectively improved. When properly designed and cared for, public green spaces bring communities together, provide meeting places and foster social ties of a kind that have been disappearing in many urban areas. These spaces shape the cultural identity of an area, are part of its unique character and provide a sense of place for local communities. In a growing number of cities urban design considers contributions of green spaces to enhanced social interactions. In Copenhagen for instance where an area was closed for car traffic in 1962, in just a few decades, a culture of public political gatherings developed and outdoor cafes emerged.

3.2.3 Derelict land converted into green space

Various examples of initiatives aimed at mostly temporary greening of derelict land by municipalities or citizen groups can be found across Europe. There are examples of green space initiatives regarding derelict land in Berlin, Malmö, Utrecht, Linz, Ljubljana and Edinburgh. Interventions at brownfields can convert a problem into an opportunity enhancing urban sustainability and quality of life through the reuse of usually environmentally, economically, and socially degraded urban sites. In certain cases the local community is actively involved by the local government in the redevelopment of abandoned spaces. Municipal government, local groups, businesses can join forces to transform a dormant, overgrown construction pits into a community based garden.

3.2.4 Increasing uptake of approaches aiming at participatory governance

As green spaces are becoming lively platforms of community building. An emerging number of grassroots initiatives (e.g. urban gardening) indicate the growing demand for community participation in the management of urban green spaces and in the design and delivery of the related policies. The various instruments aiming at participatory governance such as participatory planning and participatory budgeting are relatively modern-day governance tools. The implementation of these tools in recent times demonstrates that collaborative forms of governance, where there is a continued interaction between government- and non-government actors operating across administrative and spatial scale levels, could be an important aspect of the 'shift from government to governance' (Arts et al. 2009, Buizer et al. 2011).

3.2.5 Re-naturing cities

There is a growing recognition and awareness that nature can help provide viable solutions when natural ecosystems and the services they provide are used and deployed in a smart, engineered way. These nature-based solutions can provide sustainable, cost-effective, multi-purpose and flexible alternatives for various objectives. As opposed to working against nature, working with it can pave the way towards a greener and more resilient economy in which resources are used more efficiently. Nature-based solutions for sustainable urbanisation rely predominantly on natural areas and features in and around cities to perform essential ecosystem services.

3.2.6 Business Improvement Districts

Business Improvement Districts are fast becoming popular globally – there are thousands throughout the world, including 1400 in the US and growing numbers in Europe, South Africa and Canada. A business improvement district (BID) is an independent, business-owned and led company, which seeks to improve a defined location for commercial activity. Within this location businesses are required to pay an additional tax or levy in order to fund projects within the district's boundaries. The BID funded primarily through this levy can also draw on other public and private funding streams. The services of the BID complement those provided by the local authority and others. These districts typically fund services which are perceived by some businesses as being inadequately performed by the government with its existing tax revenues, such as, among others, urban green space management.

3.2.7 Expansion of urban agriculture

A trend that is partially related to the increased focus on, and use of, derelict land for green space development in cities, is the emergence of urban agriculture (McClintock 2010). Urban agriculture encompasses a range of activities, including allotment gardening, urban orchards and urban vineyards. It is often performed on derelict land, for example by using raised beds. Food production is often priority objective of these different types of greening activities. The activity can have a temporary character, but it can also be part of centrally planned 'green infrastructure'. This trend can in many cases be strongly linked to long traditions of urban gardening that many cities have. Guerrilla gardening is a specific form of urban gardening, when gardeners do not have legal rights to utilise the land (an abandoned site, an area that is not being cared for or private property). A number of guerrilla gardening initiatives appeared from the mid-1970s following the hippie movement in the USA and the UK. Later on it has spread elsewhere in Europe, e.g. in Denmark, Belgium and Germany.

3.2.8 Development of green roofs and vertical gardens

A specific type of urban land use is greening rooftops and facades of buildings which is a creative way of combining development with increasing urban green space. Green roof is a roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. Vertical gardens are one of the latest trends. Recently, vertical gardening has moved from small-scale venues to become an integral facet of some major architectural projects in construction. Green wall or vertical gardens can simply be walls covered with climbing plants, while others types represent a modular system that can grow within the structures. A number of European cities are promoting green roofs and green walls through supportive legislation, subsidies and demonstration sites.

3.2.9 Use of digital solutions to support UGS governance

In a growing number of cities e-tools are used to improve the effectiveness of UGS governance through a contribution to evidence-based decisions, or through the provision of detailed and robust data. E-tools are used regularly and intensively in the form of an interactive map by a large number of cities in order to gather information about different types of urban spaces. GIS-tools can be used among others in the mapping green spaces, as well as to involve citizens in the mapping green spaces, or to evaluate the state of green space elements. E-tools based governance also shows up to create accessibility to knowledge and raise awareness amongst citizens. E-tools can also be used to provide less costly forms of participatory techniques.

3.2.10 Activism, protest groups

The emergence of participatory forms of governance has not led to the disappearance of activism. Removing public spaces seems to be a factor in recent political unrest, and these spaces can foster protest communities and encourage democratic involvement. The protests at Gezi Park in Istanbul are examples of such actions. The wave of unrest that developed in Turkey in early 2013 began as a result of the government decisions to remove and develop on top of public parks, particularly centered on Gezi Park in Istanbul. Here the green space became a place for an evolving unique and empowered community, much like at Tahrir Square in Egypt or Zucotti Park in New York acting as the centre of the global Occupy movement.

4 PRACTICES

This chapter consists of a brief presentation of outstanding practices, initiatives and approaches targeting at urban green space governance from across Europe and project partners.

4.1 Practices for urban green space governance from across Europe

4.1.1 Complex approaches integrating UGS governance

Stockholm the Walkable City

The Walkable City Stockholm City Plan adopted in March 2010 intends to address the future needs of a city with a steadily growing population focusing on quality of life and sustainable development. The overall aim of the City Plan is to establish a walkable city of interconnected neighbouring districts. The idea of walkability is centralized around communal health.

Rather than a traditional land use plan the City Plan functions more as a complex, strategic navigation tool. It paves the way for an increase in density in the expanded and strengthened central Stockholm and in nine strategic nodes in the outer suburbs where a more concentrated cityscape is desirable. Apart from the focus on the historical centre and the strategic nodes, the City Plan also aims to connect the different parts of the city by strategic links through the development of new public transport, more cohesive urban environments and more attractive parks and green spaces.

The strategic document identifies nine focus areas which are associated among others with business, education, social cohesion, green spaces, transport system, housing, energy solutions, culture, health and environment. Specific planning aims were linked to each focus area, laying down the foundations for four development strategies that will lead to a more integrated and better connected Stockholm.

One of the nine focus areas identified by the City Plan is 'Sport, recreation and attractive green spaces'. The planning aims linked to this focus area are to ensure good access to attractive parks and green spaces; and to protect and improve the city's ecological infrastructure. In line with the City Plan the 'starting points for planning include incorporating parks and green spaces as elements in the urban environment and taking into account the fact that the attractiveness of green spaces depends more on the amenities they provide, their design and their accessibility than on their size'. The focus is on creating more attractive meeting places in parks and green spaces.

The plan builds on a park programme that was developed by the city with an aim to ensure good access to parks and nature, and a rich culture of parks and landscapes. The programme was based on the belief that investing in parks and green spaces as the city becomes more densely populated can make the urban environment better. The majority of the city's most popular green spaces have been given long-term protection as nature and culture reserves and a National City Park.

In recent years, the city has developed a sociotope map that is based on data showing how the people of Stockholm use and value parks and green. The data and the map provide valuable information for increasing the quality of the city's green spaces. In addition, ecological analysis tools are used to improve the knowledge base on the ecological assets of Stockholm. Through these, the city can effectively improve the conditions for abundant flora and fauna through targeted initiatives.

Malmö, Eco-town

Augustenborg district in Malmö has been transformed into an attractive and unique eco-town with a modern ecological approach, large areas of green spaces and its own production of renewable energy. The aim the development activities was to create an ecologically, socially and economically more sustainable area than it had been previously. The activities that led to the Ekostaden Augustenborg project started in 1998. Ekostaden Augustenborg represents the largest individual investment in Europe in an ecological switch for an existing residential area. By now, as a result of all the actions undertaken the area now has a unique system for ecological stormwater management, a system using food waste for biogas production, new traffic solutions, and extensive green roof facilities and green spaces. In addition, the project also introduced sustainable construction initiatives, and small allotments to grow food, and play areas for children have been created between housing blocks. During the project parks and other types of green spaces were rebuilt. The project was run jointly by MKB, a municipal housing company and a number of municipal administrations. The residents in the area had an instrumental role in the project activities.

The first Botanical Roof Garden of the world was opened in Augustenborg in 2001, which functions as a demonstration and research facility covering more than 9000 m^2. The roof garden provides a good example for the use of lightweight vegetation layers on roofs in Scandinavia. Apart from the roof garden there are around 30 additional other green roofs in the area. The staff at the Roof Garden takes care of all of them. Due to the green roofs rainwater run-off is decreased by 50%, and this means a major load off the stormwater system in Augustenborg. The Service Department in Malmö, MKB, the Swedish Department of the Environment and the LIFE fund of the EU provided support for the establishment of the roof garden. Guided tours are organised regularly for the public and for specialists and the garden hosts a large number of international groups every year.

A complex open storm water system with water canals and ponds, which could take care of the large amounts of stormwater in the area, was developed together by MKB, the Water Department of the Municipality of Malmö and landscape designers. Natural processes provided the idea for the development of the system. The eco-town now has two kilometres of so called drop-channels, ten ponds and a number of open stormwater channels. The system developed effectively prevents floods and due to better access to water biodiversity has increased in the region.

Madrid's greening plan aiming adaptation to climate change

Madrid announced ambitious plans in January 2016 to green the city. The overarching goal of the complex plan is to help the city to adapt to the challenges of climate change: rising summer temperatures, more severe drought, and heavier floods. According to projections by 2050 there will be 20% more unusually hot days in the summer in the Spanish capital. A study of Arup indicates that by 2050 there could be a 25% drop in the city's accumulated rainfall. The idea for the plans were partly triggered by the results of pilot green roof tests undertaken in some Madrid neighbourhoods. The tests showed that temperatures went down more than four degrees in the pilot neighbourhoods on account of the positive effects of the green roofs.

In line with this complex plan a broad range of actions will be undertaken to cover the city with greenery. City parks with be expanded and restored, 22 vacant lots will be turned into urban gardens. The size of a linear park running along the Manzanares River that passes through Madrid will be doubled, and the river banks will be thickly planted with trees. Paved squares will become parks that will allow better rain absorption. To contribute to cooling and better insulation special funding will be made available for green roofs and green facades. A new urban gardening school is planned to be established.

The greening actions will be closely linked to measures that aim at banning polluting cars from the city center. As the city starts to ban cars from central streets, the Department of the Environment is considering turning some of those streets into linear, tree-filled parks.

The new greening proposal will have positive effects beyond reducing temperatures and avoiding flash floods. It will also contribute to the overall improvement of the quality of life of local residents, to strengthening local communities, to noise abatement and to the creation of ecological corridors within the city.

Green Belt in Vitoria-Gasteiz

Vitoria-Gasteiz, the capital of the Basque Country in Spain, won the European Green Capital award in 2012. With 45m2 of open space per person, the city is one of the greenest cities in Europe. The entire population lives within 300m of an open green space in the Basque city. Public gardens make up 32.67% of the urban area, covering 1091 hectares. The high proportion of green spaces is part of a long-term systemic design that aims to link large suburban parks, forests, wetlands and small urban gardens. The city has made significant progress in recovering biodiversity, restoring many of the city’s damaged ecological and landscape areas through the implementation of a comprehensive urban plan including the Green Belt project, the creation of the Bosques de Europa Botanical Gardens and the opening of the Ecological Gardens for citizens.

Many of the hundreds of green spaces in Vitoria-Gasteiz take the form of smallish urban gardens, open 24 hours a day. Residents are actively engaged are encouraged by the municipality to take part in the organic gardening and community gardens initiatives. On top of public gardens in the urban area, Vitoria-Gasteiz municipality has 11331 hectares of forest, the majority of which is publicly owned. Two of these wooded areas are part of the Natura 2000 network. Citizens have access to a wide range of natural habitats, from meadows and wetlands to beech forests and mountains.

A Green Belt surrounds the city centre, forming a ring of five large suburban parks with recreational areas. These parks are linked with a network of 33km of pedestrian pathways and 90km of cycle routes. The Green Belt was partially recovered from degraded areas, such as gravel pits, burnt ground and drained wetlands. Their restoration, which started in the mid-1990s, is still ongoing. This belt links the city and the countryside. Two of its suburban, restored wetland areas have been recognised for their significant natural value with international protection status. They function also as efficient water retention and purification areas. On top of this the green belt plays a essential role in cooling the urban climate in summer.

4.1.2 *Participatory governance*

Participatory budgeting in Lisbon

Lisbon has launched a participatory budgeting initiative in 2008 with an aim to include people in decisions about the allocation of municipal funding for projects providing social and environmental benefits to the city. Participatory budgeting was first developed in Brazil in the 1980s, where the process was primarily used to promote social inclusion.

In Lisbon a budget of EUR 2.5 million was made available for the scheme during its first phase. The initiative allows citizens to propose projects and then to vote on which projects they favour. The municipality is selecting a shortlist of projects for voting using feasibility criteria. The first criteria for acceptance is the feasibility of the projects. Proposals with the greatest number of public votes are funded. Voting process is undertaken through both on-line and off line methods.

The programme has had a major impact on urban green spaces in Lisbon; it has led among others to creation of parks and gardens that function as a significant ecological corridor linking Monsanto Forest Park with Eduardo VII Park. Under the program in year 2013 a record number of votes (over 7500) ever for a single project were awarded to the restoration of Lisbon Botanic Garden. The green space projects were not predetermined aspects of participatory budgets, but citizens chose to vote for such activities above others. The high selection of greenspace projects suggests that green space is a particular priority to citizens.

Lisbon was the first European city to try participatory budgeting at such a scale. More than 65000 votes were cast between 2008 and 2012. The driver for launching the programme was that the Socialist leader of the city council sought legitimacy for public spending through involving citizens in new ways of governing the city.

The fact that in some cases existing formalised urban development plans for an area were changed in response to some of the ideas and project proposals coming through from citizens' suggestions as part of the participatory process, shows that the program has been effective and successful. The system for gathering proposals, voting and engagement evolved over time as lessons were learnt through implementation.

Maintenance contracts in Utrecht

In the 1980s maintenance contracts were introduced by Utrecht municipality, which allowed citizens to maintain a particular part of public green space in its present shape. In this new system changing needs and wishes of the residents became integrated in the contracts, and even in municipal procedures. As a consequence the design and maintenance of green space was increasingly adapted to the residents' wishes.

The municipal Department of Public Works had several reasons for developing this contract model. Firstly, the economic recession in the 1980s forced the Utrecht authorities to cut spending on the maintenance of public green space. Secondly, the municipality also wanted to avoid the use of herbicides and to rely instead on costlier manual weeding. Thirdly, at that time the idea of engaging citizens in policy and management became popular in the Netherlands.

At the same time several groups of local residents were developing proposals for public green space elements they would like to manage themselves, although this need conflicted with municipal bureaucracy.

Against this backdrop, the idea was raised to let citizens maintain elements of public green space themselves. According to the concept if local residents wanted to preserve the more expensive, labour-intensive green space elements in their neighbourhood, they would have to maintain them themselves. After the initiative had been launched the municipal authorities became much more supportive of citizens' initiatives and there is room for discussion and negotiation.

A wide range of objects are being managed, by residents including roadside verges, conservation areas, a monastery garden, a common backyard and even 'non-green' public areas like playgrounds. By now the number of contracts has increased to approximately 600 for the eight older districts of Utrecht.

Neighbourhood Planning in Bristol

Bristol is one of the few English cities developing urban neighbourhood planning. The two Neighbourhood Planning Areas located in the centre of Bristol, the Old Market Quarter and Redcliffe Way are at different stages of the participatory planning process.

Neighbourhood Planning is a national level planning policy introduced through the Localism Act 2011 in England. It provides a formally prescribed process to include the views of citizens in producing a strategic vision for a designated Neighbourhood Planning Area (NPA). Political initiatives in Britain aiming at decentralisation and localism have led to the development of the Localism Act 2010.

Old Market is a historic area, where local residents are interested in developing green spaces as part of urban regeneration. In contrast, Redcliffe Way is a modern redeveloped zone with few residents and a large professional working population commuting into the area daily. The focus in Redcliffe Way is improving the liveability of infrastructure, including green infrastructure such as green roofs and vertical planting.

The neighbourhood planning process did not deliver direct projects, instead provided strategic guidance. The process was undertaken by the municipality to improve community representation in municipal strategic planning policy. According to the scheme community consensus was required for final approval of Neighbourhood Plan.

Greenspace planning was not a predetermined aspect of Neighbourhood Plans, but a reflection of citizen priorities for their local living and working environment. In Bristol Old Market Quarter residents identified green areas of community importance and areas they felt should be greened.

A variety of different engagement tools, including different kinds of deliberative platforms, group meetings, participatory re-search exercises and consultation devices were used in Bristol. Funding was made available by the national government to support the community level participatory process.

4.1.4 *Community gardens*

Granton Community Gardeners in Edinburgh

Granton Community Gardeners is a grassroots community gardening initiative in an area of deprivation in north Edinburgh. It was started in 2010 by local people living in flats without a garden, and was born out of a desire of community members to grow vegetables near home. The initiative is operating largely independently of the municipality.

There are no individual plots, the gardens are shared. Everyone works together and then the produce is shared. Each garden site has a responsible person to oversee the garden and to ensure that it is adequately cared for. Each of these gardens has been created on relatively small plots that had previously been maintained as grassland.

Over the years, the group has gradually expanded activities from managing a single garden to nearly ten gardens at present. Occasionally community meals are organised by the group, with an aim to bring people together to meet and eat. On top of the community meals, the Gardeners Café was launched in 2014. Every two weeks the Café provides meals in the local community centre, produced from vegetables and fruit grown locally, and also products from food donations. In addition, children's gardening clubs are run in partnership with the local community centre and library.

The municipality has provided a letter of comfort indicating that they agree with community management of these green spaces for gardening. The land used by the gardening community is owned by the local authority, which allow the group to use it as long as it is kept in good condition. This provides financial benefits to local authorities as grass-cutting costs are reduced.

Community gardens in Budapest

Currently there are around 30-40 community gardens operated in Budapest that came into existence owing to bottom-up initiatives and in some cases the support of multinational companies. Recently an Evening of Community Gardens was organised in the Hungarian capital.

Community gardens in Budapest are mostly allotment gardens offering on average 30 to 40 plots, for which there is such a high demand that applicants need to take into account long waiting lists. The majority of the gardens are established in suburban housing estates due to high real estate prices in the inner city.

The Centre of Contemporary Architecture has been dealing with the development of community gardens since 2010, with the overall objectives to contribute to community building and to revitalise derelict areas. The first community gardens started to open in 2012 in the city. Every community garden in Budapest is driven by a strong initiative of local citizens, the members of which seek the support of local authorities or private companies. Community gardens are endorsed by the 2030 Long-term Development Strategy of Budapest. Gardens are typically developed on construction sites that were abandoned as a result of the global economic crisis.

One of the largest allotment gardens in Budapest, the Kerthatár Community Garden, covers an area of 2.600 m^2. It was developed by the Centre of Contemporary Architecture on an unused area offered by Magyar Telekom, a telecommunication company. The garden includes 100 plots of a size of 8 m^2 and also an educational plot for students.

4.1.5 Business involvement in management of green spaces

Better Bankside: business-led green space management in London

Better Bankside is a non-profit Business Improvement District (BID) scheme established in 2005, covering the area between Blackfriars and London Bridges, and south to Southwark Street in the Bankside district of London. BIDs are independent, business-owned and led companies, which seek to improve a given location for commercial activity. Better Bankside is run by its members, more than 620 companies operating in the BID area, which pay an annual levy.

The legislation allowing the creation of Business Improvement Districts was approved in UK by the parliament in September 2004. Better Bankside was one of the first BIDs to be established in the UK, approved in a ballot held in 2005. Later on Better Bankside has been approved in two subsequent ballots held in 2010 and 2014. Businesses that fell within the Business Improvement District area and for which total rateable values of their business premises reach a certain threshold (GBP 17,500) are eligible for voting. Based on the approvals, the BID is funded by a compulsory levy on all eligible businesses within the boundaries it has set. Levy income is supplemented by a range of non-levy sources (including voluntary subscriptions from non-levy paying businesses, voluntary contributions to corporate social responsibility, and grants from various sources).

The services of Better Bankside are additional to those provided by the local authority and other actors. Better Bankside has a core programme which includes cleaning, greening and safety.

Launched in 2007, Bankside Urban Forest is a long-term partnership project run under the Better Bankside initiative, which aims to improve and regenerate the network of public spaces including streets, pavements, squares and parks in the Bankside area.

The strategy introduces elements associated with green infrastructure and resilience of the city, but it also has strong social and economic aspects. The project is not literally aiming at turning the area into a forest, even though it does create opportunities for greening, using trees, planted walls, and other means.

The project encourages investment in streets and other public spaces; promotes greater exploration, footfall and cycling across the area; and helps to improve the local connections between green spaces, amenities and where people live and work. Bankside Urban Forest intends to make connections between people and places in Bankside.

Adopted green spaces in Oradea

The municipality of Oradea, Romania, launched an initiative that allowed some smaller green spaces to be ‘adopted’ by private companies. In line with the scheme businesses sign contracts with the municipality for a year (the contracts can be extended) according to which they are developing and maintaining smaller pieces of green spaces and are in return entitled to place their ‘business cards’ on them. The contracted companies also become exempt from fees that they should normally pay after using public spaces for private purposes. Through this arrangement the public expenses targeting green space maintenance can be substantially reduced and at the same time local businesses get a unique opportunity to promote their activities.

The demand for such green space development has increased significantly. Because of the limited number of green spaces on offer, currently the companies are queuing for acquiring new places. By May 2015, altogether 56 pieces of green space were ‘adopted’, out of which 18 are roundabouts.

Public-private participation for green space rehabilitation in Lodz

In Lodz, Poland a public-private partnership played a significant role in the rehabilitation of a park area bordering a construction site. Lisciasta Park Residence with seven buildings with 158 apartments is a new residential area in the northern part of Lodz, built in 2009–2013. This residential area is bordered in the south and east by a park with a small river and several reservoirs. A large amount of construction waste overgrown by vegetation was lying deposited in the wilder parts of the park that had been left there from the nearby housing estates built decades ago.

The developer company, Budomal started the construction of the complex in 2009. In 2013, at the time of the sales of the second batch of apartments, the company proposed that it would clean up and rehabilitate the adjacent green space, partly as a compensation for the trees that had to be removed because of the construction activities, and partly to develop the neighbourhood of the residences. The size of the contaminated area that needed rehabilitation was approximately 600 m². The offer was taken up by the municipality and a short-term public-private partnership was established between the City Office and the developer to rehabilitate part of the park adjacent to the residential area. Under this temporary arrangement the land is still publicly owned and after rehabilitation its everyday management has been taken over by the City Office.

4.1.6 Policies on green roofs and green walls

Green roof policy in Basel

By 2006 approximately 23% of the flat roof area has been covered by green roof in the city of Basel in Switzerland. A combination of policy measures implemented throughout a number of years led to this result. The initiative was originally driven by energy-saving programmes, and later by biodiversity conservation.

The city of Basel launched an incentive program and its first campaign promoting green roofs in 1996. The financial incentives were funded from the Energy Saving Fund that was covered by 5% of the energy bills of the residents in Basel canton.

Following the first green roof campaign, Basel Canton has passed an amendment to its building code in 2002, requiring that all new and renovated flat roofs must be greened. The prescriptions require a minimum depth of substrate layer (of 10 cm) and a specific local mix of soil and seeds, adapted for native plant species). In addition, specific guidelines were issued on implementing green roof in Basel.

A second campaign, coupled with financial incentives made available for retrofitting green roofs to existing buildings, started in 2005 and lasted until 2007. Biodiversity benefits were put into focus during the second campaign.

Various stakeholders were consulted when developing the green roof concept, and the programme, including the local business association, the horticultural association, the green roof association, the Pro Natura Basel environmental organisation, the Department of Parks and Cemeteries in the City of Basel, and the National Department of Environment, Forest and Landscapes. As all stakeholders were involved in the process from the beginning the green roof regulation did not meet any significant resistance. As a result of the successful programme green roof installation became a routine activity for developers.

Green roof policy in Copenhagen

Copenhagen adopted a policy in 2010 that requires green roofs for all new buildings with roof slopes of less than 30 degrees.

Since 2008, Copenhagen has focused on integrating green roofs as part of urban development. In 2009 a goal for urban design with green roofs was set in the Copenhagen Climate Plan. Subsequently green roofs have become integrated in different guidelines such as the guidelines for Sustainability in Constructions and Civil works, which mandates green roofs for all municipality buildings. Green roofs are also addressed by the Strategy for Biodiversity of the Danish capital.

The basis for the successful establishment of the municipal programme was the organisation of a comprehensive information campaign. As a result of the programme green roofs of all scales and types appear in the city, from cycle shelters, schools, warehouses, rooftop terraces, public roof gardens, mixed use buildings, to landscapes above underground garages. A calculation based on approved new local plans mandating green roofs gives a total of 200000m^2 of green roofs to be installed in the city.

Green roof policy in Stuttgart

Stuttgart is one of the leading green roofs cities in the world with more than 2 million m2 green roofs. Since 1986 a financial support program has been running for green roofs and requirements has been set according to which all new roofs below 12-degree slope must have green roofs as a compensation for the loss of valuable nature. Funds are offered to cover 50% of costs for the installation of green roofs. Subsidies are only available for existing buildings or new buildings when the construction plan does not already require a green roof. The owner of a green roof is required to maintain the green roof for at least 10 years. From 1986 until 2009 nearly 430 projects have received funding. In 2014 a relaunch of the incentive programme took place.

Hedge façade in Düsseldorf

In Düsseldorf, Germany under a new redevelopment project buildings in the city center are being greened with hedged façades and a green roof that forms a park. Following the demolition of an elevated road, a part of Düsseldorf city center between Gustaf-Gründgens-Plaza, the Schadowstrasse shopping street and the new Jan-Wellem-Plaza is revitalised.

A new retail and office building will have hedges covering its stepped façades and the entirety of its roof. In total, the building is covered by nearly 4 km of hedges. The species of hedge, Hornbeam, common in the surrounding region will be used as it is a robust plant and requires relatively low-maintenance. The vegetation will provide cool, clean and moist air to the adjacent spaces, and will act as a wind barrier.

4.2 UGB Partners' practices

A total of 15 practices from the six project partners were presented at a project meeting held on November 14-16, 2016 in Padua, Italy — two from Budapest's District XII (Hegyvidek); three from Studio ISPACE (Upper Salzach Valley); two from Maribor; four from Padua; two from Zadar; and three from Krakow. The practices, divided into three thematic groups, are outlined below.

1) Quantitative assessment of urban green spaces (UGS): cadastres, GIS, monitoring

For the Hegyvidek tree cadastre, data for nearly 9,000 trees is available regarding their value, location, species, appearance and state of health. It is planned to extend the tree cadastre from municipal to state owned public areas and private areas.

The Geographic Information System (GIS) has been used to carry out several advanced and comprehensive assessments of UGS in the Upper Salzach Valley, including: the share of green spaces within Salzburg, based on a raster matrix; the quality of supply of recreational spaces and playgrounds in the 2007 Urban Development Strategy for Salzburg; and quality of life and satisfaction with UGS in residential environments in both Salzburg and Vienna.

A public green areas cadastre has been established in Padua, where green areas are spatially georeferenced as polygons with attributes including: classification, surface, and management level. Also, a tree cadastre and playground cadastre are maintained with a mobile app for collecting and updating data.

The Municipality of Krakow has selected the project titled, 'MONIT-AIR - Integrated monitoring system of spatial data to improve air quality in Krakow' as a good practice. The project's numerous actions include the development of a map of land cover with assigned coefficients of aerodynamic roughness, as well as a general inventory of vegetation land cover—especially urban vegetation. Along with a more detailed inventory of vegetation areas, a computer-aided system for vegetation management has also been established.

2) Participation: participatory budgeting, community involvement, community gardens

Citizens of the Hegyvidek are involved in several environmental actions, including: spraying and trunk-injection efforts against the horse-chestnut leaf miner; a household composting programme; and environmental clean-up campaigns.

In the Upper Salzach Valley, especially in the city of Salzburg, numerous projects have achieved a very high level of public participation, resulting in, for example, the creation of a development strategy for a neighbourhood quarter near the central station; development of an open space around a social housing building complex in Hallein; remodelling a section of the Glan River; and remodelling the former property of the Stadtwerk Lehen (Salzburg's former municipal utility).

The Community Eco Gardens in Maribor is recognised as a "good practice" of community involvement. The first community garden started as part of the "Maribor European Capital of Culture 2012" with the goal of piloting an urban gardening project in collaboration with neighbouring residents and civic associations. With the involvement of more than 200 citizens, 80 individual gardens with eight shared gardening sheds were established at two separate locations. In addition, special gardens for children and the disabled, a children's playground, and a community building for communal activities were established. In addition, the City of Maribor Urban Plan designates eight new locations for new community gardens, with the objective of establishing a minimum of 500 urban organic gardens by 2020.

Another pilot project in Maribor has introduced a participatory budget for one of the city's quarters in accordance with guidelines of the "European Charter of Local Self-Government". Fourteen different projects, valued at EUR 97,000, were included in the Maribor 2016 budget, with all four proposed investments connected to green spaces. There is also a plan to make a new call for proposals for a further seven of the city's 11 quarters.

In Padua, more than 630 plots in 16 vegetable gardens enable the cultivation of vegetables for all groups of citizens. Citizens and associations have participated in tenders for allotments of up to 40 m^2. For an annual fee of EUR 70, the municipality provides the land, a common shelter for tools, and water.

In Zadar, the "New Skills for New Competencies" project offers good practices from the field of urban agriculture, while also addressing problems of social vulnerability. The ministry in charge of the project published a call for tenders to help reduce poverty risk and social exclusion of vulnerable groups, including the homeless. After presenting its project proposal, the expert team received funds to work on 2,000 m^2 of fertile agricultural land in the Bokanjac area. Eight homeless people, already engaged in community gardening that provides food for a public kitchen, are meanwhile receiving encouragement to re-enter the labour market.

The third phase of Krakow's participatory budgeting programme included an objective to make it possible for citizens to decide on how to allocate part of the municipal budget, which inspired citizens to suggest new, innovative solutions in green areas, and to enlarge the number of urban green spaces in Krakow. Citizens prepared projects, while experts from the Municipal Greenery Authority and other units from the Municipality of Krakow contributed with project consultation and development. After entries were submitted on a dedicated internet platform, four projects for green areas were financed from the city-wide initiative budget, while an additional 17 projects were funded from the Districts Initiative budget.

Yet another good community gardening practice comes from Krakow — the "Azory Community Garden Project". Azory is one of the most socially problematic districts in Krakow, and the objective here is to integrate the local community by boosting citizen involvement and enlarging the amount of green areas throughout the city. In the Azory neighbourhood, a group of residents interested in community gardening was brought together to get engaged in the process of creating the Azory Community Garden and to take care of the area following its establishment.

3) UGS governance: laws, strategies, projects

In 1985, a "Green Space Declaration" came into effect in the Upper Salzach Valley that protects green spaces in Salzburg. Areas affected under the declaration must be preserved as green spaces, and can only be removed in exceptional cases and after meeting certain criteria.

5 EXECUTIVE SUMMARY OF LOCAL ASSESSMENTS

This section contains an executive summary of partners' local assessments, with a special focus on: key urban landscape characteristics; strategic documents of a specific nature; other relevant aspects (community gardening, green roofs and walls); use of GIS tools; participatory planning; UGS governance; and difficulties, obstacles and challenges related to UGS development and management. The primary focus of these assessments is on the current situation of territorial units under public administration, while some of the data corresponds to situations for functional urban areas.

5.1 Municipality of Budapest District XII (Hegyvidek)

At the beginning of 2010, around 2,529,000 lived in the conurbation of Budapest (FUA). The population density of the Hungarian capital (1,010 heads per km2) is about nine times higher than the national average. On the territory of the Budapest conurbation, close to 39,200 hectares of habitats of "national importance" are protected nature conservation areas, while approximately 46,700 hectares are registered in the Natura 2000 network. From a nature conservation point of view, the defining trait of the region is its outstandingly high habitat diversity. Five primary zones have been determined for Budapest on the bases of geographical features and historical formation: 1) Suburban zone, 2) Highlands zone, 3) Inner zone, 4) Transitional zone, and 5) Danube River zone. Though the greater part of the area of Hegyvidek is located in the Highlands zone, a smaller portion of the district enters also the Inner zone.

The District XII (Hegyvidék) administration is the local government body responsible for the administration of Budapest's greenest district, a hilly suburban area west of Budapest. The district covers 26.7 km2 and has 58,322 inhabitants, and a population density of 2,181 people/km2. The area's relatively clean environment has attracted a concentration of health institutes. Through its network of contacts, the district authority has direct access to the City of Budapest (involved as associated partner) and national-level administration.

District XII has the most extensive green-space network within city boundaries. Green area per capita is about 170m2 per person. In terms of green space availability and intensity, the district is divided into four zones: a densely built-up zone, a downtown zone, a mostly residential zone, and a forest zone. From a natural and regional point of view, the district possesses extraordinarily favourable conditions. The district's picturesque terrain and great biodiversity are unique, relative to the rest of Budapest, and its forests are the capital's very popular destinations for tourism and recreation. The district also possesses numerous public and private gardens, public parks, memorial parks and tree-lined alleys.

There are numerous national and regional laws and strategies that affect urban green spaces in the Hegyvidek. District XII has prepared medium-term and long-term plans, in accordance with higher-level legislation, with the goal of achieving sustainable development for the city. Also, in 2010, the Hegyvidek became Budapest's first district to develop its own climate change strategy.

In the district, there is a relatively low number of community gardens: altogether two gardens are managed, one at Városmajor Primary School and another at Arany János High School. These are used predominantly for educational purposes. On the other hand, Budapest is one of the leading cities in this field in Europe. The 30 to 40 community gardens currently operated in Budapest came into existence through bottom-up initiatives, and in some cases with the support of multinational companies. Community gardens in Budapest are mostly allotment gardens offering on average 30 to 40 plots; demand is so high that there are long waiting lists for individual plots. There is a great deal of citizen initiative that drives every community garden in Budapest, the members of which seek support from local authorities or private companies. The "2030 Long-term Development Strategy of Budapest" includes an endorsement of the practice of community gardens.

The Hegyvidek has been using the Minerva Geographical Information System since 2005. Related to green surfaces, the system contains: a basic map from the Land Office, 10 PPCM-resolution orthophotos, maps of protected areas (Natura 2000 area, nature conservation areas, municipally and locally protected areas), forestry registrations, demarcations of green surfaces of parks and public areas, and a tree cadastre. The tree cadastre system contains detailed data on 9,000 trees on public areas managed by the district self-government. A web-based GIS tool is available both as a desktop and a mobile tool, and is also available to citizens to a certain degree.

A participatory approach is a very important element of local-level planning for the Hegyvidek. The renewal of Normafa Park, for example — which involved broadening functions of the area while preserving its natural quality and ecosystem services — took place with the deep involvement of the public and cooperation with environmental NGOs. The local government supports and stimulates bottom-up initiatives and supports environmentally conscious initiatives in the spirit of the democratic self-governance. It also maintains good relations with local communities and encourages their involvement in planning and maintenance of UGS (e.g. cleaning actions). The local government uses various participation tools, ranging from GIS application, inhabitants' forums, web pages and internet questionnaires. Planning and self-governing are based on partnership with inhabitants, which is very important for local government in terms extending the system of communication. As a practical example for community involvement, the municipality runs a residential composting program.

The Hegyvidek already has a recognisably established system of multi-level governance. The management of city green areas is performed by the newly created Green Office of the Self Government of District XII, which coordinates the realisation of green area-related programmes. It also collaborates horizontally with other district local government offices. The local government of District XII, for example, may introduce traffic-calming measures to protect green surfaces. The local government also oversees playground development and renewal, and the installation of open-air fitness equipment. The Hegyvidek self-government office enjoys fruitful cooperation with numerous bodies, organisations, and authorities, and is in continuous contact with the municipal office of the capital regarding the standing of UGS property in Budapest. As an example, multi-level governance approach will be applied for the development and maintenance of Normafa Park. At the first meeting of UGB project stakeholders, participants included numerous competent authorities, associations, civil organisations, the Technical University and citizens, all of whom intend to take part in the management of the green surfaces throughout the city, both in advisory and active capacities.

The biggest difficulties and obstacles for Budapest and the Hegyvidek related to UGS development and management are mostly environment-related, and they differ slightly depending on the type of green area in question — e.g. soil impacts from mountain biking in forests, aging tree stocks and aggressively spreading species in parks, other public areas and private gardens, problems with maintaining the least accessible roads and slopes in public areas, and some unattended green spaces in abandoned private gardens.

5.2 The Upper Salzach Valley

The Upper Salzach Valley covers parts of the Flachgau and Tennengau regions within the federal state of Salzburg. It covers an area of 351.57 km² and includes the city of Salzburg and 10 additional towns and municipalities (Anif, Groedig, Elsbethen, Puch, Hallein, Oberalm, Adnet, Bad Vigaun, Kuchl, and Golling) with a total population of approximately 206,000. The area is strongly characterised by the river Salzach, which flows from south to north, and the surrounding mountains. As Salzburg is the only relatively large city (150,000 inhabitants) and the surrounding area remains very green, the Salzach Valley can generally be described as "rural" with "open space" characteristics.

Of the Upper Salzach Valley's 351.57 km², 256 are covered with green — nearly 73 percent. The amount of green space per capita is 1,243 m². Dominant types of green cover are private gardens, agricultural areas, urban forests, public green spaces, and protected areas such as Natura 2000 sites or nature reserves.

One major problem is the lack of an overall green space management system or a tool that the federal state of Salzburg can use. Green space management exists instead at regional level or for specific areas. Management plans do also exist for some protected areas, like the High Tauern National Park. Nonetheless, the development of an overall green space management strategy is an important task for the future. Another problem is the diverse range of intended use for many non-built-up areas, which causes pressure on green spaces and is an important task for spatial planning. Finally, general awareness of the importance of open spaces and their values needs to be raised still further.

There are six permanent community gardens within the city of Salzburg. Three of them are managed under a blattform private gardening initiative, while the other three do not belong to any organisation. In some cases, the land used for the garden is owned by the municipality. Furthermore, several permanent allotment gardens can be found within the study area. Most of them are located within the city of Salzburg, but some additional ones can be found in, for example, Kuchl, Hallein, and Oberalm. Many of these are managed under an allotment garden initiative covering all allotment gardens within the federal state of Salzburg (i.e. Landesverband der Kleingärtner Salzburgs, or regional association of allotment holders in Salzburg), but there are also some gardens that do not belong to any organisation. Urban agriculture is very widespread within the study area, since many parts of the city of Salzburg (the highly urbanised part of the Upper Salzach Valley) are green spaces. Around 24 percent of the city area is used agriculturally, and many of these spaces are protected by the "Green Space Declaration".

Green roofs and walls are not currently widespread in the study area. Unfortunately, no data on the coverage of green roofs or walls are available. While green roofs are funded within the scope of housing subsidy, green walls are generally not funded — yet.

The use of GIS for UGS management is a well-established practice in the Upper Salzach Valley. Most assessments of urban green spaces in the area refer to the city of Salzburg. The first is an analysis of the shortage of current green spaces and green corridors in the city, which is part of the urban development strategy and focuses on the development of a green network. The aim is to develop a plan for interlinked green spaces that integrate public institutions and connect peri-urban areas with urban areas, and the result is that development targets for different districts within the city of Salzburg have been defined. A second example is an assessment of the urban landscape within the city, which also includes a development plan. It considers potentials, strengths, and weaknesses of each defined landscape unit, with maps showing the extent of urban greening provided for recreational areas and playgrounds in the city of Salzburg.

Worth mentioning is that an examination and inventory of all biotopes within the federal state is available. GIS is frequently used for spatial planning, analysis, and monitoring. Smart methods and tools regarding urban green space assessment and planning, on the other hand, have not been developed yet. Nevertheless, some GIS-based assessments of green spaces and the quality of living environments have been conducted, including accessibility of green spaces. Data referring to urban green spaces are stored and managed by the government of the federal state of Salzburg within a geographic information system called SAGIS. Some of the SAGIS-stored data are free and available to the public for download, while others need to be purchased. The cost of data depends on the amount ordered. Research institutes and students may use the data for free in the context of research or training projects. All data are geo-referenced and available as shapefiles — i.e. KML or JSON.

Public participation has become more important in recent years, especially in Salzburg and surrounding areas. Citizens are participating in creating an urban developmental strategy at exhibitions and public meetings where they have a chance to make comments and give feedback. Citizens are also involved in neighbourhood-level planning activities related to creating recreational areas and playgrounds, remodelling properties, etc. Participation in these projects is of a great importance, and usually one of the main goals. One project, for example, places special emphasis on the involvement of residents in efforts to win acceptance and happiness in transforming their living environment. In this and other similar projects, public participation is not only used to present the ideas and decisions of experts, but also takes the ideas and concerns of inhabitants into account.

Horizontal and vertical mechanisms of cooperation do exist in the Upper Salzach Valley. The domain of urban green space governance is up to of each municipality. For example, in the city of Salzburg, the Department of Urban Planning and Transport is responsible for, among other things, urban planning strategy, planning schemes, urban design, and landscape and environment protection. Furthermore, an additional garden department is responsible for the maintenance of urban parks, playgrounds, etc. Other municipalities in the Upper Salzach Valley also have departments that deal with environmental issues. The management of nature conservation areas and agricultural areas is a federal state task. This means that the federal-level Department of Nature and Environment Protection is responsible for establishing and monitoring protected areas within the federal state of Salzburg. Agriculture and forestry are managed by the federal Department of Natural Resources and Energy. Generally, there is cooperation between the different sectors, as well as collaboration with the Department of Spatial Planning. Sometimes, civil associations (for example, an initiative aiming to preserve of the "Green Space Declaration" in the city of Salzburg) or NGOs (e.g. nature conservation associations) are also involved into green space governance, or at least want to state their interests. Financial resources for the management and development of green spaces are widely available, but the federal state of Salzburg finances nature conservation efforts from its own resources.

5.3 Maribor

FUA Maribor is one of the two FUAs in Slovenia. It is situated in north-eastern Slovenia, features 22 municipalities, and has a population of 240,555 inhabitants with average population density of 180.39 inhabitants per km2. The biggest municipality, Maribor (which also represents the urban core), has a population of 110,543. Currently, there are no administrative structures established at the FUA level. Three decades ago 17 of 22 municipalities currently covered by FUA Maribor were part of the Municipality of Maribor, but have become independent administrative units in 1980s and 2000s. As a consequence, there are no agreements in place on the joint management or planning of the areas that are of common interest for these settlements. FUA Maribor has several protected areas, but an amount still below the national average. Within the FUA there is approximately 50 km2 of protected areas of natural heritage (4.3 percent of the overall FUA area).

Green space coverage in FUA Maribor — considering parks, other green areas, street greenery and recreational green areas — is 690.9 hectares. Adding to this a total of 343.4 hectares of sport areas, FUA Maribor has a very favourable built-up to green-area ratio. Although the numbers are impressive, they are derived from planned land use, and the majority of urban green areas remains undeveloped. FUA Maribor has 10.35 km2 of dedicated green areas, not including forests and agricultural area. At the level of territorial administration, total green space coverage is 137.74 hectares. A further total of 199.43 hectares of sport areas gives the City of Maribor a very favourable built-up to green area ratio.

There are two established community garden areas in Maribor, with a combined size of 13,000 m2 and approximately 250,000 m2 of known allotments. The known scale of allotment activity is a strong indication that urban agriculture is an important part of local customs and habits. Maribor has designated eight new locations for new community gardens in the "Urban Plan of the City of Maribor", with the objective of establishing a minimum of 500 urban organic gardens by 2020.

The use of green roofs and green walls is not widespread in Maribor, nor are they promoted by local, regional or central government. Outdated urban regulations only cover certain aspects of roof sloping. The promotion of green roofs is indicated in the "Sustainable Urban Strategy" (2015), though policies are not yet implemented in other spatial planning documents.

The process of acquiring GIS data for Maribor is not yet complete. An estimated 25 percent of all data is fully acquired, accounting for roughly half of Maribor's urban core area. The existing GIS data covers: geo-located elements of urban equipment; land use; actual use; a tree cadastre (tree positions only); point-cloud and contour terrain models; attributes integrated into data sets and/or connected to databases; demographic data; etc. The data is freely accessible to public companies and bodies within the municipal organisation scheme for research and educational purposes. Others can access GIS data for a fee. A green space information system and participatory elements does not yet exist, but there are plans to complete a GIS database within the Department of Geographic Information System, Data Processing and Information. The Department for Geographic Information System, Data Processing and Information provides important day-to-day support for municipal operations, both to in-house departments and to partners. Among several good practices related to smart methods and tools is the "Smart City Maribor Initiative", which assists in developing the "Interactive Web Service for the Submission of Initiatives, Praises and Issues". The service website is available to citizens and as an app for submitting initiatives on any number of issues, including those related to green spaces and the environment.

There is an interesting pilot project in Maribor that involves testing and implementation of a participatory budget for the municipal quarter of Radvanje. The project runs in accordance with guidelines of the European Charter of Local Self-Government and is based on a co-governance approach. The project started in 2015 and is a municipal response to informal self-organised urban communities, developed in 2013, which holds regular assemblies in city districts to discuss topics of interest (such as the municipal budget) and organises working activities (such as cleaning public spaces). Local inhabitants will have the option of deciding to fund five selected projects in their city quarter that they deem the most important. The integration of participatory models for the preparation process of strategic documents has not yet been implemented at municipal level. The community is not yet directly involved in UGS management, and community initiatives and suggestions can only be addressed to the municipality for consideration.

The Municipality of Maribor lacks a body within the municipal organisational structure that is responsible for developing green areas and open space. There is also a lack of cooperation and a shortage of expert staff. The Department for Utility and Transport (DUT) plays a predominant role in the development and management of UGS and is responsible for: preparation of standards and norms; supervision of utility contractors; and governance of advertising and use of public spaces. It also maintains the facilities and equipment of public green spaces and playgrounds, which is otherwise performed by a concessions contractor (currently a public company, Snaga). The DUT also cooperates with the Department for Spatial Planning and the Department for Geographic Information System, Data Processing and Information, all of which are parts of the same office. Coordination exists between other departments and units (e.g. the Inter-municipal Office for Environmental Protection and Nature Conservation) related to UGS governance, but not at an adequate level. Vertical cooperation and dialogue between different governance levels regarding UGS development and management is not a common practice.

One of the biggest challenges to existing UGS development and management practice is the growing power so called "self-organised city quarters and local communities" and their — mostly justified — initiatives and demands for new urban green spaces.

The primary relevant concern for Maribor is the absence of a body within the municipal organisational structure that would be responsible for developing green areas and open space, the main reason for which is a lack of holistic awareness of the importance of UGS and its benefits. Additional problems stem from inadequate cross-sectoral (horizontal) cooperation, while vertical cooperation is limited to the scope of statutory requirements. If the Municipality of Maribor is to achieve successful, transparent and rational management of UGS, it must establish a body — in addition to the existing Department for Utility and the Transport and Department for Spatial Planning — responsible for developing green and open spaces.

5.4 Padua

The Metropolitan Community of Padua comprises the territory of the city of Padua and 17 neighbouring municipalities. The territorial administrative area of the Municipality of Padua within the UGB project is 92.9 km2, and the total area of green space coverage (not including agricultural areas) is 21.80 km2. The area population of 210,401 (as of 2015), and urban green space per capita is 103 m2.

The municipality's primary UGS elements are green spaces and rivers surrounding the ancient city walls — important resources in creating a new city park. The green spaces in this area, however, need to be rehabilitated in order to integrate Padua's city walls system with waterways and the historical city centre. The second group of green spaces to consider are those along the rivers and canals, which need to be protected and restored: these green spaces retain their natural features and are very rich in biodiversity. The third element consists of peri-urban green areas, which include public parks, green trails and rural areas located along the Brenta, Brentella and Bacchiglione rivers. This is an articulated system of green areas that both surrounds and penetrates the city.

Padua has a long history of community gardening, which has been promoted since 1980. Today, Padua has 16 public garden areas with a total of 633 individual plots. In order to promote intergenerational relations and foster links across generations, the former system of urban gardens, focused on elderly people, has been replaced with a system open to every age group. Places for gardening were initially found among abandoned plots. In recent years, gardens have been incorporated into public parks because they present an important opportunity for improved social relations and environmental education; equally important is the fact that urban gardens are fundamental towards maintaining the safety of public spaces. The municipal government carries out land organisation, guarantees the availability of water and shelter for tools, and supports the setting up of small communities. Garden access is based on rankings and the payment of a small annual fee. And while there are strong connections between buildings and green urban land, urban integration with the countryside is more difficult.

The use of green roofs and walls is still limited to a few pilot projects, with a total green roof area of 1,500 m2 and a total green wall area of 200 m2. The most significant are those in the

Botanical garden and a complex of roof gardens in the Portello district. One piece of national legislation envisions further development of green roofs and walls, but no funds have been allocated for such activities.

Padua possesses a digital inventory of green areas and related trees, street-side trees, and outdoor playgrounds. The green areas are spatially georeferenced as polygons with identifying attributes related to classification, management and maintenance. Data, collected by technical staff and stored and managed by Informatic and Telematic Systems (S.I.T.) of Padua Municipality, are accessible upon specific request, evaluation and approval. The official website hosts a simplified city map that shows the presence, location and typology of trees, playgrounds, green areas and roadsides. In 2007, Padua Municipality produced a digital orthophoto using data collected through aerial photographs. Thanks to the orthophoto restitution it has been possible to create a topographic database that meets Veneto Region standards. One of the object classes involves green areas, all of which are classified without any distinction between public and private spaces. Padua Municipality has derived a specific object class that identifies only green public areas, classifying them into 16 groups according to function and size. As an example, Padua intends to collect further data — on urban furniture. Another goal is to link the GIS to accounting programs and to make it available to contractors. Another possible target to establish a further link to the citizen reporting system.

Among the project partners, Padua quite a long tradition of participatory processes, which have been an essential element for creating different plans and strategies since 2004. The municipality introduced the participatory process with the aim of involving the local communities in planning. Interested stakeholders take part at different times, but share similar roles. Different modes of participation are used (workshops, laboratories, working teams, co-design, etc.). Stakeholders, including citizens, are also involved in planning new urban parks and in improving some areas in the outskirts, and are involved in neighbourhood planning. Citizens are also involved in management of UGS: they can adopt a green space or donate a tree, participate in cultural and recreational activities (e.g. the "Padua flourishes" event), while associations can get involved in park management. As part of a World Health Organization project in 2006, a survey was conducted about citizens' perception of the suitability of green areas, which served as a starting point for planning new parks and increasing green space areas.

The management of green areas operates at multiple levels, and the tasks assigned to each organisation are clear. There is, however, a lack of integrated planning and vertical cooperation. The municipality is in charge of managing public areas, while the state is responsible for infrastructure (motorways, railways, the airport) and those areas belonging to the University Hospital areas and river banks are under regional management. Due to specific agreements, some green areas along the canal and river banks are under direct municipal management. The municipality has its own Department of Green Areas, which is tasked with: refurbishment of historical green assets, squares, gardens and street-side trees; and the expansion and upgrading of neighbourhood and urban green areas — differentiating between types and sizes. In recent years, the department has also dealt with the farming of green areas near the city. Padua also includes other actors who are involved in the governance of green public areas, such as: the Municipal Company for Hygiene and the Environment, in charge of cleaning public green areas; some associations and private bodies, which, through special arrangements, are charged managing some public parks; and individual citizens who have adopted gardens and green areas or cultivate public vegetable gardens. The private sector is also involved in USG governance to a limited extent.

The main challenge for Padua is that UGS management lacks integrated planning and an overall strategic vision. A plan for optimising various green area components is necessary. There is no perceivably stable dialogue at multiple levels (e.g. local, regional, national), and initiatives are sporadic. Some national-level provisions lack follow-up directions or measures that apply at regional and municipal levels. Plans for medium-term to long-term implementation is needed, but this in turn requires successful collaboration between partners and stakeholders, automated procedures, continuous training of human resources, and enhanced dialogue with citizens. The establishment of a long-term plan related to green spaces could supply the basis for urban green network development aimed at creating a system of urban gardens, parks and ecological corridors within the city. It could also help to establish a peri-urban green belt comprised of public parks, rural areas and green trails, with the Brenta, Brentella, Bacchiglione, Rincajette and Piovego rivers as primary elements.

5.5 Municipality of Prague District 6

Prague's District 6 (or, Prague 6) is in the north-western part of the city. With 110,152 inhabitants and an area of 41 km2, it is one of the largest and most populated districts in Prague. A high proportion of green areas and residential buildings makes this district popular and desirable for Prague residents and visitors alike. The district is part of the Czech Republic's largest functional urban area (FUA).

Total green space coverage in Prague 6 is around 8 km2, which is 72.6 m2 of urban green space per capita. The district has several urban green spaces that are also of great architectural value. The Strahov-Motol slopes, for example, was originally a fortified farmhouse build over subterranean argillite mines, and was reconstructed as a greenbelt park area background. The complex has received multiple awards, and is among the most popular in Prague. Another site worth mentioning is the Sarka Valley Nature Park, Prague's largest natural area and probably its best-preserved park.

Within Prague 6, there are five community garden sites. They developed somewhat spontaneously and without cooperation from the district office. Garden users are focused exclusively on the cultivation of various vegetables. The users of all but one of the gardens live in the immediate neighbourhood. Another "community garden demonstration site" lies just beyond the district border. As community gardens are immensely popular, one of the tasks of the UGB project is to track and take advantage of this trend in order to reap any reciprocal benefits.

Prague 6 has a great deal of experience with smart methods and tools for urban green space assessment. GIS is used in cartography and the creation of GIS spatial analysis. Within Prague 6, the following elements have been digitally processed: the extent of public green areas, biological surface elements (line and point), technical surface elements (line and point), surface markers, and network furniture. GIS formats ArcView and ArcMap (shape files) are being used in relation to graphics systems and mapping services of the Prague Institute of Planning and

Development (a City Hall-owned organisation). Data is not freely accessible to the general public. The district office uses the Misys program: the base consists of a GIS module that operates in the administered territory with interrelated graphical and descriptive information, while the system database includes information on the ownership, state and development of the territory, and other documents and records. In the past, Prague 6 also processed green passports and a trees inventory, both of which were freely accessible to the public.

The Prague 6 community is involved in preparing strategic documents, and option of public participation is also written into law. During the preparation of the strategic plan, citizens can participate in a quality-of-life survey that includes questions on how they perceive various service areas, including the management of public green spaces. Citizens may also participate in planning environmental activities at neighbourhood level, mostly at public hearings and in workshops for different projects. “Idea for Six” is a participatory budgeting project currently in progress that aims to support local communities in a variety of ways, including care of public greenery. Project funds will be allocated to the projects with the greatest public support. At a general level, citizens can provide feedback via web applications, and they can also warn authorities about possible administrative shortcomings—including lack of funds for green spaces. There is also a special district department that has been responsible for managing public participation since June 2016.

Prague 6 enjoys thorough cooperation between institutions about UGS management, both at horizontal and vertical level. The authority responsible for coordinating the management of public green spaces is the Department of Transport and the Environment, which is responsible for numerous tasks, such as: maintenance, monitoring, compositional arrangement, tree felling, and even environmental education. It also cooperates with other departments in the district, including the Commission for the Environment and Public Green Spaces, which is the environmental advisory body of the Prague 6 Council. Other bodies collaborate on UGS governance: service organisations, which take care of the management and maintenance of public green areas; developers, who manage green areas within their own land; and local communities. In terms of public green space management, both horizontal and vertical coordination is conducted through standard cooperation between public administration bodies. Elements of inter-sector cooperation are also involved in public procurement. This cooperation takes place at regional (the partner is the City of Prague) and state levels (ministries, or separate state authorities in charge of the subject agenda). Also, worth mentioning is PRO 6, an organisational body that provides a link to management of public green spaces through the preparation and implementation of social programmes, in which individuals from socially vulnerable groups are in charge maintaining public green spaces.

Prague 6 also faces several long-term issues and challenges: loss of green space, especially trees in urban areas (many parks and lanes are in a neglected state); a non-systemic approach towards public engagement, including the management of public green spaces; an absence of community rules for establishing and operating green spaces; an absence of appropriate subsidy tools for community management of public green spaces (green areas, courtyard gardens, community gardens); potentially inadequate single-procurement links for public green space maintenance and street cleaning services; and a lack of promotion and communication measures regarding public green space management.

5.6 Krakow

Krakow, with its core and hinterlands, is Poland’s second-largest city and third-largest FUA, and belongs to the larger Malopolska Region. The population of Krakow is 761,873. Krakow has several distinguishing natural values, which cover approximately 15 percent of the city area. There are three big parks that protect the Jurassic landscape: Bielany-Tyniec Landscape Park, Tenczyn Landscape Park, and Krakow Dells Landscape Park. Furthermore, five nature reserves (with a total area of 48,58 hectares) and 12 ecological sites are located in the city, while over 1 percent of the city area belongs to NATURA 2000 network. In addition, 275 monument trees are protected by law. Same of the most significant green elements in Krakow include Błonia, a vast meadow directly adjacent to the historic centre of the city; the Kościuszko Mound, an artificial mound modelled after Kraków's prehistoric mounds of Krak and Wanda, and other green spaces in the city: the Botanic Garden of the Jagiellonian University in the city center, the Zoological Garden in the Wolski Forest. Almost all protected areas are open to the public and play important educational and recreational roles. Between 65 and 75 percent of people live within 300 metres of a public green area (depending on the methodology used), which is below the European average.

There are 80 family allotments in Krakow, with a total area of 480 hectares. Thirty allotments are in Nowa Huta, and most of the allotments are owned either by the municipality or the State Treasury. Family allotment gardens form an integral part of the urban infrastructure, having served owners and residents of nearby areas for years as places for recreation and relaxation. Developed by garden associations, urban gardens remain valuable aesthetic and ecological components, significantly affecting the health of residents and the development of social and cultural life of the local community. As a good practice, the “Azory Community Garden” project must be mentioned. Azory is one of the most socially difficult districts in Krakow, and the objective of the project is to integrate the local community, boost citizen involvement, and enlarge the amount of green areas. A group of neighbourhood residents interested in community gardening was brought together through the project, and then engaged in the process of creating the community garden and of taking care of the area afterwards.

An existing inventory of green roofs in Krakow was carried out through the MONIT-AIR project. There are 186 such facilities with a total area of 14.1 hectares, which represents 0.7 percent of all buildings from the registered land and buildings in Krakow. Spatial analysis shows that nearly 40,000, or 33 percent, of buildings in Krakow offer great potential for setting up rooftop gardens.

The R3 TREES system has covered urban green spaces in Krakow since 2015. It now covers roughly 250 hectares, but is ultimately expected to manage the entire system, including urban greenery. Access to some types of data (e.g. ALS clouds, satellite imagery), depending on technical requirements and license restrictions, is limited to specialists. Selected data are also available for public access. Most GIS vector data comes down to — depending on their specifics — extensive tables of attributes (used typically in aggregate form), such as a real vegetation map of Krakow from 2007, updated in 2016 under project MONIT-AIR. This project has helped to integrate a large quantity of spatial data in high resolution: digital elevation models and numerical land cover models, satellite images drawn up on the basis on

LULC maps (land use and land cover), vegetation indices, and several other analyses, such as the average volume of greenery per unit area, or volume of greenery per inhabitant in various districts of Krakow. Krakow has a detailed general inventory of all types of municipal greenery — including greenery on private land, agricultural land and forests.

In Krakow, there is a well-established practice of participatory planning at the neighbourhood and community level, and citizens can participate via numerous engagement tools. They can also be actively involved in consultation processes about parks. The municipality may initiate some actions and changes to directly involve local communities in implementation. There are also some bottom-down initiatives, mostly related to parks or preserving or establishing new green space. The third edition of Krakow's participatory budgeting programme for district initiatives, currently underway, encourages community involvement by making it possible for citizens to decide on how to allocate part of the municipal budget. The goal is also to inspire citizens to create new, innovative solutions for green areas, and to enlarge the number of urban green spaces in Krakow. Projects are submitted on a dedicated internet platform and selected after public voting. Four projects of green areas from the city-wide initiative budget have been selected, as well as 17 projects of green areas from the districts initiative budget.

The Municipal Greenery Authority of Krakow, established by the Municipality of Krakow in July 2015, is responsible for managing and carrying out tasks related to greenery belonging to the municipality or the National Treasury. The main tasks of the authority include management of maintenance, construction, modernisation, revitalisation and restoration of greenery, and the implementation of various programmes and tasks commissioned by law. There is, however, no developed, stable platform for FUA and region-wide cooperation between bodies responsible for the management and maintenance of UGS.

Krakow's main challenges are related to land ownership and structure, and inadequate cooperation between institutions.

5.7 Zadar

The city of Zadar is situated on the Adriatic Sea, in the north-western part of Croatia's Ravni Kotari region. It is the fifth largest city in Croatia and the second largest in Dalmatia, with a population of 71,471 (2011). Zadar serves as the seat of Zadar County and the wider northern Dalmatian region. The urban core of FUA Zadar is 825.14 km2 in size, with a population of 113,045. FUA Zadar is unique in that it also includes islands together with the mainland of Zadar.

The most dominant elements of urban green space in the territorial unit are: abandoned and derelict areas, private gardens, and parts of urban forest smaller than 200 hectares. The total area of UGS elements on the territorial unit of Zadar is 3,696.8 hectares, which is about 517 m² per capita. These high UGS values are the result of unbuilt hinterland areas.

In the field of community gardening, the "New Skills for New Competencies" project presents some good practices while also tackling the problem of social vulnerability. Eight homeless people are already engaged in community gardening that produces food for a public kitchen. The project also encourages homeless people to re-enter the labour market. Also worth mentioning are a pair of NGO-led projects: “City Gardens” (2013) and “Urban Balcony Gardens” (2016) were both developed to encourage building residents to cultivate medicinal plants on their balconies.

There are some green roofs in Zadar, but not many. The main reason for the low number is that the policy to create or encourage green walls and roofs is not sufficiently promoted; nor is it regulated at territorial level. The “Urban Gardening: Green Roofs” project, initiated by the Eko-Zadar association, plans to green the roof of the Sime Budinic Elementary Eco-School, as well as the flat roof of the school garage. Perennials suitable for Mediterranean climate have been recommended for planting.

Zadar lacks an organised, purpose-built spatial database for any its 21 UGS types; nor is there any accurate analogue data on their distribution over such areas. The UGB project has therefore carried out special research to obtain insight and establish reference conditions for UGS elements in FUA Zadar, with special emphasis on the application of different geospatial technologies, namely: GIS, GPS and remote sensing to analyse the current state of database about UGS; creating a new GIS database of UGS for FUA Zadar; and suggesting and generating indicators that can support UGS management. The primary goal for the future is to create a green-space information system with an integrated, accessible UGS database.

Regarding urban planning of green areas, the general public was included through public consultations during the development stage of strategic documents (such as the Functional Urban Area Development Strategy and the Zadar County Development Strategy). The public could be much more involved, however, and participatory planning needs to be further developed. People are not accustomed to spending lots of time in parks for activities or recreation, which is typical for most cities in the Mediterranean. Because of a lack of specialised parks, existing parks are mostly used as children’s playgrounds or dog walks. Public interest in green areas and environmental awareness are quite low, but have improved in recent years. For example, citizens protested the removal of old trees in the Zadar City Centre. Also, various cultural festivals and clean-up actions have taken place in the city’s parks.

In terms of UGS management, Zadar has a problem with inadequate horizontal and vertical linkages between associations, organisations and city boards. Development management for FUA Zadar is carried out through public, private and civil sectors. Administrative bodies of local self-government play a leading role in development planning and management. Most city or municipal institutions and enterprises are in the City of Zadar, which is the founder or co-founder of 21 institutions, and owner or co-owner of 12 companies. The Department of Utility Services performs tasks related to continuity and quality of public services, maintenance of municipal facilities and equipment, etc. Nasadi is a city company whose primary activity is public green space maintenance. Natura Jadera is a public institution mandated under the “Nature Protection Act” to manage protected natural areas in Zadar County. The institution, which cooperates with multiple stakeholders, manages 13 protected natural areas of Zadar County, as well as Natura 2000 areas (except for areas that are within the boundaries of Paklenica and Telascica, Vrana Lake and Velebit). At national level, nature conservation falls within the jurisdiction of the Ministry of Environment and Nature Protection, while the State Institute for Nature Protection oversees professional activities.

Some of Zadar's main challenges are related to the lack of communication and coordination between designated bodies in UGS sector as well as to the low level of citizens involvement. Another problem that complicates UGS management is the lack of spatial data, which makes it impossible to effectively monitor trends using a system of indicators. The creation of a sustainable management plan of urban green belts is also needed to solve other primary issues, such as lack of financial support, reorganisation of competent departments and services, employment of experts, and implementation of GIS systems.

6 SYNTHESIS OF LOCAL ASSESSMENTS

The results of seven local assessments clearly show that the partners' territorial units differ widely in terms of UGS characteristics, development, management and governance. In the following chapter, the key findings from each local assessment are synthesised, following most of the building blocks of the common methodology (DT1.1.2) and with a specific focus on: key characteristics of urban landscape; other specific aspects (e.g. community gardening, green roofs/walls); use of GIS tools; participatory planning; UGS governance; and difficulties, obstacles and challenges related to UGS development and management.

6.1 Key characteristics of the FUAs and the territorial units

6.1.1 Differences between partners' areas

It should be highlighted that public administrative territorial units, which were the starting point of the local assessments, differ slightly both in size and level of administration. Hegyvidek and Prague 6 are self-governing districts within the larger municipalities of Budapest and Prague and their larger conurbations. Padua, Maribor, Zadar and Krakow are municipalities, and represent the main urban core in their functional areas. On the other hand, the local assessment of the Upper Salzach Valley was undertaken at the level of a "functional urban area" (or, FUA).

Although the project will tackle challenges at FUA level, the most extensive such local assessments were made only for Budapest and Upper Salzach Valley, but also partly for the FUAs of Maribor, Zadar, Krakow and Padua. The assessments were focused mainly on partners' public administrative territorial units. The main reason was lack of available data, as well as the fact that four project partners represent public administrative territorial units. The UGB project will look for solutions that can be applied at FUA level, but the starting point for this could and should be the situation that project partners are *currently* facing, both as public administrative territorial units and as part of a wider FUA.

Table 1: Project partners with their public administrative territorial units and functional urban areas

No.	Project partner	Public administrative territorial unit	Functional urban area
1	Municipality of 12th District of Budapest (Hegyvidék)	Municipality of 12th District of Budapest (Hegyvidék)	Budapest conurbation
2	The Regional Environmental Center for Central and Eastern Europe	/	/
3	Research Studios Austria – Studio iSPACE	FUA Upper Salzach Valley	FUA Upper Salzach Valley
4	Research Centre of the Slovenian Academy of Sciences and Arts	/	/
5	Maribor Development Agency	City Municipality Maribor	FUA Maribor
6 & 10	Małopolska Region & Municipality of Krakow	Municipality of Krakow	FUA Krakow
7	Municipality of Padua	Municipality of Padua	FUA Padua
8	Municipal District of Prague 6	Municipal District of Prague 6	FUA Prague
9	Zadar County Development Agency ZADRA NOVA	City of Zadar	FUA Zadar

6.1.2 Analysis of landscape and green space characteristics

The analysis of the main characteristics of territorial partners' public administrative territorial units reveals many differences regarding their general characteristics (see tables 2 and 3). The Upper Salzach Valley and the Municipality of Krakow stand out with their big size, and Krakow for its large population as well. We are dealing generally with densely populated urban areas. A unique case is the Upper Salzach Valley, as it covers a large continuous area with a transition from semi-urban to rural regions and possesses a high share of green space.

Methodological differences between some indicators across the partners' areas make it difficult to draw concrete conclusions. For example, any calculation of population density is always strongly affected by the size of the area (sometimes territories also include non-populated areas that belong to the administrative territory), and a given value for population density can be misleading in terms of actual environmental quality or human pressure on urban green spaces. Similar methodological issues are also relevant when calculating green space area, which strongly affects the indicator of "urban green space per capita", which is a very popular and standard measure of adequacy of green areas. Criteria for determining which areas are characterised as green spaces and those which are not differ strongly between territories, organisations and specific legislation. Our most typical example is the difference between Zadar and Maribor. Urban green space per capita in Zadar is more than 30 times greater than that in Maribor — mainly because the City of Zadar includes vast rural areas on the outskirts, while the administrative borders of the City of Maribor do not include the large forest areas of Pohorje, although Pohorje is an extremely important green area for people of Maribor, providing them with numerous recreational, social and health benefits. Such data also do not reveal the distribution of green areas, which can be very uneven. Badiu et al. (2016) reported that urban green space per capita is not a valuable target for achieving a city's sustainability goals unless it takes into consideration the determinants, structure and other characteristics of UGS. The same goes for "accessibility to green space", another indicator that is not easy to calculate and subject to numerous methodological considerations. On the other hand, some data (e.g. some indicators about FUA level or areas of green roofs and walls) are either mostly not available or can be obtained only in proxy form. Therefore, additional, in-depth qualitative analysis that also takes methodological issues into account is necessary if we want to interpret these numbers correctly.

Table 2: *An overview of some basic characteristics of partners' public administrative territorial units*

	Hegyvidék	Maribor	Padua	Prague 6	Zadar	Krakow
area (km2)	26,7	39,7	92,9	41	52,4	326,8
population	58.322	95.589	210.401	110.152	71.471	761.873
population density (people/km2)	2181	2405	2265	2687	1358	2331
green space area (km2)	9,9	1,4	21,8	8	36,9	208,8
urban green space per capita (m2)	170	15,5	103	72,6	517,2	274,1
average accessibility to urban green spaces (m)	750 (max)	1681*	300–1000	200	no data	300**
Total area of green roofs (m^2)	no data	no data	1500	no data	no data	141000
Total area of green walls (m^2)	no data	no data	200	no data	no data	8000

* to the only bigger park in the city

** between 65 and 75% of people live within the zone of 300 meters around the public green areas

Table 3: *An overview of some basic characteristics of partners' functional urban areas*

	Budapest	Salzburg	Maribor	Padua	Prague	Zadar	Krakow*
area (km2)	525,1	351,6	1.334,10	n/a	n/a	825,1	1.483
population	2.879.601	362.455	246.306	508.205	1.910.396	113.045	1.362.740
population density (people/km2)	1010	585,9	180,4	n/a	n/a	137,0	918,9
green space area (km2)	n/a	256	6,9	n/a	n/a	0,8	n/a
green space per capita (m2)	148,3	1243	31,34	n/a	n/a	33,2	n/a

* Kraków Metropolitan Area is a functional structure, comprising Kraków, along with its neighbouring settlement units, which are connected to the metropolis by various interrelationships.

UGS characteristics were also evaluated in terms of various levels of administrative responsibility (i.e. national, regional, city/municipal, private). Unfortunately, we can only provide a general overview because the data are incomplete. The general conclusion is that there is a great diversity of green infrastructure both between and within the seven partner areas.

In each area, there is at least one urban green space type that stands out in terms of having a higher level of responsibility (national or regional) and significance. With its many protected natural areas, Hegyvidek has the largest number of significant green space elements. Zadar is the only partner area with a sea coast. Padua's significant urban green spaces are riverbanks and surface waters. The Upper Salzach Valley is characterised by its agricultural areas and areas under local protection. In Maribor, the Drava River and protected areas are of particular importance. Prague 6's most outstanding feature is the Sarka Valley Nature Park — the largest and (arguably) best preserved park in Prague. The most significant green elements in Krakow include Błonia, a vast meadow directly adjacent to the historic centre of the city; the Kościuszko Mound; the Botanical Garden of the Jagiellonian University; the Zoological Garden; and numerous landscapes and national parks in the Malopolska region.

The assessments showed that the most significant types of green areas at the city/municipal level are parks, protected areas, green playgrounds and tree alleys, followed by street-side greenery and green verges, neighbourhood greens and public institutional green space. Botanical and zoological gardens, wetlands, and bio-swales are among the "least significant" types. Agricultural areas are quite important in Padua, and to a lesser extent also in the Upper Salzach Valley.

Apart from various types of public green spaces, private green spaces are also relevant for their positive contributions to the liveability of the dwelling environment, which include privacy, freedom and gardening opportunities. In line with the findings of the local assessments, private gardens are considered "very significant" in Hegyvidek, and "fairly significant" in Maribor and the Upper Salzach Valley. There is no adequate information on private gardens for Krakow, Padua and Prague 6.

6.2 Other specific aspects

6.2.1 Analysis of the situation regarding community gardening

Community gardening, which has enjoyed a surge in popularity across Europe in the past few years, offers several social benefits: community attachment, enhanced citizen participation, recreation, and inclusivity of vulnerable and marginalised groups. It can also provide a temporary solution for "grey zones" or derelict land, and can therefore significantly contribute to sustainable urban development. The EU-wide "Strategy on Green Infrastructure" also supports the development of community gardens and recognises its potential to educate school children and engage the interest of young people.

There are numerous examples of community gardening schemes in the partners' public administrative territorial units and functional urban areas that can serve as good starting points to further develop participatory approaches, community involvement and UGS governance. The largest number of community gardens is in Padua (16), which has promoted community gardening since 1980. Six community gardens are maintained in the city of Salzburg: three of them were organised under the private gardening initiative "*blattform*", while the other three do not belong to any organisation. Within Prague 6, there are five sites of community gardens that developed quite spontaneously and without the cooperation of the district office; in addition, their users focus purely on the cultivation of various vegetables without further maintenance of the area. There is another Prague 6 neighbourhood that simultaneously serves as a sort of "community garden demonstration site". Hegyvidek has only two community gardens, but Budapest, on the other hand, is one of the leading cities in Europe in this field. Roughly 30–40 community gardens that operate in Budapest came into existence owing to bottom-up initiatives and, in some cases, with the support of multinational companies. An "Evening of Community Gardens" was organised recently in the Hungarian capital. Community gardens are scarce in Maribor, Zadar and Krakow, but plans do exist in these cities for related activities. One goal of the "Urban Plan for the City of Maribor", for instance, is to obtain a minimum of 500 urban organic gardens on already selected locations by 2020. In fact, some very interesting and successful projects are going on, mainly driven by strong bottom-up initiatives of citizens or NGOs. One example: Zadar's only community gardening project also has an important social component, as it attempts to integrate vulnerable and marginalised groups — namely, homeless people — into society.

Table 4: *Analysis of community gardening across partners' administrative territorial units*

	Number of community gardens	Details, specifics
Padua	16	The longest history of community gardening among project partners, which has been promoted since 1980.
Salzburg	6	Three were organised under the "*blattform*" private gardening initiative, while the other three do not belong to any organisation.
Prague 6	5	Without cooperation of the municipality.
Maribor	2	Eight new locations for new community gardens are included in the Urban Plan of the City of Maribor.
Hegyvidek	0	Two community gardens are managed in Hegyvidek (at Városmajor Primary School and Arany János High School) and 30–40 gardens in other parts of Budapest.
Zadar	1	Goal of the "New skills for new competencies" project is to reduce levels of risk of poverty and social exclusion of vulnerable groups.
Krakow	5	Existing residential gardens: "Azory" Community Garden; a garden in Dywizjon 303 hausing estate; "Siemaszki"; „Poziomkowa polana"; and Krakowski Ogród Społeczny - Krzemionki.

6.2.2 Analysis of situation regarding green roofs/green walls across target areas

In line with the results of the local assessments, there are only very few examples of green roofs and walls in the partners' territorial units. While green roofs and walls are becoming an important element of green infrastructure in a growing number of European cities and towns (e.g. Madrid, Stockholm, Dusseldorf, Basel, Stuttgart, Copenhagen), their development across UGB partners' areas are in the initial stages (*see Table 2*). There is, however, great potential: in Krakow, it is estimated that 33 percent of buildings could set up rooftop gardens. There are some isolated examples of such initiatives, limited to certain institutions, buildings and walls in Krakow and Padua (and one planned in Zadar): these are rather spontaneous developments and unrelated to any formal strategies or action plans. An interesting case is the Upper Salzach Valley, where green roofs are funded within the scope of a housing subsidy (there are no detailed data available on the scheme). In some cases, strategies do mention or support them at municipal (Maribor) or national level (Padua), but there are neither detailed plans nor funds provided — and related policies are not yet implemented in other spatial planning documents. In brief, there is plenty of room for improvement.

6.3 Smart methods and tools for urban green space and green infrastructure assessment and planning

In filling out the questionnaire in the common methodology on smart methods and tools for UGS assessment and planning, partners had to answer questions about: elements of targeted urban green space and data types; data ownership and accessibility; green space information systems (GIS); application of GIS; plans for the application of GIS; spatial planning and management; and good practices.

The assessments indicated that municipal authorities and their respective offices or departments in most of the project partners' public administrative territorial units are using e-tools. In six of seven territorial units, georeferenced data are available as polygons, lines or points on different types of urban green areas regarding their function — i.e. as protected areas, trees, parks, forests etc. Under certain conditions, most of the data are available to researchers and students, but to the general public only to a limited extent. Numerous specific details about each unit of each green area are available, including ownership, age, quality, maintenance etc. The situation regarding GIS data is more or less similar in Padua, Krakow, Salzburg, Prague 6 and Hegyvidek. It differs in terms of content, operational system and various details, but the practice is generally well developed and serves as a firm basis for further development.

The largest gap in GIS data is in the City of Zadar, where the responsible city departments do not have official georeferenced data on green spaces, which prevents city boards (policy makers) from taking sustainable decisions on the management of UGS. Therefore, special research was carried out in Zadar within the UGB project to generate adequate spatial data and indicators for managing UGS. It is estimated that 25 percent of all data has been fully acquired for Maribor, which accounts for around 50 percent of the Municipality of Maribor's urban core area. The databases are quite developed in other territorial units, but there is still room for improvement.

It also needs to be highlighted that municipal data only cover public administrative territorial units, not wider functional areas. This is logical, due to the clear administrative borders and level of responsibility. Data at this level should be available from other sources.

The area with the most extensive experience and the most developed smart methods and tools applied in this field is the Upper Salzach Valley. Data referring to urban green spaces are stored and managed by the government of the Federal State of Salzburg, while most assessments of urban green spaces refer only to the City of Salzburg. Several extensive and GIS-supported studies have been carried out in the region: on the current shortage of green spaces; on potentials, strengths, and weaknesses of each defined landscape unit; on the degree of urban greening; an examination and inventory of all biotopes within the federal state; and assessments of green spaces and the quality of living environments. (These studies are described in more detail in the respective executive summary.)

In most cases, the use of GIS is an essential part of employees' daily work: it can provide support in decision making on urban development and management, and in preparing development and regulation plans, analysis, monitoring, etc. Administrators also use GIS in their daily work — inspecting building regulations, tree cadastres, mapping public utilities etc.

Most partners expect to upgrade the GIS databases in the near future, and the UGB project can play an important role by serving as a starting point for elaborating appropriate e-tools. Once the GIS database with UGS data is complete, integral analytics and a holistic approach to planning and managing UGS will be possible. Participatory elements are not yet included in the GIS databases in any of the partners' areas, but there are plans to do that in the future. With given data and smart methods, it will be possible to acquire the whole range of accessibility, usage-to-maintenance cost ratios, and user feedback.

6.4 Participatory planning & maintenance of UGS

Due to numerous benefits to quality of life, Urban green spaces always draw a lot of attention because of the many quality-of-life benefits they provide, so it is not a surprise that relevant authorities are trying to incorporate local views and opinions into the planning process — and in the partners' areas as well. Analysis shows that participatory approaches differ in intensity, techniques and degrees of success, but the planning process are generally quite well developed.

We can distinguish between citizen involvement at wider levels (i.e. municipal, city, regional), mostly for creating strategic documents, and citizen involvement at a smaller, neighbourhood level, where citizens can express their views and opinions on different projects, especially on how to revitalise or design urban green spaces. The opinions of citizens are taken into consideration in all the partners' areas at all levels, except in Maribor. Although urban communities have begun to self-organise at the sub-municipal level, participatory models have not yet been integrated into strategic documents in Maribor. Citizen interest in projects related to strategic development and green areas is generally high.

A wide range of participatory tools has been used in the partners' areas: among the most common are workshops and public meetings, followed by surveys and internet platforms. Among less frequently—albeit successfully—used methods are social media, laboratories, exhibitions, and cleaning actions.

We should note that partners did not detect any UGS maintenance-related practices that are already common elsewhere: in Utrecht, for example, maintenance contracts allow citizens to maintain certain sections of public green space.

There are three special cases worth mentioning that involve participatory budgeting schemes implemented at the local level: these are in Maribor, Prague 6 and Krakow. This is somewhat surprising because, compared to most “Western” countries, the post-socialist countries have weaker traditions of democracy and public participation. As these initiatives are in the initial stages (although Krakow is already working on its third edition) it is too early to assess the outcomes, but they are an important step towards achieving higher levels of citizen involvement in planning and management of UGS, as they can raise awareness of green infrastructure among citizens — a key stakeholder group. In all three areas, projects with the most public support will be selected and funded.

6.5 Multi-stakeholder UGS governance model

A trend of integrated development has become evident in some partners’ territorial units, as a very wide range of stakeholders and different profiles from different fields is getting involved in USG management. In Hegyvidek, the Green Office of the Municipality was explicitly established with the goal of facilitating intensive cooperation between different bodies and stakeholders at local, regional and national levels. In the Upper Salzach Valley, Prague 6 and Padua, high levels of internal and external (as well as vertical and horizontal) cooperation between different bodies have In the Upper Salzach Valley, there is strong cooperation between the different sectors on regional and municipal levels of responsibility, and collaboration with the federal-level Department of Spatial Planning is taking place as well. In many cases, civil society organisations (mostly dealing with environment or nature conservation) are also involved in green space governance when they have a wish to state their interests. In Padua, green area management operates at multiple levels, and the tasks assigned to each organisation are quite clear. Padua also has specific agreements that allow the municipality to directly manage green sections of the canal and parts of the riverbanks. Both Padua and Salzburg have their own departments for green areas, which are responsible for maintaining urban green areas. In Prague 6, both horizontal and vertical coordination is conducted within a standard cooperation framework between public administration bodies, while elements of inter-sector cooperation are also involved in public procurement efforts. PRO 6 is a Prague 6-based organisational body that supports the management of public green spaces through the development and implementation of social programmes under which maintenance is performed by individuals from socially vulnerable groups.

In terms of quality of UGS governance, these three areas are followed by Krakow, where municipal-level management and governance of UGS is expected to improve. In July 2015, a body responsible for UGS governance was established to manage and carry out tasks related to the greenery belonging to either the Municipality of Krakow or the National Treasury. Their main tasks related to green areas include: planning and management; continuous maintenance; construction; upgrading; rehabilitation; revitalisation and restoration of greenery; and implementation of various programmes and tasks commissioned by law. However, at the FUA or regional level there is no developed, stable platform for cooperation between bodies responsible for the management and maintenance of UGS.

Zadar and Maribor are the least developed in terms of multi-stakeholder UGS governance. Horizontal cooperation is practically non-existent, while vertical cooperation is limited to the scope of statutory requirements. This is partly due to the lack of holistic awareness of the importance of UGS and its urban benefits. Maribor’s municipal organisational structure lacks a body that would be responsible for developing green areas and open space, and there is also a shortage of professionals.

6.6 Strategic aspects: difficulties, obstacles and challenges

Project partners have highlighted several difficulties, obstacles and challenges regarding areas associated with UGS planning, development and maintenance. In the analysis, their answers were systematically categorised into five groups: green space degradation (e.g. overuse, loss of green space, low quality, invasive species); lack of spatial data; governance and management (e.g. inadequate cooperation, lack of long-term management and planning, absence of a body responsible for green areas, absence of specific rules and economic incentives, absence of overall management system); public participation and communication; and maintenance.

Governance and management-related difficulties stood out strongly, as nine such examples were indicated. These were followed by issues related to green space degradation (four examples), while public participation and communication (three examples), maintenance (one example) and lack of spatial data (one example) were problematic only in certain territorial units. It is possible, however, that partners might have applied different criteria when assessing those issues, as some of them indicated a higher number of problems than others (Prague 6 noted six different problems). In most cases, the difficulties highlighted correspond to partners’ gaps and needs. Analysis shows that one of the greatest challenges within the UGB project will be to establish a smart model for UGS governance and management, as the strongest needs are associated with this field. This is partly a because urban green spaces provide numerous benefits for different stakeholders, but also because they do not follow administrative borders.

Table 5: *Analysis of difficulties, obstacles and challenges in partners' areas*

Difficulty, obstacle or challenge	No. of examples	No. of examples by partner area	Details
Governance and management	9	Prague 6 (2) Maribor (3) Upper Salzach Valley (1) Zadar (1) Padua (1) Krakow (1)	**Upper Salzach Valley** • Lack of an effective system for overall green space management **Maribor** • Absence of a body within the municipal organisational structure responsible for developing green areas and open space • Inadequate cross-sector cooperation within the municipality • The growing power and establishment of so-called self-organised City Quarters and Local Communities and their—mostly justified—initiatives and demands for new urban green spaces **Padua** • The establishment of a long-term plan related to green spaces **Prague 6** • Absence of rules pertaining to community development and maintenance of green spaces • Absence of appropriate subsidy tools for community management of public green spaces **Zadar** • Lack of communication and coordination between designated bodies in UGS **Krakow FUA** • Inadequate cooperation between institutions
Green space degradation	4	Hegyvidek (1) Upper Salzach Valley (1) Prague 6 (1) Krakow (1)	**Hegyvidek** • Soil crumbling, old tree stock, invasive species in public and private areas, problems with maintaining the least accessible roads and slopes in public areas, and unattended green spaces in abandoned private gardens **Upper Salzach Valley** • Diversity of intended uses of non-built-up areas **Prague 6** • Loss of green spaces, especially trees in urban areas **Krakow** • Land structure and ownership
Public participation, communication	3	Prague 6 (2) Zadar (1)	**Prague 6** • Lack of a systemic approach to public engagement • Lack of effective promotion and communication measures regarding the management of public green spaces **Zadar** • Low level of citizen involvement
Lack of spatial data	1	Zadar	• Lack of spatial data on UGS
Maintenance	1	Prague 6	• Potentially inadequate linking of public green spaces maintenance with street cleaning services within a single procurement

7 CONCLUSIONS WITH A VIEW TO SMART MODELS

The baseline study presents a synthesis of the results of European-level analysis and seven local assessments done by local project partners. It is intended to provide a basis for the development of "smart models" for integrated UGS management and roadmaps to be elaborated at a later stage of the project. In this section, we offer some key considerations related to the design of smart models, corresponding to three thematic working groups.

Thematic Working Group 1 (coordinated by iSPACE) focuses on UGS and GI assessment, and aims to develop a comprehensive GIS-based decision-support tool suitable for facilitating urban planning and development. Planners and public authorities should be given a set of certain methods and tools to alleviate their administrative tasks and duties. This will happen in accordance with the preservation of the primary functions of certain green spaces. Thematic Working Group 1 will design such an innovative decision-support tool based on GIS analyses and indicator modelling knowhow on the conceptual and technical side. This is supported by expertise from the whole project consortium in terms of participatory approaches and capacity building, which consequently fosters a productive working environment and an effective transfer programme. The local assessments show that, although most project partners' public authorities and their respective offices or departments are already using e-tools, there is a clear indication that most of the partners intend to upgrade their GIS databases in the near future, while also taking into account a participatory approach.

Thematic Working Group 2 (coordinated by ZRC SAZU) focuses on the elaboration of a participatory model for UGS governance that includes innovative methods and tools of active stakeholder and community involvement into planning and implementation process aiming at revitalisation and better maintenance of UGS. EU-level analysis revealed that we have been witnessing an increase in the uptake of approaches aiming at participatory governance of urban green spaces, especially in the last decade. UGS are generally considered positive and beneficial in several ways, so it is not surprising that they are getting so much public attention and that authorities are trying to involve inhabitants' views and opinions into the planning process. The local assessment analysis revealed many successful participatory practices applied by partners that can be transferred together with lessons of good practices from across Europe. These can serve as a firm basis for better and more inclusive UGB governance, and for designing UGB smart models at later stages of the project.

Thematic Working Group 3 (coordinated by the REC) is dealing with the development of a new multi-stakeholder governance model that addresses internal and external cooperation frameworks. The model will focus on two important aspects: (1) multi-level governance, and (2) institutionalised forms of cooperation with non-governmental actors. A growing number of local authorities across Europe are making efforts to re-establish strong relationships with non-governmental actors, and to develop collaborative forms of governance aimed at improved management and maintenance of urban green spaces. The analysis confirms that the establishment of multi-stakeholder governance-related practices is one of the most demanding issues concerning urban green spaces. The greatest number of challenges in the partners' areas are related to governance and management, and are mostly associated with inadequate horizontal and vertical cooperation. There are examples of internal and external cooperation practices in place between different bodies at both horizontal and vertical levels in the Upper Salzach Valley, Prague 6 and Padua; in addition, Hegyvidek has taken its first steps towards fostering intensive cooperation with different bodies and stakeholders. Nevertheless, there is still plenty of room for improvement in terms of internal, vertical and cross-sector cooperation; applicable rules and procedures and coordination mechanisms; and innovative forms of collaboration.

REFERENCES

EU policies

EC, 2013, Commission staff working document – Technical information on Green Infrastructure (GI). Accompanying the document: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Green Infrastructure (GI) — Enhancing Europe's Natural Capital, SWD(2013) 155 final.

EC, 2006, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Thematic Strategy for Soil Protection, COM(2006) 231 final.

EC, 2007, Communication from the Commission to the European Parliament, the Council – Addressing the challenge of water scarcity and droughts in the European Union, COM(2007) 414 final.

EC, 2011, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Our life insurance, our natural capital: an EU biodiversity strategy to 2020, COM(2011) 244 final.

EC, 2011, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Roadmap to a Resource Efficient Europe', COM(2011) 571 final.

EC, 2012, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Report on the Review of the European Water Scarcity and Droughts Policy, COM(2012) 672 final.

EC, 2013, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – An EU Strategy on adaptation to climate change, COM(2013) 216 final.

EC, 2013, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Green Infrastructure (GI) — Enhancing Europe's Natural Capital, COM(2013) 249 final.

EC, 2013, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A new EU Forest Strategy: for forests and the forest-based sector COM(2013) 659 final.

EC, 2013, Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet'.

EC, 2009, Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

EC, 1999, European Spatial Development Perspective (ESDP). Towards Balanced and Sustainable Development of the Territory of the European Union.

EC, 2011, Proposal for a Regulation of the European Parliament and of the Council on specific provisions concerning the European Regional Development Fund and the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006, COM(2011) 614 final.

EU, 2011, Territorial Agenda of the European Union 2020. Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions. Gödöllő, Hungary.

Other references

Ambrose-Oji, B. et al., 2015, GREEN SURGE, Deliverable 6.1, The governance of urban green spaces in selected EU-cities- Policies, practices, actors, topics.

Badiu, D. L. et al. (2016). Is urban green space per capita a valuable target to achieve cities' sustainability goals? Romania as a case study. Ecological Indicators (70).

Buijs, A. et al., 2016, GREEN SURGE, Deliverable 6.2, Innovative governance of urban green spaces – Learning from 18 innovative examples across Europe.

Buizer, M., Arts, B., Kok, K. (2011). Governance, Scale and the Environment: The Importance of Recognizing Knowledge Claims in Transdisciplinary Arenas. Ecology and Society 16(1), art 21.

City of Copenhagen, 2012, Green roofs Copenhagen, The Technical and Environmental Administration in City of Copenhagen.

EC, 2011, Report on best practices for limiting soil sealing and mitigating its effects. Technical Report – 2011 – 050

EC, 2015, Towards an EU Research and Innovation policy agenda for Nature-Based Solutions & Re-Naturing Cities. Final Report of the Horizon 2020 Expert Group on 'Nature-Based Solutions and Re-Naturing Cities'. Directorate-General for Research and Innovation. Climate Action, Environment, Resource Efficiency and Raw Materials.

EEA, 2010, The European environment — state and outlook 2010 (SOER)

EEA, 2015, The European environment – state and outlook 2015 (SOER)

EEA/JRC, 2013, Environment and human health, EEA Report No 5/2013, European Environment Agency and the European Commission's Joint Research Centre.

ESPON, 2013, Progress towards the Territorial Agenda of the European Union 2020.

European Green Capital, 2012, Vitoria-Gasteiz winner 2012. Green cities – fit for life

Gehl, Jan. "Public Spaces for a Changing Public Life." Open Space People Space. Ed. Catharine Ward Thompson and Penny Travlou. London: Taylor and Francis, 2007.

Stockholm City Council, 2010, The Walkable City – Stockholm City Plan.

UN, 2011, Population distribution, urbanization, internal migration and development: an international perspective, United Nations Department of Economic and Social Affairs.

Urban Green Labs, 2016, Urban Green Labs – Promoting citizens engagement in in upgrading urban green spaces, Baseline study.

Websites

http://ec.europa.eu/environment/europeangreencapital/

http://ec.europa.eu/environment/europeangreencapital/europeangreenleaf/index.html

http://greencities.eu/Home-1

http://www.innovationseeds.eu/Network-Library/Core-Articles/European-Green-Cities-Network-EGCN.kl

http://www.euro.who.int/en/health-topics/environment-and-health/urban-health/activities/healthy-cities/who-european-healthy-cities-network https://naturvardsverket.se/Documents/publikationer6400/978-91-620-8591-9.pdf?pid=4268

http://malmo.se/download/18.af27481124e354c8f1800015944/Augustenborg

http://thegreencity.com/madrid-is-covering-itself-in-plants-to-help-fight-rising-temperatures/

http://www.citylab.com/design/2016/01/madrid-green-plan-car-ban-roofs-buildings/426777/

http://www.mrfood2012.com/tp/t_main.php?article_ID=253

http://www.communityfoodandhealth.org.uk/community-based-activity/case-studies/granton-community-gardeners/

http://hvg.hu/elet/20161012_Kutyat_akartam_kert_lett_belole

http://hvg.hu/plazs/20150527_Ujabb_2600_negyzetmeteren_kerteszkedhetne

http://www.betterbankside.co.uk/about-us

http://www.betterbankside.co.uk/buf

http://climate-adapt.eea.europa.eu/metadata/case-studies/green-roofs-in-basel-switzerland-combining-mitigation-and-adaptation-measures-1

http://pd.zhaw.ch/publikation/upload/203013.pdf

http://inhabitat.com/copenhagen-adopts-a-mandatory-green-roof-policy/

http://www.igra-world.com/images/city_network/IGRN-Case-Study-Stuttgart-IGRA.pdf

http://newatlas.com/ingenhoven-architects-ko-bogen-2-dusseldorf/42795/

http://www.hphpcentral.com/article/urban-planning-and-the-importance-of-green-space-in-cities-to-human-and-environmental-health

https://ec.europa.eu/research/environment/index.cfm?pg=nbs

https://en.wikipedia.org/wiki/Business_improvement_district

http://www.minimalisti.com/architecture/landscape-design/06/vertical-gardens-green-walls.html

http://all-that-is-interesting.com/vertical-gardens

https://www.bdcnetwork.com/cities-alive-arup-report-examines-latest-trends-urban-green-spaces