# GREEN TRAJECTORIES

## Municipal policy trends and strategies for greening in Europe, Canada and United States  (1990-2016)

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Photo: Travis Watson

# FOREWORD

This book is a beginning. It is the beginning of a series of publications on the urban greening policy trajectories of 99 European and North American mid-sized cities over roughly a 25-year period (beginning in 1990). These publications will examine in-depth the social equity implications of developing new urban green spaces and bringing nature back into the city. This book presents our synthesis of the green policy trajectories across all 99 cities and a brief – but detailed – case study for the first 50 cities.

This book is also the beginning of a 5-year research project examining the relationship between urban greening and social equity in mid-sized North American and European cities since 1990. Funded by the European Research Council, the *GreenLULUs* study uses the broad overview of policy trajectories presented in this book as a base from which to select 40 critical cases of cities engaged in the creation or renovation of urban green amenities (i.e., municipal parks and gardens, community gardens, greenways, ecological corridors, waterfront promenades, open recreational areas and playgrounds).

For these 40 cases, we are gathering extensive quantitative and spatial data on demographic changes and green space implementation. Following analysis of that data, we will further examine through qualitative case work 16 of the 40 cities that show interesting outcomes in terms of the relationship between greening and social and racial equity. Our forthcoming qualitative research will help to gain a greater understanding of the process of green gentrification, the ways that communities contest it, and the responses offered by municipalities to address displacement. Ultimately, then, this book is the first step in a long-term effort to provide a clear picture of processes and outcomes related to urban greening and social and racial equity.

This book also – we hope – helps to mark the beginning of a new epoch for urban sustainability. It builds toward perhaps a 30-year point of inversion for the urban sustainability movement, where social and racial equity is elevated in priority to become fully integrated into urban greening strategies rather than remain a distant consideration for urban policy behind growth and environment. This inflection point for urban sustainability requires that we acknowledge that, for urban greening to become a true public good with ample social and health benefits delivered to all residents over time, urban planners and decision-makers cannot only count on a trickle-down effect. They need to put issues of social and racial equity at the center of green planning and consider how to best address trade-offs between social, economic, and ecological priorities to produce green, healthy, and equitable urban communities.

Finally, we hope this book serves as a starting point for you to examine what has developed in cities since 1990 and to reflect on what needs to come next. We are excited to see, and look forward to your feedback.

Isabelle Anguelovski
Director

James Connolly
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# INTRODUCTION

The decade of the 1990s was the starting point for formal urban sustainability programs in many cities around the world. Following the 1987 release of the Brundtland Report by the United Nations, which coined the term "sustainable development," international agreements and goals on environmental issues were lent further momentum with the 1992 Rio Declaration on Environment and Development, its complementary Agenda 21 (an action plan intended for implementation at various scales), and the 1997 Habitat Agenda. These international initiatives, and their adoption by numerous municipalities, largely catalyzed the start of sustainability planning in cities. Numerous cities began at this time to use greening and sustainability as anchors for policies of all sorts, even if many of them were already leaders in environmental initiatives and liveability practices since the 1980s. Many of them were also responding to World Health Organisation (WHO) calls for addressing health-threatening levels of air contamination, poorly managed and hazard-prone urban settlements, and urban growth more generally.

As a result, between the 1990s and the late 2010s, cities produced prolific documentation and implementation of city-led environmental strategies, policies, and projects around urban sustainability and greening. This greening agenda will likely continue to intensify in the future, building on the momentum created by the 2016 Habitat III conference in Quito, which, among others, articulated the importance of increasing urban green areas and investing in social well-being in order to build sustainable cities. This call brought together greening, health, and equity in urban planning. It highlighted that a green city which does not integrate social development, economic opportunities, environmental management and sound urban governance cannot create long-term sustainability.

In most cases, the wide spectrum of municipal sustainability efforts in the last 25 years has included an emphasis on land use – the preservation of natural environments and habitats, the creation of green buffer zones for water quality management, and the expansion of urban green space for resident health, temperature control, and air quality improvements. While many municipalities amplified the physical greening of their landscapes as a result of the sustainability movement, green space and urban nature in the form of urban parks, gardens, trails, and open spaces have long been treasured by residents as a critical component of their heritage and well-being.

At the same time, cities that experienced the mass movement of residents to their suburbs following the second World War – more so in North America but in Europe to some extent as well – began rethinking ways by which social and economic activity, vibrancy, and residential desirability could be returned to their downtowns and central districts. Attractive green areas and programmed public spaces provided one convincing answer to the question of what residents needed in order to come back to the city neighbourhood or, more generally, to live in healthier and higher-quality urban environments. Cities with medium-sized populations – many of which face the reality of competing for visibility in a post-industrial context of transnational investment and flows of resources that skip past places without the  right mix of attractors – were also reaching a point where they needed to develop new visions for their urban identities. City neighbourhoods started to become laboratories for urban regeneration, innovation, and livability initiatives.

Beyond boosting neighbourhood attractiveness, green space and urban nature have been pushed forward as a solution to a wide and growing range of urban issues over the past three decades. Known for its benefits to health, culture and development, urban greening has been positioned as an answer to significant modern city challenges related to post-industrial redevelopment, neighbourhood and downtown revitalisation, public health promotion, environmental protection and resilience to climate change. As the academic literature and city park plans from around the world have long argued, urban greening holds multiple benefits, including: physical and mental health improvements from regular access to green and outdoor spaces; ecological and environmental benefits from the construction of green infrastructure and the reintegration of nature into the city; socio-cultural benefits from the use of urban green spaces for social activities; and economic benefits from new investment and local development resources that are inevitably attracted to districts with rich and well-maintained green amenities. In many instances, cities have adopted means for monitoring and improving equal access to green space for all residents, in recognition of the importance of extending the benefits of green space to all.

Although the equal distribution of green space has been pursued – and in more recent years, equal access to residents of various ages and abilities has been considered – cities have not, for the most part, accounted for post-implementation equity concerns regarding green space. These concerns include issues of gentrification, socio-cultural representation and resident-driven design, and concerns over displacement. As experienced in the example of numerous high-profile greening projects, such as the High Line in New York, attractive new green amenities tend to boost adjacent property values, increase speculative behaviour, and encourage further residential and commercial development catered to a more privileged group of city dwellers. In many instances, the residents and business owners in socially and economically vulnerable neighbourhoods, who invested in and advocated for improved community amenities for years face the threat of displacement and erasure due to rising rents and the disappearance of their local culture and associated social practices and traditions. These threats have often negative impacts on residents' chronic stress level and other mental health problems.

This book presents a first step in understanding the relationship between the implementation of municipal greening agendas and implications for equity – both procedural equity in the planning and redevelopment process and equity in terms of the right to stay in place and the right to the green city. This publication is also one of the first products of a larger international study funded by the European Research Council through a project called *GreenLULUs* that seeks to determine how urban equity has been impacted as western European, Canadian and US cities have become greener over the past twenty-five years.

With this book we seek to share our findings on municipal greening policy trajectories over the course of twenty-five years or so between 1990 and 2016. While many reports have been published on the benefits of urban greening, its best practices and the typology of physical greening solutions, *this book provides an analysis and description of the policies, plans, policy styles and strategies* that have been used by city staff in mid-sized cities around the world to promote greening solutions and increase the presence of green public space on the city landscape. Different cities have approached greening policy in different ways, with some relying on a strong rhetoric around environmental competitiveness or an emphasis on citizen

participation in green space planning, while others have embedded greening policy into a larger city strategy or have used the 'healthy city' argument in promoting greening plans, policies, and projects. Over time and in response to their particular socio-economic realities, city policymakers have also evolved their thinking on the functions they expect green space to perform as well as the larger city problems to which green amenities can offer a solution.

We invite you, as residents, scholars, policymakers, and change agents in your municipalities, to explore how various cities have approached greening from a policy, procedural, and planning perspective and to note the major greening trends across cities. We hope the following 50 US, Canadian, and European case studies will be useful in critically considering which policy approaches may serve your city to not only facilitate the creation of more urban green space, but to also ensure justice and equity concerns are at the core of the entire life-cycle of proposed greening projects. The information presented here shows that steps forward are possible through thoughtful urban policy frameworks, transversal planning practices, territorial approaches rather than sectoral approaches, and complementary schemes and tools to maintain neighbourhood affordability. By highlighting and bolstering these approaches, we believe the right to the green city can be extended to all residents.

# METHODS

## Research Design

The information presented here represents the initial stage of a long-term research project on equity and inclusion in urban greening. In this stage, we sought to understand, based on public documents, public data, and contact with local informants, the general trajectory of greening in each of the 99 mid-sized cities we studied over the last 25 years. We analyzed how municipalities used policy and planning to advance greening goals; what complementary city programs worked hand-in-hand with greening; and how greenspace expansion was physically manifested under the varying geographic, climatic, political, economic, and regulatory realities in each city.

*City selection:*

We began by identifying all medium-sized cities in western Europe, Canada, and the United States, defined as those with populations roughly between 500,000 and 1.5 million residents. Next, we narrowed the population of cities in our study according to the seven languages spoken by the authors (English, French, Italian, Danish, German, Spanish, Dutch). This yielded a sample of 99 cities. Of those cities 50 were selected according to geographic diversity, public reputation, and availability of data for detailed reporting in this book (see breakdown of cities in Table 1 below). Our goal was to achieve a geographical balance of cities in our three regions and present a variety of greening trajectories. We also developed quantitative greening scores for the remainder of our sample.

| Western Europe | United States | Canada |
|---|---|---|
| <span style="color:red">Amsterdam</span> | Albuquerque, NM | Bradford |
| <span style="color:red">Antwerp</span> | Atlanta, GA | Brampton |
| <span style="color:red">Barcelona</span> | <span style="color:red">Austin, TX</span> | Calgary |
| <span style="color:red">Birmingham</span> | <span style="color:red">Baltimore, MD</span> | <span style="color:red">Edmonton</span> |
| Bremen | <span style="color:red">Boston, MA</span> | Hamilton |
| <span style="color:red">Bristol</span> | Charlotte, NC | <span style="color:red">Mississauga</span> |
| Brussels | Cleveland, OH | <span style="color:red">Montreal</span> |
| <span style="color:red">Copenhagen</span> | <span style="color:red">Colorado Springs, CO</span> | Ottawa |
| Dortmund | Columbus, OH | <span style="color:red">Québec City</span> |
| <span style="color:red">Dresden</span> | Dallas, TX | <span style="color:red">Vancouver</span> |
| <span style="color:red">Dublin</span> | <span style="color:red">Denver, CO</span> | Winnipeg |
| Edinburgh | <span style="color:red">Detroit, MI</span> | |
| Essen | El Paso, TX | |
| Genoa | <span style="color:red">Fort Worth, TX</span> | |
| <span style="color:red">Glasgow</span> | Fresno, CA | |
| Gothenburg | Indianapolis, IN | |
| Hamburg | Jacksonville, FL | |
| <span style="color:red">Leeds</span> | Kansas City, MI | |
| <span style="color:red">Liverpool</span> | Las Vegas, NV | |
| <span style="color:red">Lyon</span> | Long Beach, CA | |
| <span style="color:red">Málaga</span> | <span style="color:red">Louisville, KY</span> | |
| Manchester | Memphis, TN | |
| <span style="color:red">Marseille</span> | Mesa, AZ | |
| Milan | Miami, FL | |
| <span style="color:red">Munich</span> | Milwaukee, WI | |
| Murcia | <span style="color:red">Minneapolis, MN</span> | |
| <span style="color:red">Nantes</span> | <span style="color:red">Nashville, TN</span> | |
| <span style="color:red">Naples</span> | <span style="color:red">New Orleans, LA</span> | |
| Nice | Oakland, CA | |
| <span style="color:red">Palermo</span> | Oklahoma City, OK | |
| Palma | Omaha, NE | |
| Rotterdam | <span style="color:red">Philadelphia, PA</span> | |
| <span style="color:red">Sevilla</span> | Phoenix, AZ | |
| <span style="color:red">Sheffield</span> | <span style="color:red">Portland, OR</span> | |
| <span style="color:red">Stockholm</span> | <span style="color:red">Raleigh, NC</span> | |
| <span style="color:red">Stuttgart</span> | <span style="color:red">Sacramento, CA</span> | |
| The Hague | San Antonio, TX | |
| Toulouse | <span style="color:red">San Diego, CA</span> | |
| <span style="color:red">Turin</span> | San Francisco, CA | |
| <span style="color:red">Valencia</span> | <span style="color:red">San Jose, CA</span> | |
| <span style="color:red">Vienna</span> | <span style="color:red">Seattle, WA</span> | |
| Zaragoza | <span style="color:red">Tucson, AZ</span> | |
| Zurich | <span style="color:red">Tulsa, OK</span> | |
| | Washington, DC | |
| | Wichita, KS | |

*Table 1: List of Cities by Region. Cities in* **<span style="color:red">red</span>** *have extended descriptions of their greening policy trajectories since 1990 included in this volume. Cities in* **black** *were included in the analysis of overall trends presented below, but do not have a full description of their greening policy trajectory in this volume.*

## North America
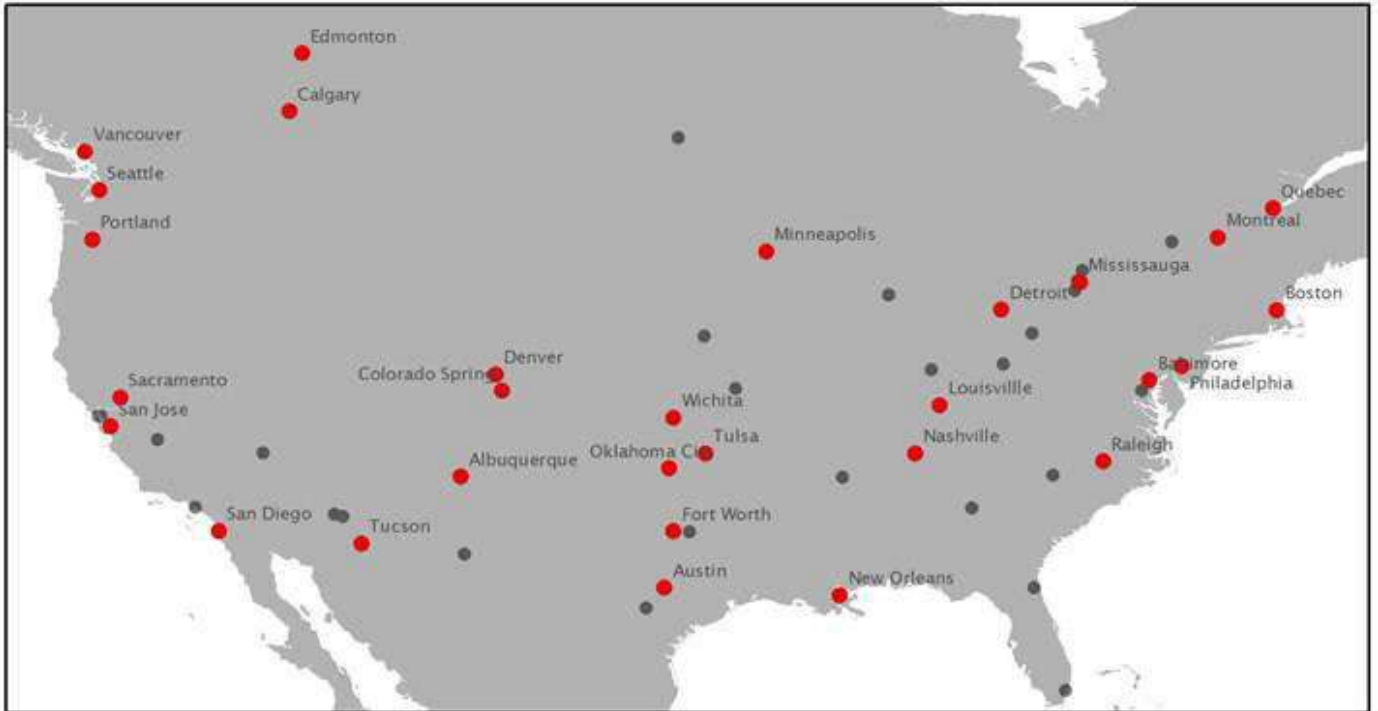


## Western Europe



● Cities with case studies in this volume

● Cities included in the analysis but without case studies in this volume

*Definition of greening*

Our research into city policies and greening activities focused on initiatives involving the physical manifestation of green or natural spaces as well as public spaces that promote some of the same functions of relaxation, recreation, interaction and socialisation. We included planning initiatives and projects oriented toward the production, restoration, and renovation of the following green spaces, urban natural preserves, and green infrastructure (Table 2 below).

Municipal parks and gardens
Open spaces
Preserved natural areas, urban forests and woodlands
Green promenades and greenways
Waterfronts (including riverfronts and beaches)
Urban wetlands
Habitat protection areas
Community gardens
Urban farms
Greened utility corridors
Raingardens
Playgrounds
Greened plazas and public squares

*Table 2: Types of green spaces, urban nature, and green infrastructure*

Both highly manicured spaces and native landscapes were taken into account among the cities. Predominantly, the green spaces considered included vegetated parks and public spaces. For desert cities and highly paved urban contexts, both partially paved parks and desert areas were included as representative venues for public recreation and relaxation that were designed to deliver the benefits of greening.

The above-mentioned spaces fit on a spectrum of intended human use and activity levels; some were intended for heavy use and active recreation, while others were intended for lower degrees of human traffic and for passive uses. While some studies distinguish strongly between 'greening' and 'blueing' projects, in this study, waterfront projects and policies were included as important components of an urban natural environment that provides recreation and respite.

*Sources of data*

All publicly available and web-accessible city planning documents since 1990 including official plans, master plans, area/sector plans, parks and open space plans were reviewed, alongside secondary literature and media documents on individual municipal policies, by-laws and design guidelines. Official city websites and their individual department online resources provided links to these documents and often outlined both current and past greenspace priorities. In some cases, online city archives or city staff members provided access to older plans and newspaper clippings that were not accessible otherwise. Publicly accessible presentations and design boards by city officials were also used to identify priorities expressed by city agencies. Researchers also contacted policymakers and agency representatives via phone or email to clarify greening projects or get a better sense of their implementation.

Information about formal plans was augmented with online newspaper articles, press releases, academic analyses of park systems, analysis of public spatial data, analysis of municipal and other reports, and the websites of parks-related non-profit or foundation websites in order to further build our understanding of greening priorities between 1990 and 2016. Last, provincial, state, regional, or national-level websites and plans were consulted for context in some cases, where their programs supported urban parks and greenspace creation. In all, these data sources represent the currently available public information about greening policy in a city.

Finally, once we wrote the greening trajectory of each city based on these different sources of data, we shared it for verification with at least one local expert, which was usually a local city staff member or professional academic familiar with greening in the city. We incorporated the reviewer's comments and suggestions into the final version of our greening trajectory. It should be remarked, though, that travel to each city to engage (for example) with physical archives was not possible. Therefore, our data is accurate and representative, but not necessarily exhaustive.

# Data collection and analysis

*Data collection*

Each author was assigned a set of the 99 cities included in this study, based on language ability and familiarity with the regional context of a place. Upon initial review of key information on the socio-economic and historical context of each city, the researchers collected timeline information on the construction of key greening projects, plans, policies and special initiatives. They researched the nature, size, and thematic scope of each in order to achieve a complete picture of the physical expansion of green space in the cities as well as the growth of policies and plans.

Then, an iterative approach was taken whereby the team of researchers developed, over time and collectively, a methodology for capturing both the policy trajectories cities had taken in their aim to become more 'green' as well as a record of some of the key greening projects they implemented since 1990. Initially, thorough investigation into the planning and policy documentation was undertaken to determine cities' main historical justifications and methodologies for increasing or supporting green and natural areas. Concerned with capturing a wider view of the policy context, we identified, wherever possible, the main actors (promoters, planners, elected officials, legislators, funders, designers, researchers, non-profit organisations, and implementers) involved. These main historical justifications and actors were used as a basis to collectively develop the essential sections for each trajectory and a coding scheme for analyzing trends within cities.

While many community-led or regionally-supported greening projects were found to be important in the cities' evolutions towards becoming more 'green', we narrowed in on initiatives that appeared to be chiefly municipally led, even if other important partners were involved. That said, we also occasionally included notable community- or privately-led greening initiatives in as far as they responded to or augmented municipal policy.

The often-limited availability of older plans on city websites led us to more creative methods of tracing back greenspace developments into the 1990s. For this, newspaper clippings and articles were indispensable as well as Google Map- and GIS-based explorations of individual parks, accompanied by internet searches on individual park creation dates and plans. These more site-based investigations often led to the discovery of older plans and policies that helped complete the picture of a city's greening policy trajectory.

The final template for city greening summaries reflected in this book, includes a brief background on the city's socio-economic or historical context, and a summary of the policy trajectory in the city's greening efforts, including where available, information on the implementation and/or construction of individual greening projects related to city policy orientations. The case study for each city also includes visual representations of the highlights and various dimensions of greening policy in the city. For information on how these diagrams were constructed and how they are intended to be read, please see Section 4, "City greening trajectory summaries – how to read and use them."

*Data analysis*

A collaboratively developed coding strategy (Appendix 1) was employed, through which a series of possible greening policy themes (e.g. focus on waterfront restoration, focus on health, high procedural participation) were identified, consolidated, and narrowed down. These themes, obtained inductively from the written city summaries and from a collective process of proposal and refinement of key trends across cities, were combined with quantitative ratings (Appendix 2) on several dimensions of greening policy (e.g. level of rhetoric, level of implementation) to arrive at an understanding of overall trends (Appendices 3 and 4).

After lengthy inter-rater reliability discussions where researchers developed shared understandings of how to quantitatively code each city along the dimensions reported here, the cities were ranked on the following dimensions:

- Degree of public rhetoric around greening
- Degree to which greening was present across numerous municipal policy areas (e.g. land use, economic development, transportation, housing, etc.)
- Degree of completion of new physical green spaces between 1990 and the 2010s
- Degree to which greening plans and projects were oriented toward the creation of a "healthy city," reflecting our particular interest in health as a policy tool for greening
- Degree to which greenspace planning involved citizen participation

A ranking system based on a five-point scale for each of these dimensions was agreed upon iteratively during inter-rater reliability sessions and individual coding and recoding of data (Appendix 1).

*Disclaimers:*

While a number of languages are spoken among the group of researchers that compiled this book, some researchers were functionally, but not fully fluent in the language of the city in question.

While researchers were generally selected for familiarity with the regional contexts within which their assigned cities are based, not every researcher has professional, academic, or lived experience with each city they wrote about, and may therefore not have been fully aware of all of the intricacies of local projects, citizen-city relationships, and policy environments.

We made every effort to account for these shortcomings by consulting with at least one local expert in every case. As well, we may have missed greening projects in some cases, if information on them was not publicly, and readily available through online sources or communications with current city staff.

As we work further with these cities through our collective and individual research projects, we will undoubtedly learn more, and invite you to reach out with comments, corrections, or suggestions you feel we should incorporate into our future in-depth understanding the cities presented here.

# VARIETIES OF GREENING: CITY STRATEGIES AND JUSTIFICATIONS

Changing populations and economic realities greatly affect municipal parks and open space budgets, resulting in significant differences in the capacity (of a single city over time or between cities) to manage, develop, and restore municipal greenspace. Similarly, state, provincial, national, and even super-national policies and frameworks sometimes shape the nature of urban development and urban environmental programs. Other overarching factors affecting cities' progress in greening their municipal landscapes include the baseline level of heritage green and open space a city is endowed with, its climate particularities and changes, the inheritance of a built-up urban form or decaying residential and industrial infrastructure, evolving greenspace uses, and the development of social equity and public health goals. Changing social and technocratic perceptions of the value and function of green and open space have also brought about differing priorities in greenspace planning and development as well as differing physical manifestations and forms.

Among the large number of fiscal and city-building challenges today's mid-sized cities face, several city issues have been framed as easily amenable to improvement via the introduction of physical greening assets. In other words, physical greening at various scales and in various forms has been presented as a viable solution to a number of wider city concerns. As a result, cities have given greening different meanings and implemented a variety of activities focused on bringing nature back into the city. Here we focus on WHAT cities do when they green and on the content of their greening initiatives (see Appendices 3 and 4 for a listing of some of the priorities that individual cities have developed). Table 3 below summarizes the variety of urban green strategies employed by cities in Europe, The United States, and Canada. Some of the individual strategies are described in detail in the sections below.
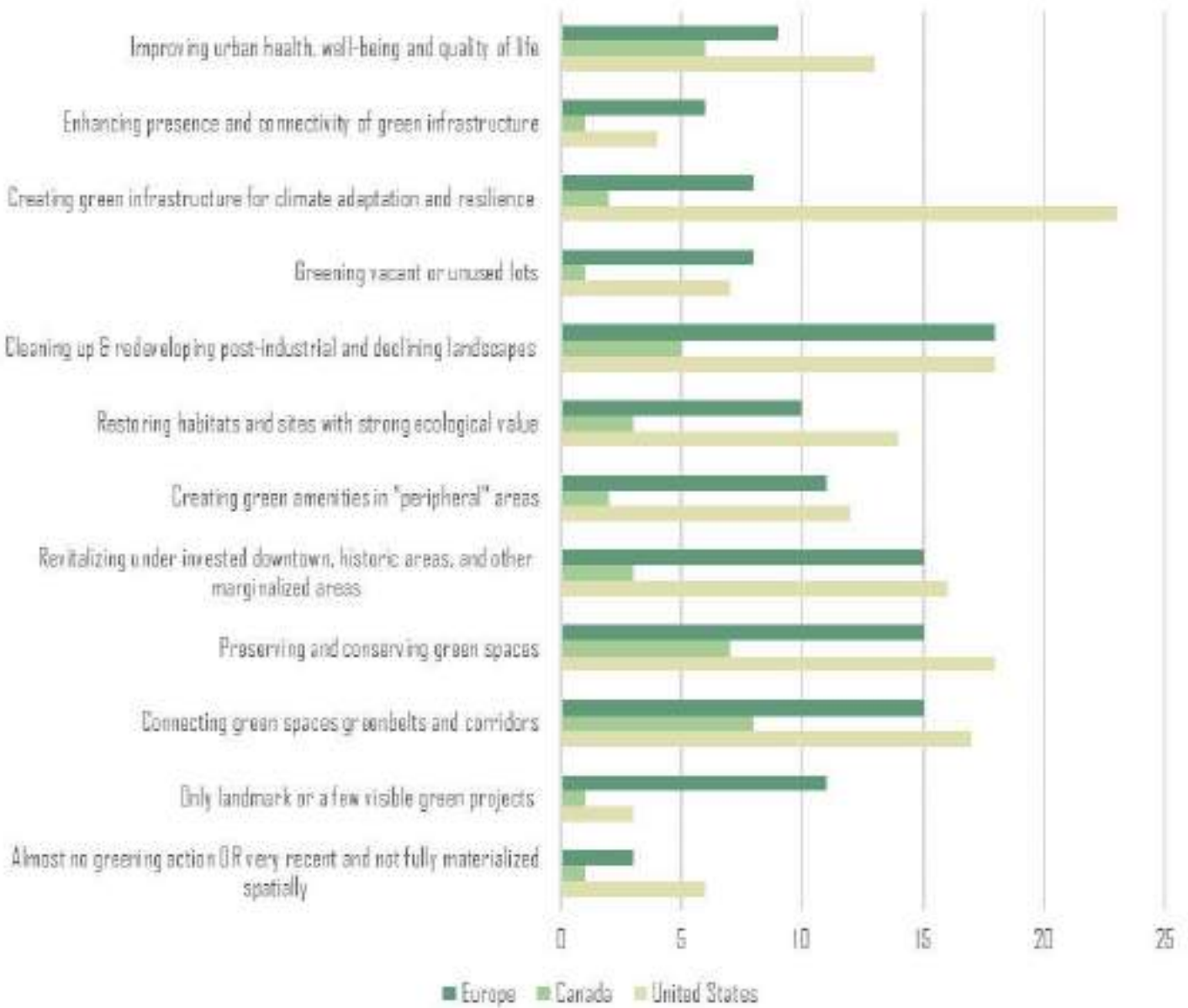
*Table 3: Current urban greening strategies and justifications in Europe, The United States, and Canada*

*Greening as a tool for improving individual and public health*

The connection between nature and well-being has long been emphasized in the academic literature. In addition to the physical benefits of engaging in outdoor recreation, its psychological and social benefits have helped place urban greening in a key position among municipal tools to improve individual and neighbourhood health.

Greater exposure to green space has been associated with improved health outcomes, including, for example, chronic stress and depression (Triguero-Mas et al. 2015) and lower cardiovascular risks (Gascon et al. 2016). Green spaces have also been related to improved self-perceived health, particularly so for women and residents living in low-density neighbourhoods (Triguero-Mas et al. 2015). When children are exposed to surrounding greening, researchers have also noticed a positive association with their cognitive development (Dadvand et al. 2015), with the association being partially mediated by improved air pollution.

Providing clean, green, and healthy daily commutes as well as gathering and recreation spaces for residents and their wellbeing has been recognized as increasingly important in creating a liveable city. To this end, cities focusing on health as part of their greening policies have looked to improve the connectivity between their green spaces and key destinations, and have begun to cater park design and programming to residents of varying ages and mobility needs. For instance, Québec City promoted healthy intergenerational living by increasing access to parks, trails, and river banks for different groups of residents. In 2010, the municipality inaugurated Parc Bon-Pasteur, Parc Juchereau, Parc Sainte-Geneviève, and Parc Jean-Guyon as recreational parks for the elderly. In Germany, Munich is enhancing quality of life and health for all residents through redevelopment of industrial sites that builds on a narrative of greening the city. Back in 1998, the early Perspektive Muenchen plan already highlighted the importance of including health "all around" through enhancing access to open spaces and recreational offerings, parks and sports facilities, and building or restoring green spaces.

# Greening as a Public Health Tool



Denver, Colorado, USA| Public Domain

## DENVER, USA

As one of the most effective and transversal justifications for adding greening to the city agenda, many cities have innovative health initiatives. Denver, a city with a strong sports and recreation culture, has recently relied on the 'healthy city' argument; in 2014, the Denver Department of Environmental Health recommended that public health concerns in the Globeville and Elyria-Swansea neighbourhoods could be addressed, in part, by the improvement of existing parks and the expansion of tree canopies. In Nantes, the municipality adopted in 2012 the Local Action Plan for Environmental Health as a further commitment to bringing together urban redevelopment, environmental protection, and health in order to create a healthy, welcoming, socially equitable, and protective eco-city.

## EL PASO, USA

In the United States, El Paso (TX)'s focus on the health of citizens, and its unique position as an international border city with a predominantly Latino population, makes it an interesting case of planning to address health disparities and enhance residents' well-being. Over the past 10 years, the city has produced a number of detailed planning documents which include strategies for green space development and restoration and improved residential health. For instance, the city's 2012 comprehensive plan highlights a concern for increasing rates of obesity, asthma, and diabetes and a need to increase social equity. While El Paso aims at being an attractive city and encouraging new private investment, its priority is about improving urban quality of life through the built environment and linking economic development and prosperities with new parks, livable neighbourhoods, improved transportation, and innovative urban design.

*Greening as downtown or economic development strategy*

Urban population migration to city outskirts and suburbs was a phenomenon in many cities across North America (and Europe to a certain extent) in the later decades of the twentieth century. The decaying state of the historical downtown was in some cases exacerbated by economic downturns and shifting industrial practices. Mid-sized cities have faced an uphill battle in trying to revive their downtowns with new and more relevant infrastructure, programming, and landmark projects.

Today, green space and green infrastructure expansions are rather effective tools for economic development, tourism attraction, and neighbourhood revitalisation, especially so when new businesses open up in the vicinity of a new green amenity (Dooling 2009, Quastel 2009). The desirability of a neighbourhood for real estate investors and residents is often enhanced when it becomes greener, which eventually contributes to higher property values (Brander and Koetse 2011, Conway et al. 2010, Sander and Polasky 2009, Immergluck 2009). Research on real estate indeed reveals that urban green infrastructure positively influences home prices (Li, Saphores, and Gillespie 2015). For example, a synthesis of many studies showed that for every 1% increase in the area of green open space in a neighbourhood there translated into a 2.25% increase in value as measured through willingness to pay; and the value of an average green open space was $1,550 per hectare per year (in 2003 US dollars) (Brander and Koetse 2011, 2766).

# Greening as a Tool for Economic Development



Mississauga, Ontario, Canada| STEVEN2222 -Wikimedia Commons

## PHILADELPHIA, USA

In Philadelphia, the redevelopment of the Delaware River waterfront involved the creation of the quasi-public Delaware River Waterfront Corporation in 2009, which used expected increases in real estate values and associated tax revenues near the park as a key justification for public expenditure on greening, thereby attaching greening to economic development benefits.

## MISSISSAUGA , CANADA

In Mississauga, the addition of several downtown parks, green streets, and green connections has been a strategy to bring activity back into the downtown, and to eventually attract sustained higher level socio-economic standing for residents by creating a network of "great people places" (see the 1994 City Centre Vision). Between 1990 and 2010, downtown Mississauga received several green amenities, and after the release of the 2010 Downtown21 Master Plan, the municipality announced several new parks, green streets, and green connections. Among others, it constructed the Scholars' Green downtown park at Sheridan College as an "outdoor living room."

*Greening as a tool for socially vulnerable neighbourhoods*

Historically, lower-income and minority neighbourhoods have seen a concentration of noxious facilities and respiratory health problems (Schively 2007, Maantay 2002, Taylor 2014) – even in the context of sustainability planning (Checker 2011). Existing power differentials between minorities and white residents often drive decisions over where to allow the siting of freeways, incinerators, or waste sites in and around cities (Pulido 2000). Similarly, lower-income and minority groups have traditionally had less access to urban vegetation, fewer high quality parks and natural settings (Dahmann et al. 2010, Pham et al. 2012), and fewer urban reforestation programs (Perkins, Heynen, and Wilson 2004) than well-off and white residents. Here, procedural justice issues prevent marginalized groups from having a true voice in decisions that affect their territory and health (Schlosberg 2007, Walker 2009) and from being able to address the inequitable distribution of environmental goods and bads in their neighbourhood (Dobson 1998, Foster 1998, Schlosberg 2007) through participating in project planning and implementation.

Half of the cities we studied employed greening as a way to improve living conditions and address disinvestment in socially vulnerable neighbourhoods. For example, in the racially and culturally diverse neighbourhoods of the Nørrebro district in Copenhagen, a multi-zone new park and cycle route was developed using objects, public furniture, art and landscaping imported or replicated to represent the several dozen cultures with which residents identify. A more comprehensive neighbourhood revitalisation initiative in Kansas City saw the creation of a Green Impact Zone in which a declining neighbourhood would be transformed into a "thriving, sustainable neighbourhood," and where improved housing, community services, health and employment programs were also part of the deal (Green Impact Zone Initiative, 2009-2013). These improvement strategies demonstrate that there is a wide range of approaches to add greening as a neighbourhood revitalisation strategy, some of which directly address the threat of displacement by speculation that may accompany a green intervention, as well as the fear among residents of what they perceive as green gentrification (Checker 2011, Wolch, Byrne, and Newell 2014, Gould and Lewis 2017, Anguelovski et al. Online).

# Greening as a Tool for Bringing Resources to Socially Vulnerable Neighbourhoods



Bristol, UK | Nick - CC BY 2.0 Wikimedia Commons

## BRISTOL, UK

A growing trend among cities interested in ensuring that socially vulnerable neighbourhoods have access to green space is to develop an **equal access standard** or **parks provision standard.** Arguing that all residents should be within close proximity to a green space, these standards typically outline the maximum duration of a walk or the maximum distance to the nearest park or significant natural, publicly accessible green area. These standards help cities keep track of which neighbourhoods are meeting the goal and which need further greenspace provision. Some cities also differentiate between different classes of green areas, with separate access standards developed for neighbourhood parks, community parks, city parks, and regional parks.

In 2007, the Bristol Green Capital Partnership aimed to make Bristol "a low carbon city with a high quality of life for all." A year later, in 2008, Bristol's *Parks and Green Spaces Strategy* (2008-2028) outlined a 20-year investment program for the future provision of green spaces, whose quality, distance and quantity standards were then incorporated into the *Bristol Development Framework*. The Strategy includes an *Equalities Impact Assessment*, a requirement of Bristol City Council for all new policies. It also highlights the specific needs of vulnerable groups in regard to amenities and qualities of parks in the city. Later, in gearing up to become the 2015 European Green City, Bristol invested in enhancing the quality of green spaces and developing integrated green infrastructure, with an attempt to address inequalities in access to green space together with social and health inequalities more broadly.

*Greening as solution for post-industrial clean-up and redevelopment*

The world's former industrial urban powerhouses have been transformed in dramatic ways, and particularly in the closing decades of the twentieth century. Whether facing drastic decline or merely a reduction and reinvention of industrial activities, many city landscapes have accumulated a collection of former, decommissioned industrial infrastructure and have inherited the accompanying spreads of brownfield sites and contaminated land (Bjelland 2004, Dillon 2014). Although some cities, such as Detroit, continue to struggle with a vast geography of vacant land, using greenspace development wherever appropriate, other more compact urban centers have cleaned up and redeveloped many of their formal industrial sites in an effort to redefine their identities and find new ways to use old landscapes. The redevelopment of brownfields has been conceived as an opportunity for urban redevelopment and renewal and creation of new environmental and social value (Bjelland 2004, Hula and Bromley-Trujillo 2010, Steil and Connolly 2009, Pearsall 2010) although concerns over the equity impacts of those projects have also emerged (Connolly and Steil, 2009; Pearsall, 2010; Dillon 2014).

# Greening for post-industrial clean-up



Baltimore, Maryland, USA

## BALTIMORE, USA

In the UK, Sheffield has restored derelict land and transformed abandoned spaces into nature and recreational areas to regenerate its urban fabric and increase access to green space. In 1999, the city invested £1.5 million in a 15-year program to restore Manor Fields Parks, a 25 hectare site of former derelict land, and converted it into a park with a sustainable drainage scheme. Later, in 2013, the city opened Edward Street park, as a flexible community and sports green space, on a previously abandoned and underused site in a lower-income downtown community.

The development of parks, natural areas, harbour beaches, and ecologically oriented residential communities has been an indispensable component in the success of post-industrial transformations. In the US, Baltimore developed a strong greening of vacant land agenda in the mid 1990s. For example, in 1996 the Parks & People Foundation started the Neighbourhood Greening grants program to provide funding to community groups interested in greening vacant and abandoned lots. This effort was followed in 1997 by the city-led Clean Sweep program, to regularly clean and maintain vacant property in the city through a close collaboration with neighbourhood vacant lot greening groups. Efforts in greening vacant or disinvested land were greatly strengthened in the 2000s, through the Healthy Neighbourhoods Initiative, Operation Reachout, or the Greentracks Program, a program started in 2014 to redevelop abandoned houses and land along the Amtrak train line in greenspace.

*Greening as tool for climate preparedness and resilience*

Both inland and coastal cities aiming to better control their climate-related risk of flooding, heat island effects, and droughts have looked at green space and green infrastructure in a new light: as critical infrastructure to enhance the resilience of their residents and of the natural and built environment that surrounds them (Rosenzweig and Solecki 2010, Anguelovski and Carmin 2011).

Among others, creating floodable green public spaces and other green infrastructures in low-lying areas has been a hallmark of resilience efforts in recent years (Kirshen, Knee, and Ruth 2008, Mees and Driessen 2011). Rain gardens, green roofs for storm water retention permeable green pavement, and green infrastructure lining city streets or the edges of parking lots have all become important tools in environmental urban planning and civil engineering at the municipal level (Mees et al. 2012, Hill 2013). Almost one third of the cities we studied have adopted greening as a tool for disaster management and prevention, or for resilience against climate change effects. Yet, not all green infrastructure projects are planned with an equity lens in mind and with a consideration of the mid- to long-term social and racial impacts they might exacerbate (Anguelovski et al. 2016). Cities need to pay great attention to the social and scalar trade-offs of green resilience planning and ensure that new green infrastructure projects do not create new social and spatial inequities through time.

# Greening as a tool for climate preparedness and resilience



South End Skyline,  Boston, Massachusetts, USA | Tim Grafft/MOTT - flickr

## NEW ORLEANS, USA

The development of parks, urban forests, and most natural areas has now been bolstered by the recognition of such assets as nature-based solutions to major city challenges. In New Orleans, the Urban Water Plan[3] has been conceived as a citywide planning effort to improve stormwater drainage through green infrastructure, including a new blue-way along Bayou Bienvenue in the Lower Ninth Ward.

## BOSTON, USA

In Boston, the 2013 Climate Change Preparedness and Resiliency Policy made it mandatory for all new developments to consider change preparedness during the environmental review process. While much of the plan's physical implementation has had to do with green building, Boston is also developing a network of green infrastructure to address both risks of flooding and heat island impacts. In 2016 the Climate Ready[4] initiative articulated the importance of relying on natural processes and working with layers and at multiple scales to address those impacts. One emphasis is on the increase of tree canopy in combination with building adaptation through cool roofing and paving materials. The Boston Parks and Recreation Department has also been installing rain gardens in municipal parks and is seeking new locations for future projects.  As transversal commitment, the City aims at siting new green infrastructure in socially vulnerable and underserved populations.

*Greening as ecosystem restoration and nature preservation strategy*

Urban green spaces and green infrastructure offer widespread ecological benefits and ecosystem services (Elmqvist et al. 2015)– from carbon sequestration, air pollutants removal, prevention of carbon emissions (Baró et al. 2014)to natural flood prevention and mitigation or the attenuation of heat island effects (Gómez-Baggethun and Barton 2013). For instance, in Manchester, recent research has identified that a 10% increase in tree canopy may lead to a 3 to 4 degree Celsius reduction in air temperature (Elmqvist et al. 2015). Ecosystem services also hold socio-cultural benefits such as decreased job stress (Elmqvist et al. 2015), environmental learning, tighter social ties, and stronger place attachment (Andersson et al. 2015). Beyond the services they provide, parks departments, citizens, and advocacy groups in many cities view the preservation and re-introduction of nature into the city as a responsibility.

...

It is clear that urban greening meets an increasing number of city needs, and as such, the cities we studied often employed several strategies – either alone or in combination – to (re)introduce nature in the city fabric and enhance the quantity and quality of green spaces. In fact, 54 out of the 99 cities used three or more of the strategies we describe above (and others) to include greening in solutions to larger city concerns. Cities push forward their greening agendas based on different needs, values, and benefits they assign to urban nature and green space. But, beyond questions of what cities do when they green, it is important to consider how they do it as well.

# Greening for ecosystem restoration and nature preservation



Palermo, Italy | Xerones - CC BY 2.0 Wikimedia Commons

Many cities recognize their green and open space areas as cultural or natural heritage assets, deserving of protection, upkeep, and expansion. As stewards of their cities' natural landscapes and resident flora and fauna, parks and open space departments (along with community conservation groups) have used their municipal planning frameworks to ensure that greenspace development and programming works synergistically with conservation efforts. They have also undertaken initiatives in species protection, biodiversity programs, habitat restoration, identification of sites with strong ecological value, and the acquisition of green assets for public protection. Balancing between conservation (passive programming) and recreation (active programming) interests, cities focused on nature preservation have taken advantage of greenspace connection and networking projects, waterfront clean-up efforts, and other greening initiatives to strengthen habitats and ecological performance in the urban landscape.

## PALERMO, ITALY

In Palermo, throughout the 1990s and 2000, piazzas, villas, and parks, previously neglected or crime-ridden have been restored and returned to public use. While many of them have become privately managed heritage sites, they offer some degree of public access, including Villa Giulia, Palermo's first public park, which in 2015 was returned to the municipality after the garden was restored with European Union funding from 2003 to 2005.

# THE GOVERNANCE OF GREENING: URBAN POLICY TRENDS AND STYLES

Despite the varying contexts and scenarios that distinguish one mid-sized city's reality for greenspace development from another's, municipalities across the board have, over the past 25 years, developed policies, plans, programs and projects to boost their green assets and reintroduce nature into the urban fabric. In developing them, cities have adopted different predominant policy styles. In this section, we focus on the governance of greening in our sample of 99 cities – that is on HOW cities do greening rather than WHAT they do when they green and (re)introduce nature into the urban fabric. In the next section we turn to the question of what cities do. Here, we dissect the main trends in policy styles that have developed in the three decades since urban sustainability and greening became a rising trend.

## Types of policy styles for urban greening

Cities' greening *policy styles* can be characterized along four dimensions: level of integration of greening across various policy sectors; level of rhetoric around greening; level of physical implementation of greening projects; and level of participation by local residents. Our review shows that these are key aspects of HOW cities green. Below we offer examples of cities with high levels for each and summarize our findings for all cities.

*Greening policy integration*

Cities have varying degrees of **greening policy integration**, meaning that the level to which the subject and practice of municipal greening is integrated across planning, policy, and development programs in the city differs. Some cities have a very high degree of greening policy integration, in that they employ greening to fulfil many different goals (e.g. healthy living, climate change adaptation, urban revitalisation). Among these cities, a parks department master plan is not the only document where greenspace figures prominently. Instead, the expansion of green assets is also a key element in other comprehensive plans and city strategy documents. For these cities, greenspace is not a niche subject, but has been a key strategic item for years, across the entirety of their geography and has been mainstreamed in different urban policies, including urban regeneration, housing, or urban health.

Overall, the trend among cities was toward integrating greening across a wide set of policy goals, including housing, transportation, or health. Most cities had a relatively high level of policy integration, with more than half of the cities analysed scoring a 4 or 5 out 5 points (58% of our sample) in our ranking system. See Appendix 2 for a listing of the policy integration scores for each city.
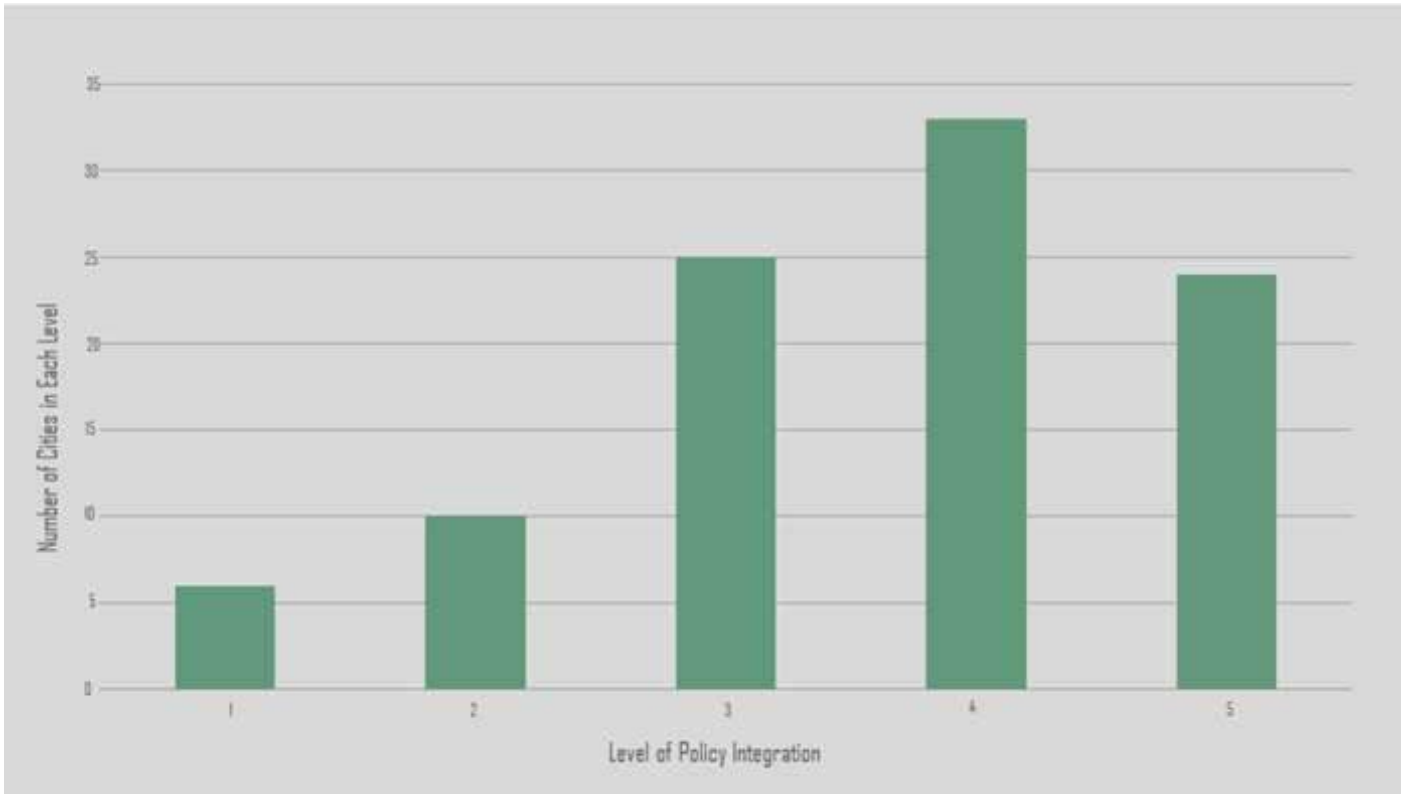
*Figure 2: Chart of the distribution of policy integration scores across the sample of 99 cities (see Appendix 1 for a detailed explanation of what each score means).*

## NASHVILLE, USA

Nashville, TN, a city with a prolific record of greenspace development since the 1990s, considers its parks system to be one of the investments most likely to advance its key development aspirations of good neighbourhoods, access to opportunity, environmental protection, economic development, and climate resilience. As a result, in 2008, a Mayor's Green Ribbon Committee on Environmental Sustainability was charged with producing a plan that resulted in 16 goals across various policy sectors with 71 recommendations "for making Nashville one of the greenest cities in America" and the "greenest and most liveable city in the Southeast." This plan, finalized in 2009, establishes ambitious targets for open space preservation and parkland expansion, together with strong incentives for brownfield redevelopment. The plan also calls for the development of an urban forestry program and for an increase in local food production. Last, included a "Green Neighbourhood Program" and a "green tourism" program to help embed sustainability into the city's reputation.

*Greening rhetoric*

While some cities aspire to be the greenest, most sustainable, or to have the best system of natural assets among their peer group, others do their greening work more quietly. The level of **green talk** or **green rhetoric** used by the city to present its identity to the world as found in city documents and on city websites indicates how pervasively greening has permeated the municipal culture and its visioning process (even if green discourses do not always reflect greening actions on the ground). In that case, cities include greening as a vital component of their brand and their idealized future state. These cities, including Philadelphia, Cleveland, Vancouver, Copenhagen, Essen, or Nantes are, effectively, "dreaming in green" and aim at becoming recognized regional and global leaders in urban green planning. In contrast, cities such as Wichita or Naples have employed very limited green rhetoric in their municipal visions while nonetheless developing a number of public green spaces over the years to become physically greener and healthier places to live.
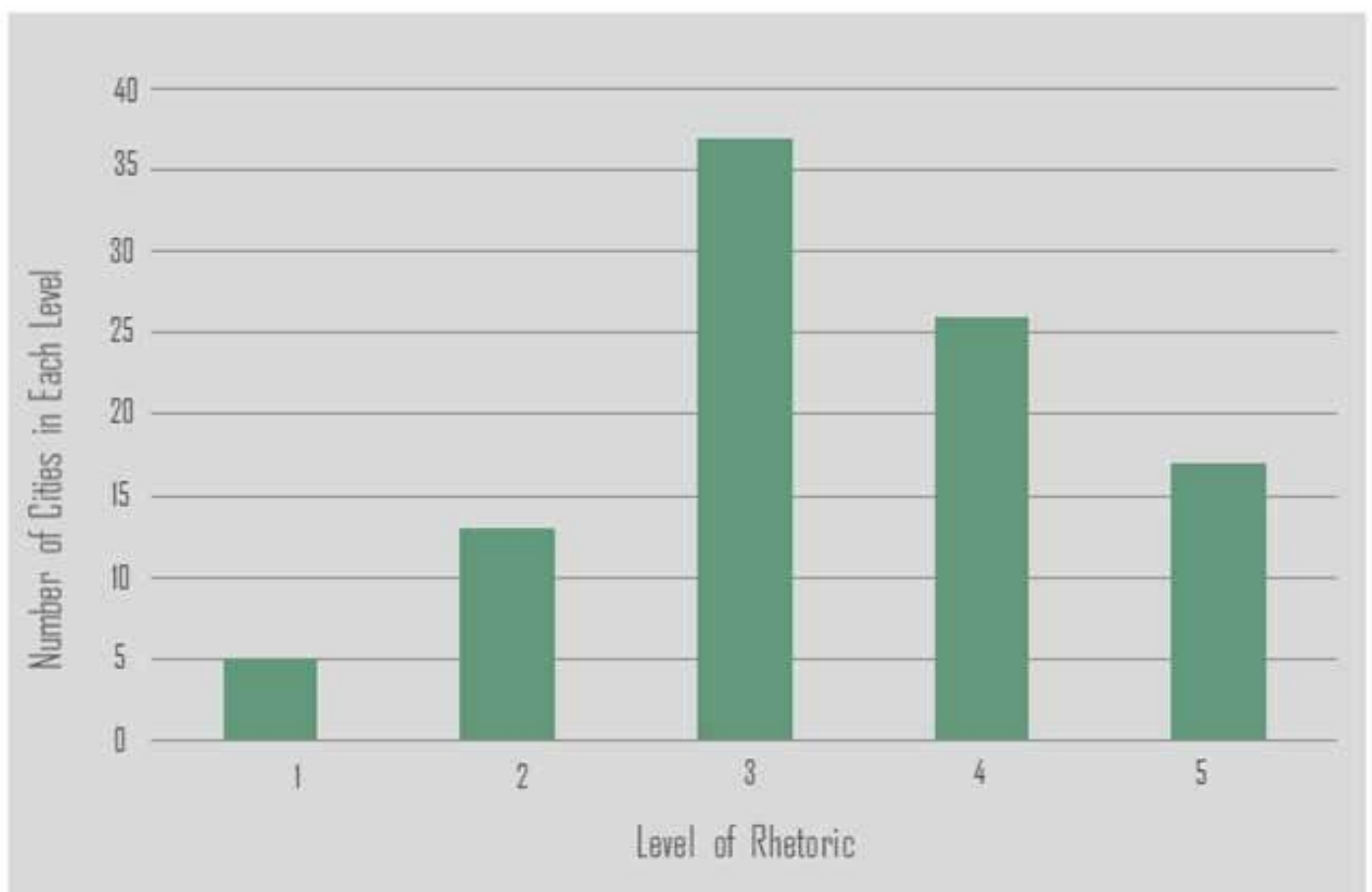


*Figure 3: Chart of the distribution of levels of rhetoric scores across the sample of 99 cities (see Appendix 1 for a detailed explanation of what each score means).*

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5 http://www.vancouversun.com/business/green+branding+Vancouver/11686117/story.html

Overall, the distribution of levels of rhetoric showed a fairly normal, bell-shaped curve – though there was a trend toward higher levels of rhetoric. On a scale of 1 to 5, 37 out of 99 cities (38% of our sample) scored a 3, placing them right in the middle. Most cities talk about greening as part of their identity, but it is only the centerpiece of that identity for the 17 cities (17% of our sample) that scored a 5 on our ranking system. See Appendix 2 for a listing of the greening rhetoric scores for each city.

## VANCOUVER, CANADA



Downtown Vancouver, Canada| Xicotencatl - CC BY-SA 4.0 Wikimedia Commons

A mid-sized city that clearly embodies an ethos of "green city" is Vancouver. A pattern of upward intensification without compromising sightlines to nature and its stock of urban green spaces has made green urban living synonymous with Vancouver. Vancouver's green focus is on preserving green and open space, protecting sightlines to natural surroundings, densifying while maintaining green amenities, and converting industrial lands into green areas. In addition to a history of municipal sustainability leadership, Vancouver has adopted a high degree of green talk: Among others, it intends to become the world's greenest city by 2020 and achieve a 100% renewable energy trajectory by 2050. With a green brand valued in the billions of dollars[5], Vancouver relies on and markets its green identity to maintain its place among the world's most liveable cities. In 2014, Vancouver was ranked the fourth greenest city in the world, according to the Global Green Economy Index.

*Physical implementation*

Some cities have managed to implement greater numbers of greening projects across their urban land-scape than others. The degree of **physical implementation** we account for as part of this analysis refers to the number and extent of the physical green spaces a city has added to its landscape since 1990, as judged by available public documents and data. If a city has added dozens of parks, open natural spaces, landscaped waterfront areas, or kilometers of greenways and naturalized trails in the past twenty-five years, the city fell into the group of high physical implementation municipalities. We include here cities like Louisville, Kansas City, Seville, or Stockholm. Progress on constructing and inaugurating new green spaces has not only been a point of celebration (and sometimes contention), but has often served to fur-ther push greening policy forward.
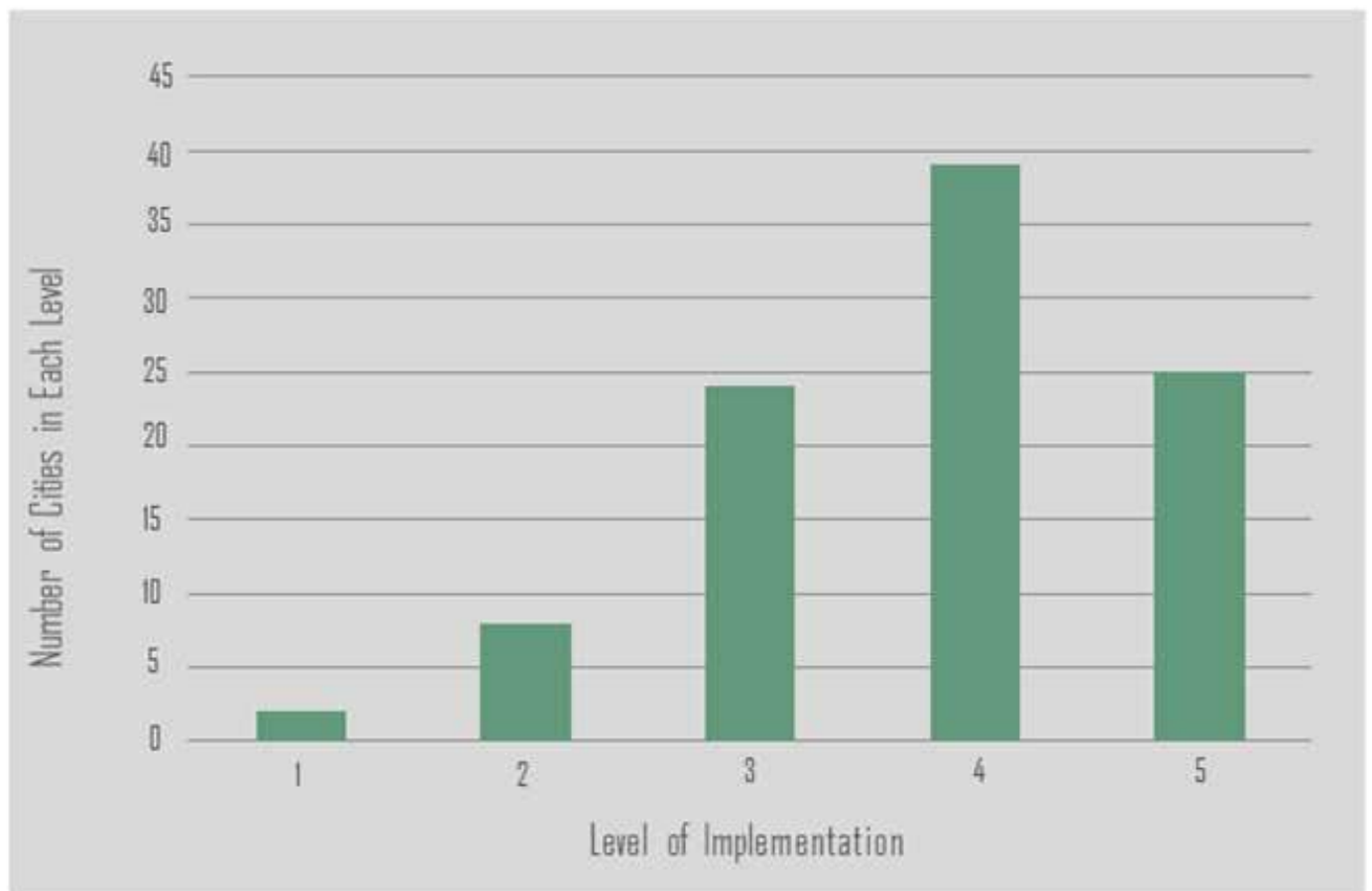


*Figure 4: Chart of the distribution of level of implementation scores across the sample of 99 cities (see Appendix 1 for a de-tailed explanation of what each score means).*

Overall, the trend was toward a fairly high level of greening implementation, reflecting the centrality of greening during the recent era of post-industrial clean-up of city neighbourhoods, with a high value placed on "liveability," with almost 65% of our sample falling in the 4 or 5 score category. See Appendix 2 for a listing of the greening implementation scores for each city.

## STOCKHOLM, SWEDEN

Stockholm has a long-standing and diverse array of greening activities. Back in the 1990s, the city began to engage in the construction of large-scale eco-districts. In 2002, under the Environmental Billion program, the city set aside a one billion kroner reserve to carry out various environmental projects. Among others, the city inaugurated Laduviken water park in 2009 and opened a 15-hectare green area with pedestrian and cycling paths after concluding the Lövsta landfill remediation in 2010. Additionally, in the mid-2000s, initiatives such as the Arstafältet wetland habitat creation and surface water restoration project on Arstaviken Bay exemplified the greening dimension of Stockholm's waterfront restoration efforts taking place at that time. Most recently, in 2013 and 2015 respectively, the Stockholm Royal Seaport and the Hammarby Sjöstad eco-districts were inaugurated with the first residents moving in.

*Procedural participation*

**Procedural participation** of residents in the visioning, planning, and management of green spaces has been key to greening policy in about one third of the cities we examined. Some cities have historically involved residents on a regular basis, and in multiple ways, while others have recently begun to do so. Whether through municipally sponsored participatory planning programs that direct the goals and outcomes of greening, or through the hand-over of some form of direct control over greening initiatives, or both, these cities have capitalized on the creativity, neighbourhood experience, and self-organisation capacity of their citizenry.

While the scope of this initial research does not allow us to assess whether and how significantly these processes improve justice and equity within the city, we have developed insights into how municipalities tapped into this resource. Cities such as Calgary have employed large-scale visioning and planning processes for greenspace development and have for years collaborated with citizen groups in developing open space, biodiversity, and parks plans. In times of financial strain, many cities have made naturalisation or volunteer programs part of their greenspace policies, thus reducing maintenance costs while handing over some control of the development and management of gardens, parks, and planting initiatives to residents and community partners.
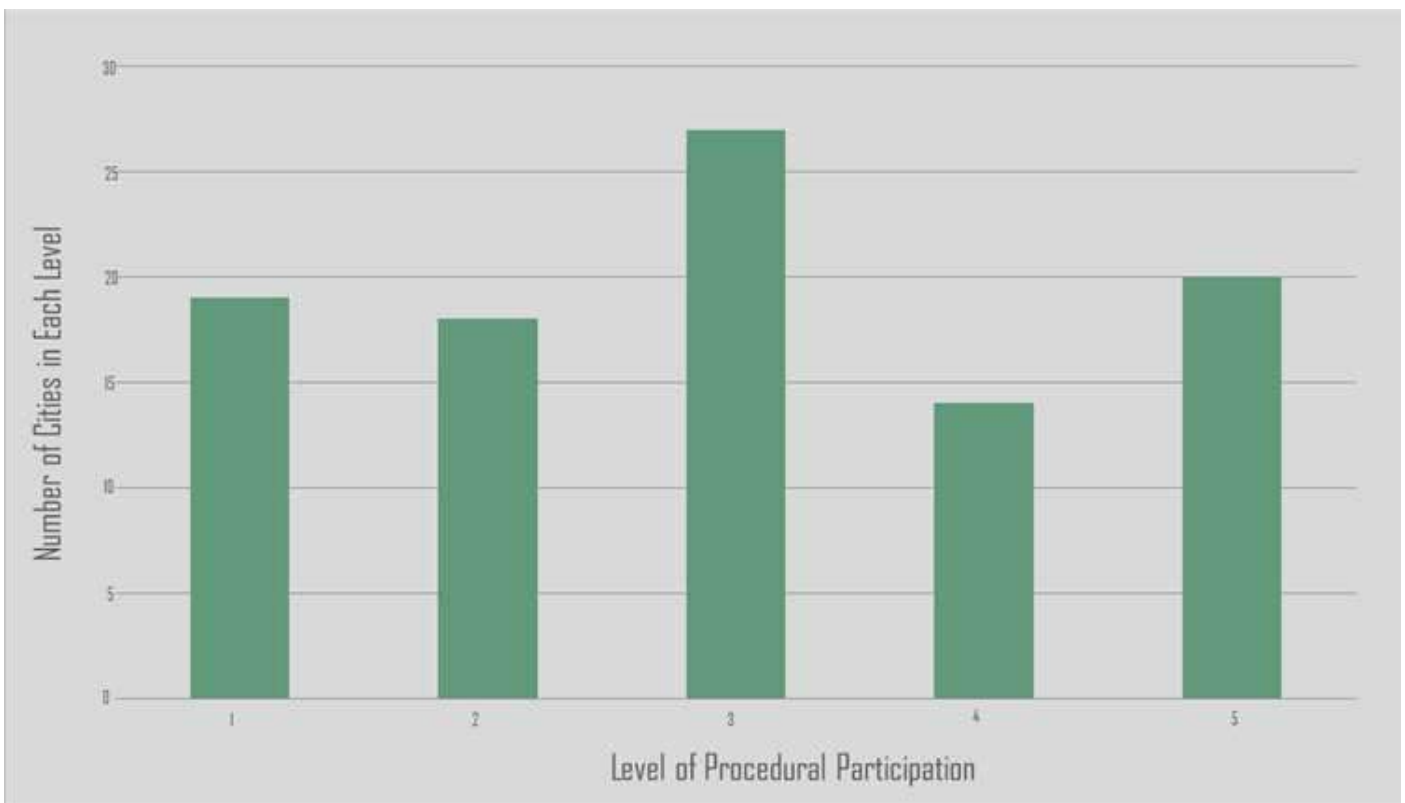


*Figure 5: Chart of the distribution of procedural participation scores across the sample of 99 cities (see Appendix 1 for a detailed explanation of what each score means).*

Overall, participation showed a more even distribution than the other greening policy metrics reported above. There were roughly even numbers of cities in the two extremes of our 1 to 5 ranking system and a concentration of cities in the middle. A notable trend here is the fact that 35% of our sample of cities only minimally seem to encourage or engage in procedural participation. See Appendix 2 for a listing of the procedural participation scores for each city.

## VALENCIA, SPAIN



Valencia, Spain | Mike Lowe - CC0 Wikimedia Commons

In Valencia, a coastal Spanish city that is no stranger to monumental public space projects, including the City of Arts and Sciences cultural complex, resident movements have worked to reshape major planning and policy decisions directing the outcomes of public and green spaces. Although initially cut out of many of the top-down processes that have led to Valencia's landmark projects, residents, through community organisation and activism, have become a formidable power in redirecting greening projects, influencing comprehensive territorial plans, and most recently partnering with their municipality to manage a participatory public space. The Paseo del Mar (seawalk) redevelopment, included in the Valencia 2015-2020 Integrated Strategy for Sustainable Urban Development, has become a participatory space for the revitalisation and sustainable redevelopment of one of the most marginalized neighbourhoods (i.e. El Cabanyal) in Valencia, including the preservation of its existing social and architectural fabric and the enhancement of its public space quality.

# What policy trends are associated with high levels of urban greening implementation?

With differing socio-political contexts to navigate, municipal staff have leaned on differing policy styles at various times to achieve their greening goals. Overall, higher levels of rhetoric; greater integration across various policy arenas; and green access standards are associated with higher rates of implementation, but there are important exceptions . As well, a focus on greening as a health initiative does not seem to be clearly associated with high levels of physical implementation.

Our research reveals four main trends in how different policy styles relate to the level of implementation of physical greening initiatives in cities. We elaborate on each below. First, cities with higher green rhetoric – that is, those who talk more about their greening work – tend to have higher levels of greening implementation, with important variations. Second, when cities integrate greening across several policy domains, they exhibit higher degrees of implementation of greening programs. Third, if a city has developed an equal access or provision standard for greenspace, that city tends to show a higher degree of imple-
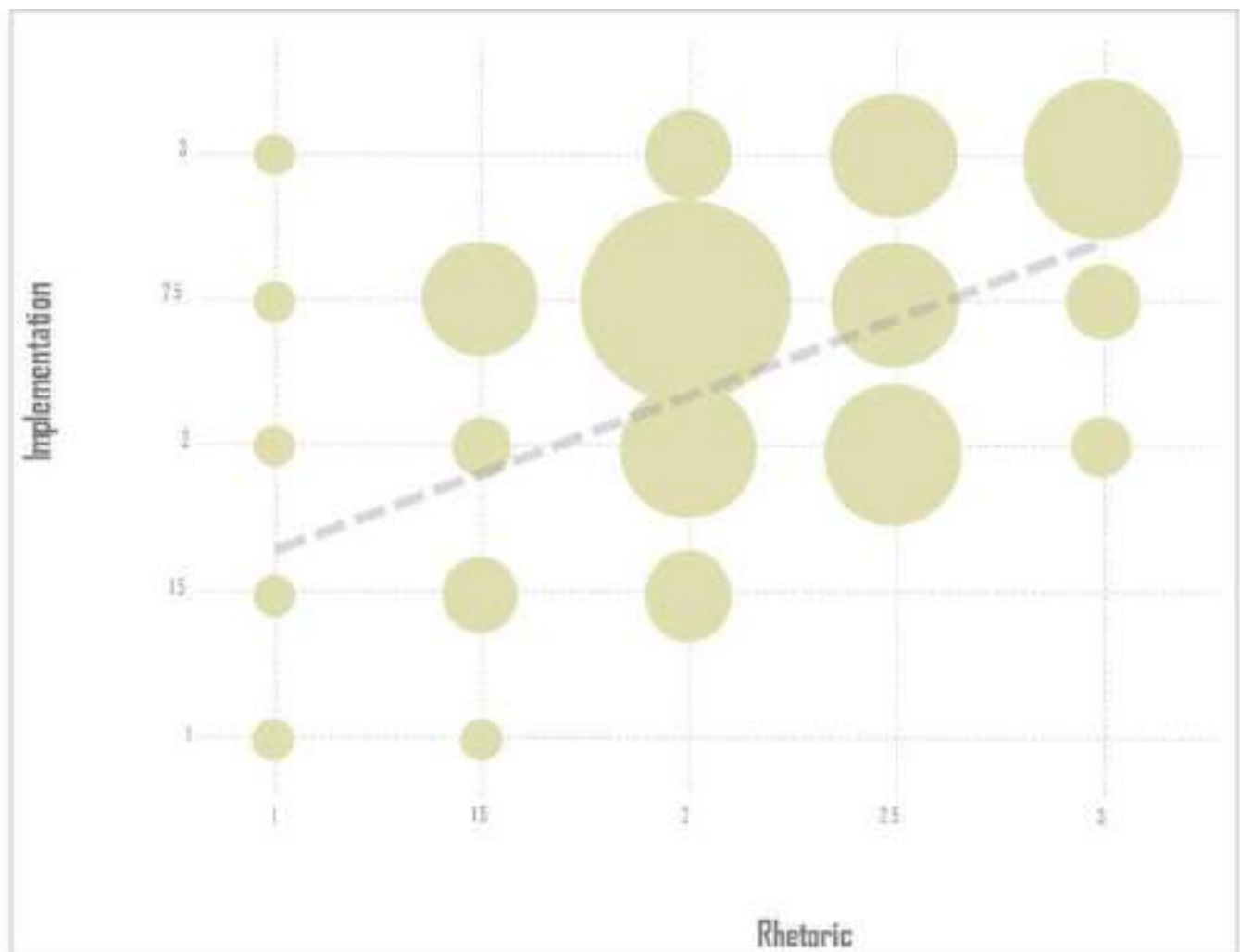


*Figure 7: Level of rhetoric scores across the sample of 99 cities charted against level of implementation scores and broken down according to high (above average) or low (below average).*

### Trend 1 – Green Rhetoric

Cities with higher green rhetoric (those that talk about greening more), tend to have higher levels of greening implementation, but there are important variations.

In Figure 7, we see that almost half of the cities (48% of our sample) defy the overall trend of higher greening rhetoric coinciding with higher implementation (these cities fall in the upper left quadrant of high implementation and low rhetoric or the lower right quadrant of low implementation and high rhetoric). These deviations from the expected trend raise questions for research and policy about why a city would overstate or understate its level of greening in its public rhetoric. In particular, there are possible implications on both ends for the view taken by the city of the relationship between greening and social equity.
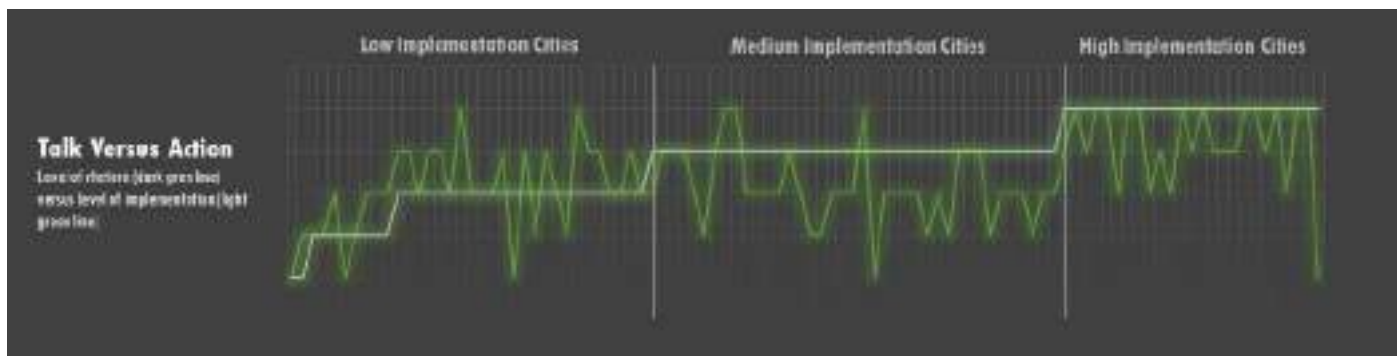
Digging Deeper



*Figure 8: Green rhetoric plotted against level of physical implementation of greening projects.*

*There are 20 cities (20% of our sample) where rhetoric outpaces implementation (area shaded grey in Figure 7). When we further breakdown where this occurs, the figure above shows that it is mostly in the low implementation category. Only 3 medium implementation cities and 0 high implementation cities have rhetoric that outpaces implementation.*

Initial analyses also show that cities with high *greening rhetoric* in their public documents have high levels of *policy integration* and *procedural participation*. While in some cases it could be that high green talk cities simply articulate and publish more information on the other dimensions of their policy style, this trend seems to indicate a sort of self-fulfilling prophecy; cities that talk the talk tend to build more programs that let them walk the walk. An example of a city whose policy style tends toward a high degree of all three of these dimensions is Nashville, Tennessee. In contrast, up to a few years ago, a city like Barcelona articulated strong discourses about liveability and access to green spaces, but did not necessarily implement green public spaces.

**Trend 2 – Policy Integration**

If a city integrates greening across several policy domains, it has a higher degree of implementation of greening programs.

Overall, the extent to which a city integrates greening across several policy domains follows the same trend as level of implementation of physical greening initiatives. Roughly 77 percent of cities with a high level of policy integration also have a high level of greening implementation. Meanwhile, no cities with low policy integration have high levels of implementation. Conversely, roughly 80 percent of cities with low levels of policy integration also have low levels of greening implementation. Table 4 below shows the results across all categories and Figure 9 on the left shows the similar trend lines of these two policy characteristics. The downward peaks in the policy integration line show that there are a few exceptions to the overall trend.
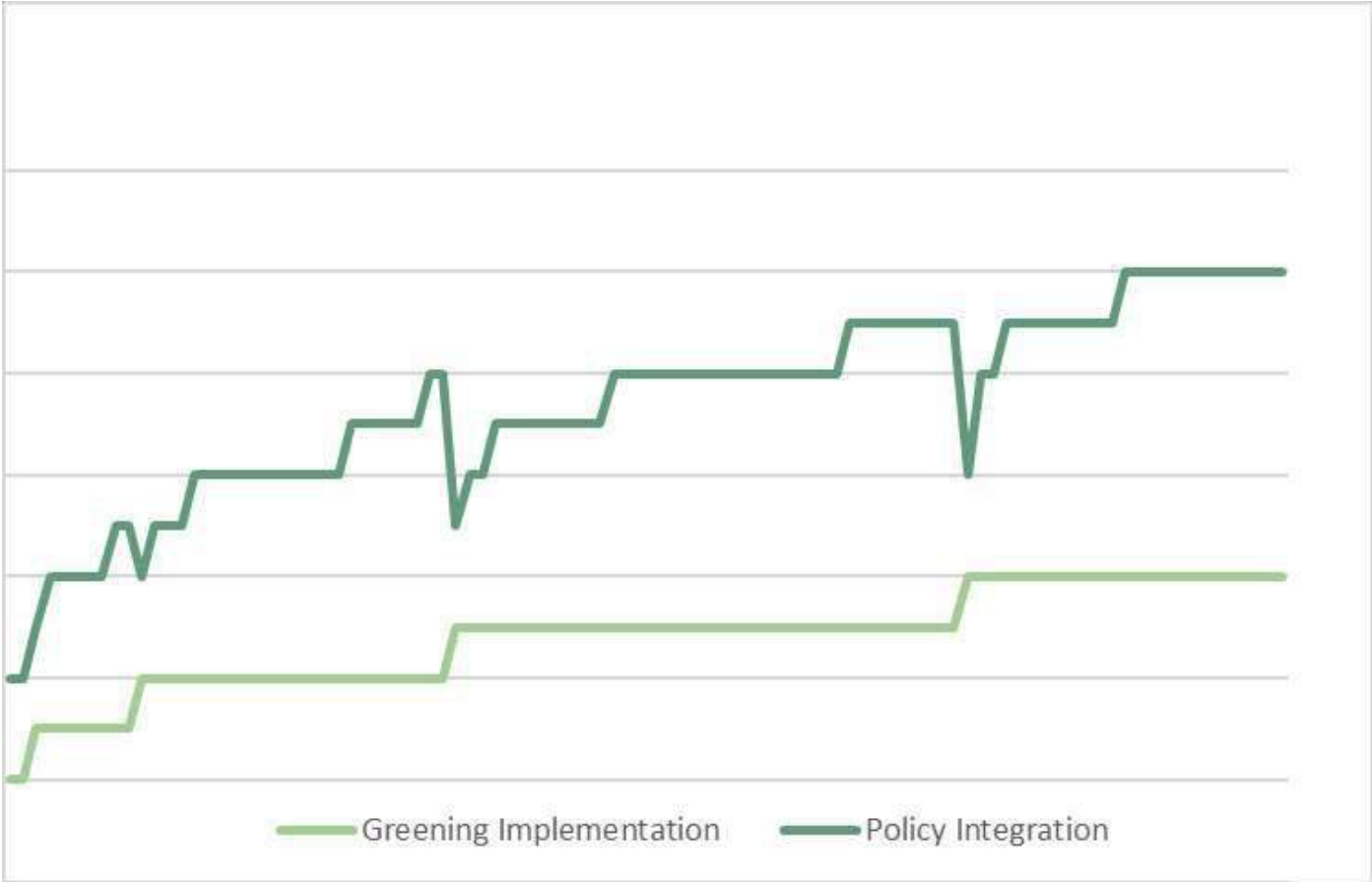


*Figure 9: Trend lines of greening implementation and policy integration.*

| Greening Implementation Score | Low Policy Integration (1 or 2) | Medium Policy Integration (3) | High Policy Integration (4 or 5) |
|---|---|---|---|
| LOW (1 or 2) | 80% | 17% | 6% |
| MEDIUM (3) | 20% | 50% | 17% |
| HIGH (4 or 5) | 0% | 33% | 77% |

*Table 4: Results by level (High, Medium, Low) for greening implementation and policy integration.*

Austin, Texas in the United States is one example of a city that integrates greening across several policy areas as a means for achieving a high degree of physical implementation of green projects. The city has green programs in its departments of parks, energy, health, transportation, and economic development. It also has specific units focused solely on sustainability that encourage cross-cutting green projects sponsored by agencies throughout the municipal government.

**Trend 3 – Equal Access Standard**

If a city has developed an equal access or provision standard for greenspace, it tends to have a higher degree of implementation of greening programs.

The presence of an equal access standard seems to have a positive effect on the physical implementation of parks and other greenspace projects. 70 percent of cities with an equal access standard scored a 4 or 5 for implementation as opposed to 57 percent for those without an equal access standard. In one example, Edmonton in Canada has worked to preserve and develop a connected system of parks and natural spaces, promenades, squares, public open spaces, and riverfront parks using an equal access standard. In Italy, Turin has put emphasis on the development of green-blue connections, especially through brownfield clean-up and conversion into green spaces connected to rivers, all following an equality approach. Today, the city offers 19m2 of green open space per resident. Both cities received the ranking of 4 or 5 for implementation.

| Greening Implementation Score | No Access Standard | With Access Standard |
|---|---|---|
| LOW (1 or 2) | 32% | 13% |
| MEDIUM (3) | 38% | 16% |
| HIGH (4 or 5) | 57% | 70% |

*Table 5: Results by level (High, Medium, Low) for greening implementation and the presence of an equal access standard.*

Digging Deeper

 Cities with an equal access standard also tend to have a high degree of procedural participation and tend to use greening as a revitalisation strategy for socially vulnerable neighbourhoods. The average score for procedural participation in cities with no equal access standard was 1.88 as opposed to 2.06 in cities with an equal access standard. The average score for presence of a revitalisation strategy based on greening in socially vulnerable neighbourhoods (0 if there was such a strategy and 1 if not) was .46 in cities with no equal access standard and .53 in cities with one. This means that just fewer than half of cities without an equal access standard had a greening program targeting toward socially vulnerable neighbourhoods and just over half of cities with an equal access standard had one.

|  | No Equal Access Standard | Has Equal Access Standard |
|---|---|---|
| Average score for Procedural Participation (on a scale of 1 to 3) | 1.88 | 2.06 |
| Average score for presence of a revitalisation strategy in socially vulnerable neighbourhoods (possible scores were 0 or 1) | .46 | .53 |

*Table 6: Procedural Participation and presence of revitalisation strategy by equal access standard.*

For example, a city like Palermo has developed an equitable greening and blueing agenda to reclaim abandoned spaces and redevelop the historic city center. A similar trend can be found in post-industrial US cities such as Baltimore, Cleveland, or Columbus, which use greening as a way to clean-up and reclaim contaminated and abandoned lots in deprived neighbourhoods as green spaces for historically marginalized residents. All of these cities also have equal access standards.

## Trend 4 – Health Focus

Cities with a strong health focus tend to have high levels of physical implementation of greening, but the association is unclear across all cities.

While cities with a high health focus tend to also have high greening implementation scores, unlike the prior three characteristics, there is not a clear association between degree of health focus and degree of implementation of physical greening projects. Rather, high implementation scores occur across cities with low, medium, and high focus on health. In fact, cities with lower implementation scores tend to have a higher health focus than cities with a high health focus.

| Health Focus | Low Greening Implementation Score (1 or 2) | Medium Greening Implementation Score (3) | High Greening Implementation Score (4 or 5) |
|---|---|---|---|
| LOW (1 or 2) | 6% | 32% | 56% |
| MEDIUM (3) | 11% | 19% | 69% |
| HIGH (4 or 5) | 14% | 21% | 64% |

Table 7: Results by level (High, Medium, Low) for health focus and greening implementation

In Munich, Germany, green space is envisioned as improving the quality of life and health (Health 'all around', Perspektive Muenchen Plan, 1998) with a strong emphasis on the redevelopment of post-industrial or ex-military sites and urban regeneration. Munich scored highly on health focus and implementation. However, this trend is not always true. For example, EL Paso, Texas made health of its citizens a central aspect of its 2012 comprehensive plan with heavy use of greening strategies to achieve its goal, but the city has not made much progress in terms of implementation of green spaces.

# CONCLUDING REMARKS: IS THIS GREENING SUCCESS ENOUGH?

These greening trends demonstrate how cities have succeeded in pursuing their greening agendas over the past 25 years and the policy tools or tendencies that aided in their success. While these improvements in greening have created more liveable, socially cohesive, environmentally functional, and healthier urban spaces, there is an issue that is often not highlighted by city greening initiatives: For whose enjoyment and benefit will these new or restored green or natural urban spaces ultimately exist?

The publicly available documents on city greening policies, strategies, and plans over the last two and a half decades are largely bereft of equity concerns beyond commitments to equal access provision. As community experience and green gentrification literature shows, the wider policy systems within which greening policy exists are largely unprepared to address the displacement stress and alienation experienced by the very many socially vulnerable residents who advocated for improved access to green amenities in the first place. Where greening is celebrated for its ability to revitalize, increase property values, improve health, and increase resilience, it should similarly be recognized as a public benefit to be distributed in a more thoughtful and equity-oriented manner that accounts for the consequences of increased housing costs and loss of belonging.

Further research, by this group of authors and environmental gentrification scholars worldwide, is considering how cities have performed under an equity perspective as they have become greener. Cities with stronger social policies that protect affordability and the right to stay in place will undoubtedly better extend the benefits of increased greening to the communities in greatest need of them.

# GREEN TRAJECTORIES: HOW TO READ THEM

The individual city summaries that follow detail how different mid-sized cities have evolved in their thinking about greening over the past two and a half decades. Taking into account socio-economic and historical context, they summarize how the individual cities during various periods within their recent history, have regarded parks and green space: as essential amenities; as public health assets; as an economic revitalization strategy; as infrastructure that provides a functional service; as a social and community cohesion strategy, or other.

Each summary contains a brief introduction to city context and any socio-economic or historical information that may be pertinent to the development of policy, planning, and greenspace creation. The remainder outlines the city's greening trajectory since approximately 1990. For some cities, we included information about earlier work if it was particularly pertinent to or influenced later development, rhetoric, and policy around greening. We largely analyzed city initiatives up until 2015; in some cases 2016 and 2017 projects were included if they represented the culmination of a recent greening strategy. Many cities have been highly active in their planning and implementation of greening projects in the past two years and we recognize that not all of the latest accomplishments may have been captured.

While variability exists between summaries and authors, their greening trajectory sections typically outline major municipal policy foci for greening, major drivers for promoting greening and sustainability initiatives among other city concerns and priorities (and in some cases as a solution to those larger concerns). The summaries also provide analyses of the planning and policy tools used by cities to plan and manage greenspace as well as descriptions of the related projects the city has undertaken, led, or been a convening partner in. Some summaries include information on community-based greening initiatives if they played a particular role filling in for the City on programmatic gaps, or when their efforts were supported, managed, or regulated by the City (as in the example of city-sponsored community garden or allotment initiatives).

At the bottom of each summary a visual timeline represents the key milestones and highlights in the city's greening trajectory between 1990 and 2015. While this timeline is by no means exhaustive, it displays influential policies, plans, and implemented projects related to the physical greening of the city[1].

Each city summary also includes a spider chart as well as grey-coloured side tabs. The spider chart illustrates the relative degree to which the city's greening policy and activities tended toward the following dimensions/styles[2]:

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[1] Some plans, even if cited as influential in other documents, could not be included when they were unavailable online or there was a lack of information available about their contents.

[2] The coding and scoring methodology for the data feeding the spider diagrams can be found in Appendix 1.

1.  A policy style strong in procedural participation and the involvement of residents in greening policy and projects
2.  A heavily integrated greening policy style, where greening was embedded in the city's larger (more comprehensive) policy documentation
3.  A style strong on green rhetoric and the voicing of ambitions to become the greenest city in comparison to peers.
4.  A policy style resulting in, and relying on, a high degree of physical implementation of greening projects
5.  A style strong on rhetoric around health and the healthy city.

The policy style plot (green line) for each city is shown in comparison to the regional average and to the average of the entire set of 98 cities we analysed. While cities were given a score for the above policy styles, a simple yes/no data point has been collected on whether each city had developed an equal access standard for green space by the year 2015.

The grey side tabs on each city summary indicate (in darker grey shade) the larger city problems for which urban greening has been presented as a solution in that particular city. The majority of cities used physical greening to address more than one of the following concerns:

1.  Health improvements
2.  Downtown revitalization
3.  Vulnerable neighbourhood regeneration
4.  Post-industrial redevelopment
5.  Climate preparedness and resilience
6.  Nature preservation and restoration

These visual tools help demonstrate how cities compare along various dimensions of their greening trajectories. Which cities have been very outspoken about their greening activity? Which have simply allowed a deep integration of greening into core city policy and strategy? Which cities have involved residents in both planning and realizing greening projects? In this publication, summaries of our research on the first 50 cities are included, with the remainder of the case studies to be added in the months to come. We hope that the tools and analysis in this publication help our readers compare cities and approaches that interest them; we invite you to reach out to us as we learn more about your city and dig deeper into the greening initiatives that have helped shape it.

# GREEN TRAJECTORIES: 50 CITIES

AMSTERDAM
ANTWERP
AUSTIN
BALTIMORE
BARCELONA
BIRMINGHAM
BOSTON
BRISTOL
COLORADO SPRINGS
COPENHAGEN
DENVER
DETROIT
DRESDEN
DUBLIN

EDMONTON
FORT WORTH
GLASGOW
LEEDS
LIVERPOOL
LOUISVILLE
LYON
MALAGA
MARSEILLE
MINNEAPOLIS
MISSISSAUGA
MONTREAL
MUNICH

NANTES
NAPLES
NASHVILLE
NEW ORLEANS
PALERMO
PHILADELPHIA
PORTLAND
QUEBEC
RALEIGH
SACRAMENTO

SAN DIEGO
SAN JOSE
SEATTLE
SEVILLE
SHEFFIELD
STOCKHOLM
STUTTGART
TUCSON
TULSA
TURIN
VALENCIA
VANCOUVER
VIENNA

# Amsterdam

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

## Background/Context

Amsterdam, the capital and largest city of the Netherlands, is home to 780,000 residents, 20% of whom self-identify as non-white (most being Indonesian, Surinamese, Turkish, Moroccan, and Chinese). While local economic development is boosted by the IT, finance, culture, trade, education, and tourism sectors, the UNESCO's World Heritage canal-based historic quarter is one of the cornerstones of the city's infrastructure. The historically industrial and poor section of the city, *Amsterdam Noord,* is divided from the city centre and wealthier sections of the city by the IJ Inlet. Social housing constitutes almost 35% of Amsterdam's housing stock, although this amount is declining and has long waiting lists.[1]

Over the past few decades, Amsterdam has devoted a great deal of attention to the provision of green space for residents. The city currently has about 30 parks[2] and is committed to ensure access to green space for all residents at a maximum 10-minute walking distance.[3] This commitment dates back to the 1935 General Expansion Plan[4] which envisioned the development of new neighbourhoods surrounded by greenbelts offering proportionate areas of housing and greenery. The green buffers, strictly protected in the city's 2002 and 2011 structural plans, have survived until today, and are referred to as the nine "green fingers reaching into the city."[5] Today, Amsterdam is also a European leader in the modal share of cycling, with 28% of local trips made by bicycle in the city.[6]

## Greening trajectory

Over the last twenty-five years, Amsterdam's overall greening strategy has been oriented around waterfront redevelopment projects and park expansion and improvement. In that sense, the city's numerous green and blue spaces are often integrated with one another. One of the key instruments of the City of Amsterdam to develop and redevelop green spaces is the 'Amsterdam Hoofdgroenstructuur' (HGS), translated as 'Amsterdam main green structure,' a status designated to specific areas and sites in the city to transform and protect them into



*Vondelpark* © [Pillerss](Pillerss) | [Megapixl.com](Megapixl.com)

'greener and bluer' spaces. The HGS, first established in 1996 and revised in 2011, prescribes the minimum amount of green space that the City of Amsterdam seeks to guarantee for its residents. Once the city designates an area as HGS, that area receives a specific part of the budget for its conversion and maintenance.

Characteristic of Amsterdam's combined blueing and greening agenda is the revitalisation of the IJ inlet waterfront. Formerly a heavily industrialised and trade-based area, the area underwent land use conversion in the 1990s and the 2000s, with much of the space transformed into housing, museums,

Beatrix park enlargement and enhancement
**1993**

Oostelijk Havengebied riverbank restored
**2000**

**1996**
Hoofdgroenstructuur
(HGS) plan released

restaurants, green and open walkable and bikeable spaces, and new docks for cruise ships and yachts, particularly so on the Northern shore. The Oostelijk Havengebied – the Eastern Docklands – was the first section to be transformed in the 1990s into a residential area with green spaces on the former site of a cattle market and slaughterhouse. Today, the area is a mixed-use business and residential district with 17,000 homes, including 600 units of social housing.[7] Several other sections of the docklands, such as Java-eiland and NDSM-eiland, include market price housing.

As part of the Oostelijk Havengebied conversion, in 1999 the Borneo Sporenburg project demolished existing buildings and converted two peninsulas into a neighbourhood of 2,500 high-density residential homes (100 units per ha) with a large percentage of open spaces (plazas, gardens) interspaced between the dwellings.[8] This design followed the 1999 Master Plan[9] conceived by the Rotterdam-based West 8 Urban Design & Landscape Architecture to create blocks with 30% to 50% voids to allow for ample collective open spaces, maximising available natural light, and creating a sense of spaciousness.

Other waterfront areas were redeveloped in the 2000s. The Southern Riverbank of the IJ, a dense area closer to the city centre, was redeveloped from 2005 until 2012 to create new biking lanes alongside the water, a broader ferry station to allow for a faster connection to Amsterdam Noord, as well as museums and restaurants. The most recent waterfront redevelopment project in the Northern IJ waterfront, initiated in 2012, has included the construction of new housing and the redevelopment of the area into creative class businesses, restaurants and museums. Some of the green areas previously set aside for industrial activities with a relatively high environmental impact have been given an HGS protection status. One of these areas, the Noorder IJplas is a lake with surrounding scrubland which now *'assumes an important recreational function for the inhabitants of the Borough of Amsterdam-North and Zaanstad region'* (The Implementation Agenda and Instrument),[10] many of these being lower-income residents.

Most of the parks in Amsterdam, many of them designated HGS areas (Beatrixpark, Amstelpark), were established during the Second World Garden Fair 'Floriade' exhibition in 1972. In the period after 1980, the first major enhancement of an already existing park was in Beatrixpark, situated in the southern part of the city, close to the fair and exposition centre called RAI. When a large portion of the park was taken away for the construction of a larger exhibition and convention centre (Parkhal), another piece of land was added in 1993 to the park to compensate for the loss.  In 2002, Erasmuspark in the Turkish neighbourhood of 'Bos en Lommer' in West Amsterdam was renovated and reopened, after being closed for almost a decade. Close to this neighbourhood, the Cultuurpark Westergasfabriek was opened in 2003. The space consists of a park combined with a theatre, cinema and exhibition and events space opened after the restoration of an old gas factory (*gasfabriek)* and water installations.  In 2004, the municipality opened Frankendael Park on a site of a restored former private Villa dating from 1653 designated as HGS site and

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**Dimensions of greening in Amsterdam**

*(radar chart with axes: Policy Integration, Green Talk, Physical Implementation, Health Focus, Procedural Participation)*

Legend: — Amsterdam — Europe ⋯⋯ All

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Launch of *Amsterdam in 2020*
**2009**

**2003**
Westergasfabriek recreational area and park inaugurated

**2011**
Northern IJ Waterfront revitalised

**2015**
*Green Agenda 2015-2018* released

now open to the public. The last park to undergo major renovation in Amsterdam was Sarphatipark (2004) in the the Pijp, a neighbourhood offering a variety of private rentals, owner-occupied apartments and socially supported housing.

Since 2011, connected to the release of the Implementation Agenda and Instruments, Amsterdam has developed a greater emphasis on greening initiatives. The city has also furthered its historical focus on intensifying the land use within the city and gaining further land to the water. Among others, the implementation agenda states that *'the green spaces in and around the city require robust protection, while other parts of the city are optimally exploited'* (p. 2). The conception of "green" developed by the city is reflected in the *Amsterdam in 2020* report wherein the municipality commits to a good quality of life through improved air quality, sufficient green space and clean soil and water, as well as through keeping the city acceptable and affordable (p. 9). In the *Amsterdam, a Green Metropole* and Ams*terdam Green Agenda 2015*, the City of Amsterdam states that it plans to invest € 20 million in green projects in the coming years, double the budget previously allocated to green space, and to transform Amsterdam's green space into a garden for Amsterdam's residents. The plan also mentions a target of a 25% increase in neighbourhood green space in the coming years through the creation of 20 pocket parks.

While much of those green plans and agendas have given rise to sustainable and circular economy projects and through initiatives aimed at achieving an energy transition (i.e., energy efficient transport and heating systems) the implementation of the new green space projects still needs to be further materialised. Of particular interest is also the financing of many these projects, especially those related to the preservation or enhancement of ecosystem services, energy, water and mobility, through a 'sustainable' private-public partnership tool called the Green Finance Lab, an initiative between the City of Amsterdam and the Dutch bank ABN AMRO.

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**Notes**

1) Further details on housing in Amsterdam:  https://pure.uva.nl/ws/files/4187860/59558_housing_amsterdam.pdf

2) More information about some of Amsterdam's most important parks: https://www.amsterdam.info/parks/

3) More about the 10-minute walking distance to greenspace committment: http://vaneesterenmuseum.nl/nl/binnen-tien-minuten-groengebied/

4) An overview of Amsterdam's development: https://www.arcam.nl/en/amsterdam-een-korte-geschiedenis/

5) A summary of the vision for the development of Amsterdam and its surrounding area by 2040: https://www.amsterdam.nl/bestuur-organisatie/volg-beleid/structuurvisie/

6) Details on cycling as a transport mode in different European countries and cities: https://ec.europa.eu/transport/road_safety/specialist/knowledge/pedestrians/pedestrians_and_cyclists_unprotected_road_users/walking_and_cycling_as_transport_modes_en

7) More information on the Oostelijk Havengebied project: http://www.architectureguide.nl/project/item/prj_id/518

8) A more detailed description of the Borneo Sporenburg project: https://alastairgordonwalltowall.com/tag/lowlands/

9) For more on the 1999 Master Plan: https://www.johndesmond.com/blog/design/borneo-sporenburg-amsterdam-the-netherlands/

10) More information on the history and features of Noorder Ijplas: https://www.amsterdam.nl/toerisme-vrije-tijd/parken/noorder-ijplas/

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http://www.west8.com/projects/all/borneo_sporenburg/

# Antwerp

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

## Background/Context

Antwerp is the most populous city in Belgium with 517,042 residents.[1] The Port of Antwerp, one of the biggest in the world, ranks second in Europe; its docklands house a large concentration of petrochemical activity and are the site of five oil refineries. Other energy industries conduct major activities in the port as well; wind farms and nuclear, conventional, and combined cycle power plants are located on the site. Antwerp is also the centre of the global diamond industry with four exchange centres located in the diamond district. The current city comprises the area traditionally known as Antwerp proper, plus several former adjacent towns.[2] Today, the combined city territory is divided into nine districts with the 'Ring' of highways around old Antwerp forming both the centre of the new city's territory and a physical barrier that cuts off the new outer city from the nineteenth-century inner city.

Located on the River Scheldt which spills into the North Sea, nearly half of Antwerp's area is green or blue space; a total of 6,200 hectares of greenspace includes 14 large green landscapes grouped into 5 green networks, each with a strategic spatial function for connecting urban greenspace.[3]

## Greening Trajectory

The revival of urban development in Antwerp has progressed hand in hand with policy changes from the Flemish government. Until the mid-1990s, planning was highly centralized at the regional Flemish level, but with its spatial planning decree of 1996, the Flemish government shifted toward a planning structure based on three policy and administrative levels: Flanders as a whole, the provinces, and individual municipalities. Antwerp's independent city planning tradition started with (and continues to be structured around) area-oriented programmes in the following geographical areas: the *Antwerpen-Centraal* central railway station area, the *Scheldekaaien* (Scheldt River quays), the *het Eilandje* ("The Little Island") historic port area, and the *Groene Singel* (the green space surrounding the 'Ring' between the inner and outer city). In addition to this spatial division of planning efforts, some priority projects have been implemented as part of other City programs.



*Park Spoor Noord* © [Roger Price](#) | [CC BY-NC-SA 2.0](#)

City-level strategies that are implemented through area-oriented planning and programming are strongly inspired by the conceptualization of Antwerp as an ecologically-oriented and well connected 'Water City,' in which the most important figure is the River Scheldt. Past and current comprehensive city plans have articulated several thematic directions, or city identities, for the development and

Establishment of non-profit coordinating body, SOMA
**1992**

**1996**
Shift in municipal planning structure by Flemish government

Master Plan Eilandje developed
**2002**

redevelopment of Antwerp: the 'Eco City' represents an integrated open space and diverse ecological infrastructure network; the 'Port City' emphasizes the economic significance of the port; the 'Railway City' envisions an expanded tram network and a completed cycle route network; and the 'Mega City' seeks to leverage the city's strategic location in one of the most densely developed and populated parts of Europe. These themes, originally developed in the 1980s still guide the strategies, objectives, and proposals of current city plans.[4]

Ideas around the development of a ring forest and the redevelopment of port areas into a "City on the Stream" were well supported by residents since the 1980s, but little was accomplished before

**Dimensions of greening in Antwerp**

- Policy Integration
- Green Talk
- Physical Implementation
- Health Focus
- Procedural Participation

Antwerp — Europe ⸺ All ·······

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the mid-1990s due to limited resources, little political will and a lack of expertise in place-specific redevelopment under a wider city vision and strategy. In the mid-1990s, however, urban development in Antwerp reached a turning point, not only for the previously mentioned administrative changes in planning structure, but also due to the increased attention and allocation of funds the European Union (EU) started giving to urban issues and to urban development. Antwerp benefited from these and from the additional Belgian and Flemish programs and funds that followed.

One of the first major projects undertaken in the mid-1990s was the redevelopment of the old and abandoned port area, *het Eilandje*. Since 1977, port activities had been relocated to the north of the city and the historic port area was abandoned. Large parts of the Scheldt Quays were relegated to car parks or repurposed organically by Antwerp residents for recreation, picnicking, and social events. Early formal redevelopment in the area came only in the form of a new waterfront with luxury flats and lofts, established by a private company. In 1996, however, the formal planning process for *het Eilandje* was started, leading to the development of Master Plan Eilandje in 2002. This plan focused on providing maximum accessibility to the waterfront, developing the port's logistical infrastructure, and restoring the relationship between the city and the port.[5] More recent plans such as the City's 2012 urban development plan continue to highlight the historical port areas as key connections to the waterfront where green boulevards, parks, and open spaces are being created while the district's historical value is maintained.[6]

Away from the waterfront, the City has similarly employed the concepts of brownfield redevelopment and abandoned infrastructure redevelopment for the introduction of new green and public spaces. In 2000, the City began planning the conversion of the abandoned railway facility, *Spoor Noord* in the Antwerpen-Noord neighbourhood, into a park. Public consultation revealed a great need and interest for greenspace among residents of the surrounding underinvested neighbourhood. In 2009 the park was completed, covering 18 hectares of the original site, with the remainder of the rehabilitated site developed into high-rise buildings by the national railway company.[7] This and other projects progressed more efficiently due to the formation in 1992 of a non-profit organisation that worked under city administration but retained the right to act under less stringent conditions in terms of hiring and management.[8]

Rozemaai Neighborhood Master Plan submitted
**2009**

Munthof green square finished
**2012**

**2007**
Groen Kwartier begins redevelopment

**2009**
Park Spoor Noord built and Theaterplein renovated

**2011**
Bremwide adventure playground created

**2014**
Groene Singel guidelines in place
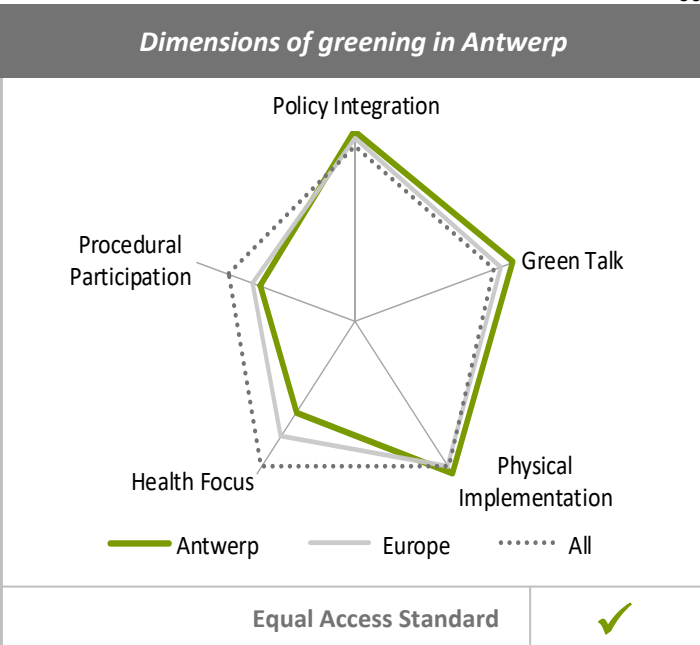
In the development of new residential neighbourhoods constructed on old industrial sites, the City mandates conditions for public park space and private greenspace provision, sustainability and mobility considerations, and affordability. Several projects of this kind have been marketed as new green residential districts. The *Groen Kwartier* (Green Quarter) has undergone dramatic redevelopment since 2007 from its previous use as a military hospital and zone into a largely residential area connected by green open space and green infrastructure.[9] Meanwhile, the Nieuw Zurenborg neighbourhood and park, in remediation and planning since 2006, will attempt to connect a physically isolated and underutilized site to the rest of the urban fabric.[10]

Antwerp has engaged in smaller-scale greening of neighbourhoods and existing public spaces as well. Between 2007 and 2012, the City intended to construct at least one green space project per neighbourhood with the goal of improving the quality, access and utility value of existing green spaces by extending them and balancing the preservation of nature with the provision of recreational space.[11] One of the most notable initiatives is the effort to remedy the isolation and stigmatization of the Rozemaai neighbourhood via the creation of a landscape park with sociocultural amenities, traffic reduction, and better transit connections. Other recent projects have included the 2011 Bremwide adventure playground construction and the 2012 completion of the Munthof garden and square on one of the last unfinished and informal public spaces in the city centre. Attention has also been given to the greening of public open spaces in Antwerp. Formerly uninviting spaces have recently been redesigned to include more attractive and functional greenery, and sustainable technologies such as the 2009 rainwater harvesting canopy roof of the *Theaterplen* (Theatre Square). In the design of any project, and to the extent possible, the City gives water management priority.

In the last few years, a focus on greening streets and highways has also emerged. The *Groene Singel* area is a "reservoir of open space" through which the 'Ring' around old Antwerp runs. Currently inaccessible and intersected by webs of highways and railways, it has been imagined as a high-use ecological and social amenity for its adjacent high-density city neighbourhoods. The guiding document for all future developments in the area was completed in 2014.[12] On a smaller scale, city streets such as the Carnotstraat and De Keyserlei have been transformed from car-dominant spaces into shared avenues for pedestrians, cyclists, and street vegetation.

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**Notes**

1) Population as of January 1, 2016, according to Statistics Belgium's, "Loop van de bevolking per gemeente," on the "Bevolking - Cijfers bevolking 2010-2017" webpage. Antwerp's metropolitan area has around 1,200,000 residents, which is second in the country behind Brussels. As of 2010, 36-39 % of Antwerp residents had a migrant background.

2) Seven adjacent municipalities were merged into the city in 1983: Berchem, Borgerhout, Deurne, Ekeren, Hoboken, Merksem and Wilrijk. Berendrecht-Zandvliet-Lillo had merged with Antwerp in 1958 during preparation of the 10-year development plan for the Port of Antwerp.

3) For more on the structure of Antwerp's green networks, see: https://www.antwerpen.be/nl/info/5644b2f8afa8a725098b462d/wat-is-het-groenplan

4) The 1984 Global Spatial Structure Plan for Antwerp (GSA) already contained these visions which continue to be reflected in current documents, such as the 2012 city-wide plan, "Urban development in Antwerp: Designing Antwerp."

5) See the 2012 city-wide plan, "Urban development in Antwerp: Designing Antwerp," where information on the Master Plan Eilandje is also available. The port's 'unique city areas' include het Eilandje, the Quays, the large industrial parcels at Noorder-laan, and the industrial park at Blue Gate Antwer. Blue Gate Antwerp is a water-linked eco-effective industrial park and is an example of the type of ecologically oriented infrastructure the City and region want to introduce into an area previously dominated by the fossil fuel industry. For more on this project, see: http://www.bluegateantwerp.eu/en/what

6) Planned projects for the old port area include Metropolitan River Park in The Dry Dock Island, New Park in the Nieuw Zuid Area, Droogdokkenpark on the River Scheldt.

7) The deal between the City and the railway company included the right to development for the company in return for environmental remediation and the sale of the park site for the price of 1 Euro. See Palermo & Ponzini, 2014.

8) The non-profit SOMA (Urban Development Association of Antwerp) acted as a coordinating body for projects supported by multiple levels of government. SOMA was initially developed to improve the public space, housing, and education amenities of three neighbourhoods within the old 19th century belt around the city.  For more information, see: http://www.tijd.be/algemeen/algemeen/Antwerpen-pakt-herwaardering-negentiende-eeuwse-gordel-aan/5143772

9)The Green Quarter project, while redeveloping and rehabilitating an area formerly inaccessible by civilians, has become somewhat socially fragmented in terms of the usability of its green spaces and the unaffordability of its upscale amenities. For a critical assessment of the project, see Ulusel (2014) at: http://www.academia.edu/12903027/A_critical_look_at_The_Green_Quarter_of_Antwerp_by_Stephane_Beel_Architects

10) Similarly, private developer initiatives such as the Regatta and the Nieuw Zuid (New South) project on the shores of the Scheldt River include future sustainable residential, parkland, and retail areas. These projects face challenges of adequate connection to their surrounding neighbourhoods and the exclusion of low- and middle-income residents.

11) These projects are in various stages of public participation, negotiation and planning. They include Neerlandpark, Hollebeekvallei, the Borgerhout square and neighbourhood park, and the highly contested Park Groot Schijn, which, after years of spatial conflict has proceeded with an agreement for shared space between users.

12) For details on the *Groene Singel* project, see: http://www.hub.eu/projects/Groene-Singel#21

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# Austin

## Background/Context

Austin is the capital city of the state of Texas. Until the 1980s, it was a relatively small city known for its vibrant local music scene with an economic base built almost entirely around the two large institutions of the state government and the flagship campus of the University of Texas. Beginning in the 1980s, the federal and local governments collaborated with private industry to seed technology firms in the city. With the growth of large firms like Dell and AMD, the technology industry flourished and transformed Austin into a global hub of high tech employment and one of the fastest growing cities in the United States. According to the US Census, the City of Austin had almost 945,000 people in 2017, which reflects an increase of almost 300,000 since 2000. Austin recently became a majority minority city, with just under half of the population identifying as White. The other major ethnicity is the roughly 35% Latino/a population. There is a high degree of income inequality and spatial segregation in the city furthered by rapid suburban growth in the metropolitan area.

## Greening Trajectory

Reflecting its liberal political tradition, Austin is home to an active community of local environmental organizers. Perhaps the most visible group within this community, the Save Our Springs (SOS) Alliance, began work in the 1990s following a number of closures of the city's beloved Barton Springs Pool. Barton Springs is a natural spring-fed public swimming pool that serves as an essential public gathering space in a city where summertime temperatures often surpass 100 degrees Fahrenheit. The pool was closed due to contamination from runoff in new development upstream. In response, several local citizens who had been involved with 1980s efforts to improve water quality in Barton Creek formed the Save Our Springs Legal Defense Fund in 1990 and launched a "Save Our Springs" campaign with the goal of passing legislation that would limit development within the Edwards Aquifer recharge zone, which covers a large portion of southwest

*Barton Spring-* Lars Plougmann | CC-BY-SA-2.0

Austin. In 1992, the Save Our Springs Ordinance was passed by city voters through referendum. The ordinance limited the amount of impervious surface in new developments within the aquifer recharge zone and helped expand a large area of preserved greenspace along Barton Creek.

Around the same time as the SOS ordinance passage, a local group of mostly Latino/a residents living in the east central area of the city also won a major local environmental battle. The group, PODER (People Organized in Defense of Earth and Her Resources), launched a campaign to clean up contamination and remove large petroleum storage tanks in their neighbourhood. The campaign was an early example of

Austin Watershed Protection Department formed
**1991**

"Green Council" elected to the city council
**1997**

**1992**
Save Our Springs Ordinance passed;
Austin Watershed Protection Department formed

**1998**
Smart Growth land use regulations passed;
East/West Divide in local environmental policy

**1990**
Save Our Springs Legal Defense Fund formed

effective environmental justice organizing that brought clean-up and public health initiatives to the neighbourhood and led to removal of the tanks.

Environmental concerns like those raised by SOS and PODER were at the heart of the central political battle over land use in the 1990s that pitted environmentalists against development interests. This battle, which had been ongoing since efforts to limit growth in the name of water quality and endangered species preservation began in the 1970s, led to the 1991 creation of the Austin Watershed Protection Department. The battle between pro-development and pro-environmental groups came to a head in 1997 when a contentious city council election had a pro-



**Dimensions of greening in Austin**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

— Austin — Southern US ···· All

**Equal Access Standard** ✓

environmental candidate running against a pro-development candidate for nearly all open seats. All of the pro-environment candidates won, ushering in what is known as the "Green Council." This council passed a "smart growth" plan for the city that included a bond to finance the purchase of thousands of acres of land for preservation in the Edwards Aquifer Recharge Zone. This land was augmented with over 1,000 acres donated by the non-profit Trust for Public Land. As a result, the Barton Creek Greenbelt, which was originally a small fenced-in area with limited public access, became a major green urban destination with swimming holes, hiking trails, and rock climbing walls along roughly 12 miles of creek bed lined with a preserved area of woods.
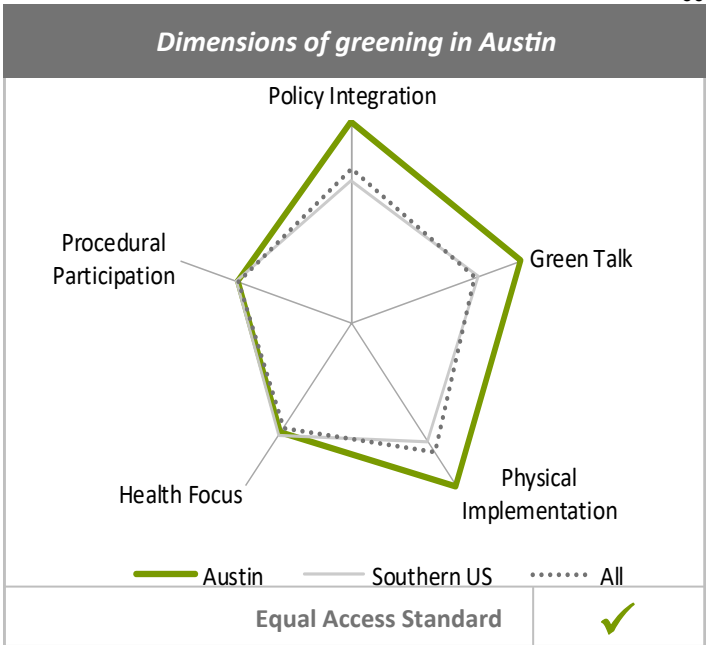
By the time the Green Council was elected and the battle over land preservation in west Austin was developing, the city was already a global innovator in green building policy. In 1991, Austin Energy, a municipally owned energy utility company, used grant funds from the United States Department of Energy to launch a green building program with a rating system. This was the first green building rating system in the United States and served as an important laboratory for what later became the United States Green Building Council's LEED rating system. Austin Energy continues to provide green building ratings and will do so for free to any building in its service area. By 2016, the agency had certified over 20,000 residential units and over 100 commercial projects in its service zone. At the same time, there was also a move toward improving and expanding parks and greenspaces throughout the city. The Austin Parks Foundation began work in 1992 as a means of leveraging private donations and grant funding for support of public parks and greenspaces. The Foundation now issues several hundred thousand dollars in grants each year to support parks maintenance and programming. In part, The Austin Parks Foundation was a response to historically low and declining city funding for parks. Reflecting the funding situation throughout the 1990s and early 2000s, The Trust for Public Lands rated Austin in 2012 in the bottom one-third of the US cities it ranked on parks maintenance. According to the group Great Austin Parks (founded in 2013 to advocate for more parks funding in the city), the Forestry Division of the Austin Parks Department in 1992 had 28 employees for 6,900 acres of land while in 2012 it had 24 employees for 19,500 acres of land. While Austin has clearly expanded its green infrastructure, it has not expanded its budget for maintenance.

Austin Climate Protection Plan adopted
**2007**

Imagine Austin Plan adopted by the city council
**2012**

**2010**
City of Austin Office of Sustainability established

**2015**
Austin Community Climate Plan published

While debates over green space preservation, funding, and green building innovation played out in the 1990s, Austin's economy was fuelled by rapid growth in the technology sector to make it one of the fastest growing cities in the country. By the end of the 1990s, this fast growth was directed toward the long-neglected east side of the city with a redevelopment plan that contained a number of green initiatives. Some have argued that the success of greenspace preservation and large lot zoning in west Austin, in fact, generated a high pressure for development that mirrored earlier rounds of slum clearance in low income areas of east Austin by the late 1990s.[1] As a result of a long history of residential segregation in the city, the east side was home to nearly all of the black and African-American residents as well as a large Latino/a population and was predominantly lower income. Since the plans were passed for redevelopment, this has been one of the fastest gentrifying areas in the nation.

During the 2000s, Austin sought to maintain its reputation as a leading green city by undertaking aggressive sustainability and climate planning initiatives and keeping green building as a central focus of the city's identity. In 2000, Austin Energy established Manage It Green consulting services to transfer the Austin green building model to other cities. In 2004, the City Council adopted the Mueller master plan for redevelopment of a former airport in the centre of the city. All of the buildings constructed in the Mueller project meet a minimum green building standard. The city also has a number of master planned sustainable developments and eco-districts within its "desired development zone" as part of its smart growth plans. There has also been an incredible rate of new high-end development in central Austin, especially since 2000, augmented by new and improved green spaces nearby. For example, in 2003, The Trail Foundation was formed to maintain and improve the trail system around Ladybird Lake in the centre of downtown Austin. The trail was built in the 1970s and has been much improved with new pedestrian bridges, landscaping and waterfront access points since the foundation formed in 2003.

Alongside this rapid high-end growth, the City launched a comprehensive planning process in 2009 titled Envision Austin, with sustainability, greening and social equity as central and recurrent themes. The final plan was approved in 2012 under the name ImagineAustin. The plan listed as its 4th priority, "Use green infrastructure to protect environmentally sensitive areas and integrate nature into the city." The plan uses green space as a means for improving quality of life, mitigating and adapting to climate change, and improving the health of residents. To support implementation of the plan, the City created an office of sustainability in 2010 in anticipation of new sustainability goals that would be adopted. Some goals that were adopted since the new office was founded include a commitment to 35% renewable energy use by 2020 and a net-zero emissions output model by 2050. As well, the 2013 Urban Forest Plan, 2014 Urban Trails plan, and 2014 Community Climate Plan all call for large expansions in green infrastructure in the coming years.

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**Notes**
1) For more information, see: https://southernspaces.org/2015/crossing-over-sustainability-new-urbanism-and-gentrification-austin-texas

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# Baltimore

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

## Background/Context

As a result of its extensive inner harbour, Baltimore was founded as a major shipping port with related industrial activity. Until 1950 this economic base brought rapid growth to the city, which peaked at roughly 950,000 residents at the start of the Second World War. Between 1950 and 2010, Baltimore lost roughly 330,000 residents (about 1/3 of the population) to processes of deindustrialization and suburbanization of the middle class. Notably, though, in 2015 the first population increase in six decades was registered by the United States census with the addition of nearly 1,000 people between 2010 and 2015. The population of Baltimore is majority Black and African American (63% in 2010). In 2015, almost 30% of the population (28.7%) had a college degree or higher and the median household income was $42,000 (US) per year with 24% of the population below the federal poverty line.

Baltimore is home to Johns Hopkins University, one of the leading research institutes in the United States, and has seen increasing tourism since the 1990s focused on a major redevelopment of its inner harbour                                                                                              area.

## Greening Trajectory

The trajectory of greening policy in Baltimore since 1990 has been fairly consistently focused on three aspects. First, there has been a steady push to use greening as an interim use (for the most part, though sometimes the intention is permanent) on abandoned or unused vacant land throughout the city. The vacant land conversions have focused on the creation of community gardens, community greenspaces, and small urban forests, as well as simple beautification plans. Beginning in the 1980s, this process was started by local community activists who created gardens and mowed abandoned lots as part of the Baltimore Clippers program. The Baltimore Clippers were founded in 1985 and established a trend of maintaining abandoned green spaces as a way of intervening in the decline of the urban centre.



*Union Square Park–* [Public Domain](Public Domain)

By the early 1990s, the Parks & People Foundation began to institutionalize these efforts to green vacant lots. In 1991 the Foundation started a community forestry program, which offered technical assistance and small grants to local residents for the purpose of creating community-managed urban green spaces. In 1993, The Revitalizing Baltimore Project continued this trend by providing more grants for community based forestry and also for restoration of watersheds. 1993 also saw the first effort to formalize community based greening of vacant land through creation of Sandtown-Winchester Park, which

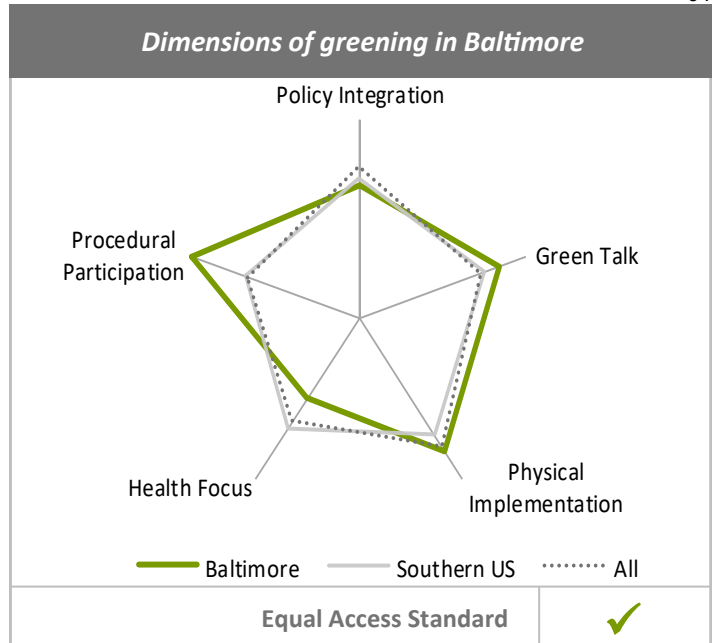Parks & People Foundation forestry programme created
**1991**

PlanBaltimore Launched
**1997**

Charm City Land Trust formed
**1999**

**1993**
Revitalizing Baltimore project established

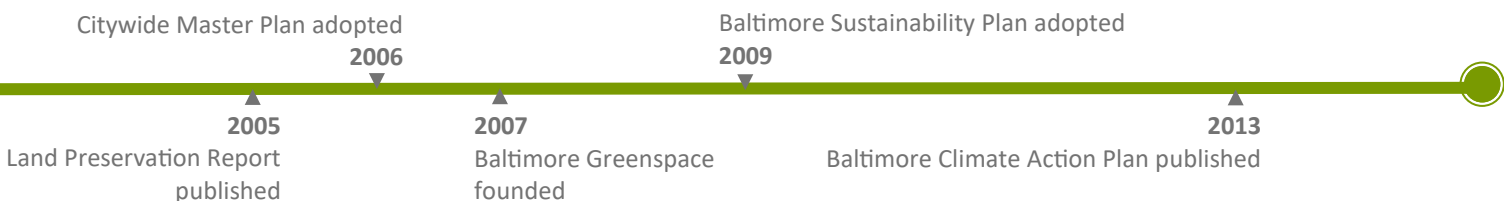**1997**
Sensitive Areas Plan for Baltimore City published

transferred control of a large formerly vacant community greenspace to the City Parks Department. A similar process occurred two years later with the creation of 26ers Park in 1995. By the mid-1990s, the focus by the City government and local foundations on greening vacant land expanded. In 1996, The Parks & People Foundation started the Neighborhood Greening grants program. This program provided a new round of funding for community groups interested in greening vacant lots. In 1997, the City launched the Clean Sweep program, which was an organized effort to regularly clean and maintain vacant property in the city. The program worked closely with neighbourhood vacant lot greening groups.



**Dimensions of greening in Baltimore**

Policy Integration · Green Talk · Procedural Participation · Health Focus · Physical Implementation

—— Baltimore   —— Southern US   ·········· All

**Equal Access Standard** ✓

By 1997, the City incorporated vacant lot greening into its formal land use plans. That year, the Sensitive Areas Plan for Baltimore City was approved with expanded protections for riparian areas, biodiversity, and urban forests which included many formerly developable areas that were by then vacant and greened. Also in 1997, the City government initiated a neighbourhood planning process to develop strategies for managing vacant lots within the PlanBaltimore citywide land use planning program. PlanBaltimore, which was released in 1999, created a neighbourhood typology (similar to a housing market typology) system as the basis for vacant land redevelopment strategies. Many of these strategies involved various levels of greening. To the city and most people involved, though, greening of vacant lots was largely seen as an interim measure within PlanBaltimore. Greening was good for holding or preparing areas until redevelopment was possible but not necessarily viewed as a desirable permanent land use. In response, the Charm City Land Trust formed in 1999 with a focus on permanent preservation of greenspace.

Efforts to create neighbourhood-scale programs for greening vacant land continued into the 2000s. In 2000, the Healthy Neighborhoods Initiative Included some funding for neighbourhood beautification projects that was used for vacant lot greening. As well, Operation Reachout Southwest began in 2002 with the goal of turning vacant land into attractive open space in the Southwest area of the city. In order to augment the work begun by the Charm City Land Trust, the non-profit group Baltimore Greenspace was founded in 2007 with the goal of transferring more of the most established community-managed greenspaces into permanent uses. In order to do so, this group created a second land trust to reserve greened vacant lots as permanently undeveloped land. Demonstrating the continued relevance of this focus on greening work in Baltimore, The Greentracks Program was launched in 2014. This was a City-led effort to replace abandoned houses and land along the Amtrak train line with greenspace. Demolition of empty buildings along two blocks began in 2014 and continues as of publication of this report. Also launched in 2014, The Growing Green Initiative was a City-led effort to stabilize and hold land for redevelopment by greening. Seven design competition winners were chosen to implement new greening projects under the program.

The second focus of greening policy in Baltimore since 1990 has been on efforts to rehabilitate and

Citywide Master Plan adopted
**2006**

Baltimore Sustainability Plan adopted
**2009**

**2005**
Land Preservation Report published

**2007**
Baltimore Greenspace founded

**2013**
Baltimore Climate Action Plan published

maintain the existing historic parks and open space system. Because this system has always been expansive and the City has lost several hundred thousand residents from its peak post-war population for whom the system was built, the City has struggled to keep up with maintenance of these spaces. Thus, neighbourhood-scale and citywide planning efforts including master plans, sustainability plans, and climate plans developed since 1990 (except new large scale and high-end development projects like the East Baltimore redevelopment where the focus is on development of new parks), almost universally contain a stated goal of upgrading and maintaining existing greenspace rather than building new greenspace.

This focus was clarified in 2005 when the Baltimore Parks and Recreation Department issued a report on land preservation which determined that the city had sufficient greenspace for the population. The report stated an official policy of turning toward preservation and enhancement rather than expansion. This policy was reaffirmed in the 2006 Citywide Master Plan. Overall, because of its large stock of legacy parks and new community-managed greened vacant lots, Baltimore has not been challenged since 1990 to provide equitable access to greenspace. Rather, it has been challenged to maintain and fund its existing public greenspace network. The third focus of the greening policy trajectory since 1990 has been on the limited areas where there was expansion in green space and greening. This expansion did not focus on creation of new parks, but rather on increasing the tree canopy, increasing biodiversity through habitat preservation, and developing various greening initiatives. That is, the greening expansion since 1990 outside of the vacant lot greening programs has been more focused on ecological goals than social goals. The social use of green space has mostly been met through the other two programs of vacant land greening and maintenance of existing parks.

In partnership with local universities and organizations like the Chesapeake Bay Trust, Baltimore has been a centre of urban ecological research since the 1990s, and this has driven a wide awareness of and focus on the ecology of urban green networks in the city. In response, the 1997 Sensitive Areas Plan provided for large-scale urban habitat preservation. Later, in the 2000s, large scale tree plantings began. For example, the 2003 Patterson Park Neighborhood Association "Project 500" was a large-scale tree planting initiative in a targeted residential area. Tree canopy expansion is the sole goal of the City's Tree Baltimore program, which seeks a 40% tree canopy by 2037. This goal is also supported in the 2009 Sustainability Plan, which was accompanied by the opening of a new Baltimore City Office of Sustainability. The new office manages several citywide greening programs including the Growing Green initiative for environmentally conscious development and a project to green the city's schools. Several sustainability goals are also reaffirmed and expanded in the 2013 Disaster Preparedness Plan and the Climate Action Plan of the same year. The third focus on non-park greening has also extended to other areas. Baltimore has sought to be a leader in green building policy, with mandated green building standards first adopted in 2009. These standards required all new buildings over 10,000 square feet in size to meet at least the established LEED Silver standards for green construction. These regulations were expanded in 2014 when the International Green Construction Code was adopted by the city.

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# Barcelona

### Background/Context

Barcelona is the second largest city in Spain and one of the most compact and densely populated cities in Europe with 1,604,555 inhabitants over an area of 102,2 km2. Together with adjacent municipalities, it forms a larger metropolitan region of over 5 million people. Substantially transformed for, and in the aftermath, of the 1992 Summer Olympic Games, the city has since remained in the international spotlight as a top cultural destination and tourist attraction. There are significant socio-economic differences among the districts in Barcelona, particularly since the recent economic crisis. This inequality has been further exacerbated through the dynamics of gentrification and real estate speculation, both partially fuelled by a still-growing tourism sector.

Located on the Mediterranean coast, the city is bounded by two rivers and a peri-urban forest atop the Collserola massif. Municipal greenspace amounts to 28.3 km$^2$, or 17.6 m$^2$ of greenspace per resident, including more than 580 urban parks, peri-urban forests and other green areas. The peri-urban Collserola forest accounts for a substantial share of this green space, while the city, although rich in street trees, only has 7.0 m2 of inner greenspace per person.

### Greening Trajectory

The key instrument for planning and zoning in Barcelona over the last 40 years has been the Pla General Metropolità (PGM), which has undergone over a thousand modifications since it was initially approved in 1976. The PGM was conceived as an attempt to curb speculation and rehabilitate degraded urban spaces after Francisco Franco's lengthy dictatorship. It placed special emphasis on social, healthcare and cultural infrastructure and was ambitious in terms of allocations for new greenspace. However, due to countless lawsuits and opposition from landlords and other



*Photovoltaic platform, Forum* Ⓢ [Public Domain](#)

stakeholders, implementation of the plan has been challenging. Many areas originally classified as greenspace in the PGM are in fact built-up areas today.

In 2013 the City approved a Barcelona Green Infrastructure and Biodiversity Plan. As a strategy document that sets key City goals and actions for greenspace and biodiversity up until 2020, it aims to: preserve and enhance the natural heritage of the city and limit species and habitat loss; increase the connectivity between existing green surfaces through the use of green corridors; maximize the socio-environmental services generated by greenspace to elevate the societal value assigned to it; and to increase city-wide climate change resiliency.

Parc de Can Dragó and Parc de la Trinitat opened
**1993**

Diagonal Mar Park completed
**2002**

**1992**
Five seaside parks and two inland parks opened;
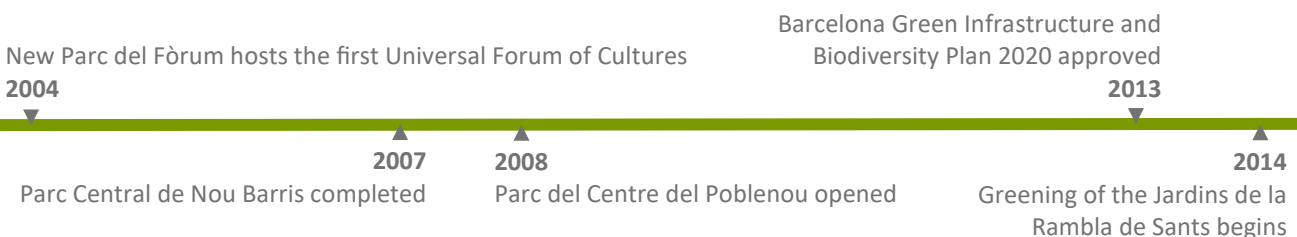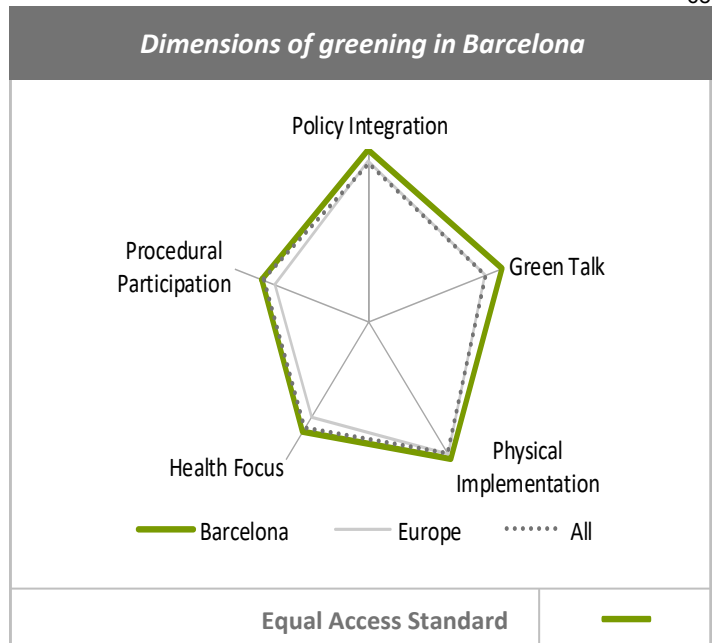Olympic redevelopment of Montjuïc

During the 1980s, many green spaces were created in place of old municipal facilities. Some prominent examples include: *Parc Joan Miró*, opened in 1982 on the site of the city's old central slaughterhouse; *Parc de l'Espanya Industrial*, *Parc de La Pegaso*, and *Parc del Clot*, all developed in formerly industrial areas between 1985 and 1986; the *Parc de l'Estació del Nord* (1988) built in place of old railway facilities; and *Parc de la Creueta del Coll* constructed in 1987 on the site of a former quarry. During this period, many greening and pedestrianization projects within the city's road network were also implemented.



**Dimensions of greening in Barcelona**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

—— Barcelona    —— Europe    ········ All

Equal Access Standard ——

The most dramatic urban transformation during the PGM period occurred in connection to the 1992 Summer Olympic Games. The city's Montjuïc mountain was intensively redeveloped to host the majority of Olympic venues, while a new neighbourhood, the Olympic Village, was constructed on former industrial and railway lands in the Poblenou neighborhood to accommodate the athletes. Also included in the Olympic works was a new marina, which hosted the Games' sailing events and at the same time marked the large-scale regeneration and opening up of the formerly industrial seafront with several reconstructed beaches and new green spaces in the area (including *Parc del Port Olímpic*, *Parc de les Cascades, Parc de la Nova Icària, Parc del Poblenou, and Parc de Carles I*).  Between the Montjuïc and Poblenou sites, the redevelopment of the Old Port (*Port Vell*) brought in new boating and leisure activities, a shopping center and  promenades. Around the same time, several inland parks were also finalized; *Parc de Sant Martí* and the *Jardins de Sant Pau del Camp* opened in 1992, while *Parc de Can Dragó* and *Parc de la Trinitat* opened in 1993.

Two major city initiatives have characterized the urban transformation of Barcelona in the new millennium: the creation of the 22@ innovation district in a declining industrial area of Poblenou and the controversial Universal Forum of Cultures in 2004. The 22@ urban renewal initiative on 115 ha of the Poblenou neighbourhood aimed to gradually transform the area into a technological and innovation district with additional community amenities, including an 11.4 ha increase in greenspace. Anticipation of the 2004 Universal Forum of Cultures sparked a major urban transformation in the formerly industrial Besòs area. The most emblematic physical change was the construction of a 16 ha multi-purpose seaside esplanade to host the forum. The esplanade, capped at one end by a large photovoltaic panel and containing several green areas is now referred to as the *Parc del Fòrum*. Nearby, a new residential and commercial neighbourhood, Diagonal Mar, was built and became home to a new green space, the *Parc Diagonal Mar*, constructed between 1999 and 2002.

In terms of neighbourhood park creation in recent years, the most relevant projects have been the *Parc Central de Nou Barris* (constructed between 1997 and 2007) and the *Parc del Centre del Poblenou* (built in 2008). The creation of the 112 ha *Tres Turons Park* in 2009 was brought about by the connection of existing green spaces (including *Parc Güell, Creueta del Coll*, and *Parc Guinardó*) rather than the creation of

New Parc del Fòrum hosts the first Universal Forum of Cultures
**2004**

Barcelona Green Infrastructure and Biodiversity Plan 2020 approved
**2013**

**2007**
Parc Central de Nou Barris completed

**2008**
Parc del Centre del Poblenou opened

**2014**
Greening of the Jardins de la Rambla de Sants begins

new parks. Strong neighbourhood opposition was mobilized during the course of the planning process in order to save 400 of the initial 700 dwellings slated to be demolished and replaced by public greenspace.

Several recent and ongoing projects have involved the capping of railroads and major streets (or reconstructing them below grade) to create new public squares, community facilities, housing, and green spaces. An international competition was held in 2013-2014 for the design of a new 14 ha park in the Glòries Square. Similarly, in the Sagrera neighbourhood, railway lines and facilities will be covered by a four-kilometre strip (about 40 ha in area) that will accommodate a new park and public facilities and also serve to connect the previously bifurcated urban fabric between the districts of Sant Andreu and Sant Martí. On the opposite side of the city, the elevated park of *Jardins de la Rambla de Sants*, although officially opened in 2016, has been undergoing a greening process since 2014. The new green zone sits atop railway lines which have separated the surrounding community for decades, and in particular since 2012, when a rectangular concrete structure was built to cover them, rising as high as 800 meters above grade.

On an urban redesign scale, the City has recently begun the implementation of the *Superilles* plan, crafted by the Urban Ecology Agency of Barcelona. The plan involves the creation of large "superblocks," each consisting of a square of nine regular street blocks in the gridded districts of Eixample and Sant Martí. Traffic flow through the superblocks is meant to be reduced to the outer edges, freeing up significant portions of the urban fabric for pedestrians, cyclists, and the creation of new green and public spaces.

*Author: Francesc Baró*

## Notes

1) 2015 Barcelona City Council Statistical Yearbook. Race and ethnicity statistics are not recorded for Barcelona. According to the last census (2015), the percent of foreign population in the city was 16.4%.

2) Indices of per capita available family income over time reveal the strong impact of the recent economic crisis in increasing inequality. For example, the index was 184.3 for Sarrià-Sant Gervasi (the wealthiest district) and 53.7 for Nou Barris in 2014. However in 2007, the index for Sarrià-Sant Gervasi was moderately lower (178.7), but substantially higher for Nou Barris (70.8). The Barcelona average was 100 (Barcelona Statistical Yearbook, 2015).

3) Obtained from the 2015 Barcelona Statistical Yearbook. This ratio is very low compared to other European cities, especially in Northern countries, where greenspace can amount to 300 m$^2$ per inhabitant in some municipalities (Fuller and Gaston, 2009).

4) With its 158,616 street trees in 2014, the city performs better than most European urban areas. The 2014 ratio of 98.9 street trees per 1000 inhabitants compares well to the 50 to 80 street trees per 1000 inhabitants in other urban areas in Europe. (Pauleit et al., 2002).

5) The PGM has been undergoing a consultation and revision process, led since 2013 by the metropolitan planning agency, *Àrea Metropolitana de Barcelona (AMB)*. The forthcoming *Pla Director Urbanístic Metropolità, or PDU,* (Urban Metropolitan Master Plan) will encompass the city of Barcelona and 35 surrounding metropolitan municipalities.

6) Examples include: Gaudí Avenue, Josep Tarradellas Avenue, Tarragona Street, Reina Maria Cristina Avenue.

7) Preparation for the Olympic Games gave the official push for the demolition and clearing of the remaining informal settlements in Barcelona, such as the large community previously located on Montjuïc mountain. (For more information see: http://www.barraques.cat/en/)

8) Sant Sebastià, Barceloneta, Nova Icària, Bogatell, Mar Bella, and Nova Mar Bella beaches.

9) For more information on the 22@ Barcelona project, visit: http://www.22barcelona.com/content/blogcategory/27/391/lang,en/

10) For more information on this project and community mobilization, see (in Catalan): http://territori.scot.cat/cat/notices/2009/11/parc_dels_tres_turons_barcelona_1530.php and http://ajuntament.barcelona.cat/premsa/wp-content/uploads/2015/03/Dossier-Tres-Turons.pdf

11) The winning design, based on the concept of an urban green canopy, emphasizes the value of vegetation and biodiversity in the new space.

12) Several pilots of the concept have been tested in the years since the idea was initially conceived almost 30 years ago.

13) For international media coverage of the project, see: https://www.theguardian.com/cities/2016/may/17/superblocks-rescue-barcelona-spain-plan-give-streets-back-residents.

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# Birmingham

## Background/Context

Birmingham is the United Kingdom's 'second city'. Home to 1,101,360 residents, it is the UK´s most culturally diverse city.[1] Located in the middle of the country and at the heart of England´s national canal network, three main rivers and their tributaries run through Birmingham. The city, a historical centre of the Midlands Enlightenment and the Industrial Revolution, grew steadily until the 1980s, when significant economic decline led to increased concentrations of social, economic and environmental deprivation. Since the 2000s Birmingham has again been growing; it is now one of the youngest European cities and still increasing in population and ethnic diversity.

Birmingham has a rich green space system of 470 parks, recreation grounds and open spaces covering 3,200 hectares.[2] At the same time, the city has significant pockets of poverty: 40% of the city's super output areas are ranked in the most deprived 10% in England.[3] There is an uneven provision of public open space, with deficiencies in most parts of the inner city.[4]

## Greening Trajectory

The Unitary Development Plan (UDP) – obligatory for all English metropolitan authorities until 2004[5] – was the key statutory development plan in Birmingham until 2011, providing all the policies and proposals that guide development and land use for the City. The first UDP was adopted in 1993 when it positively encouraged the inclusion of high quality green spaces in developments throughout the city, including: parks and gardens; natural and semi-natural areas such as woodland, urban forestry, grasslands, wetlands and pools; green corridors along canals, rivers, streams, cycle ways and rights of way; sports pitches, playing fields and other outdoor sports areas; informal recreation spaces including amenity space associated with housing developments; children's play areas; allotments and community gardens; public squares and other



*Water canal © Stanko07 | Megapixl.com*

formal public spaces. The mid 1990s also saw a rise in park association activism[6] and the arrival of some community-led greening initiatives such as the EcoScape Project which turns vacant land strips into planted gardens, trails, or otherwise greened spaces.[7]

Whereas Birmingham's Nature Conservation Strategy of 1997 focused on protecting existing nature conservation areas and improving the diversity and quality of wildlife habitats throughout the city, reviews of the inaugural UDP in the early 2000s also outlined the City's environmental assets and liabilities, calling for action to improve environmental quality in the city with specific focus on the built

Birmingham Unitary Development Plan adopted
**1993**
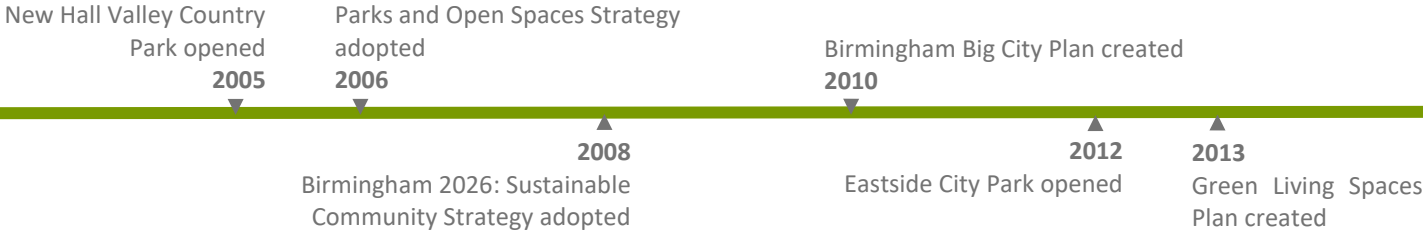
**2002**
Canal network regeneration started

environment; city canals and the green belt; nature conservation; open space and play space; garden allotments; and air and water quality. Rather than primarily promoting conservation, the City´s UDP shifted towards greening more broadly and in particular within the City Centre, for which it identified areas for "environmental improvement" among downtown canals, open spaces, pedestrian-friendly spaces, and cycle networks. In 2005, a new 198-acre country park on greenbelt land was developed by City Council to include cycle paths, nature conservation sites, and a plant nursery in combination with the ancient woodlands, wetlands, grazing sites and farmland originally present in the area.

**Dimensions of greening in Birmingham**



Birmingham — Europe — All ⋯⋯

**Equal Access Standard** ✓
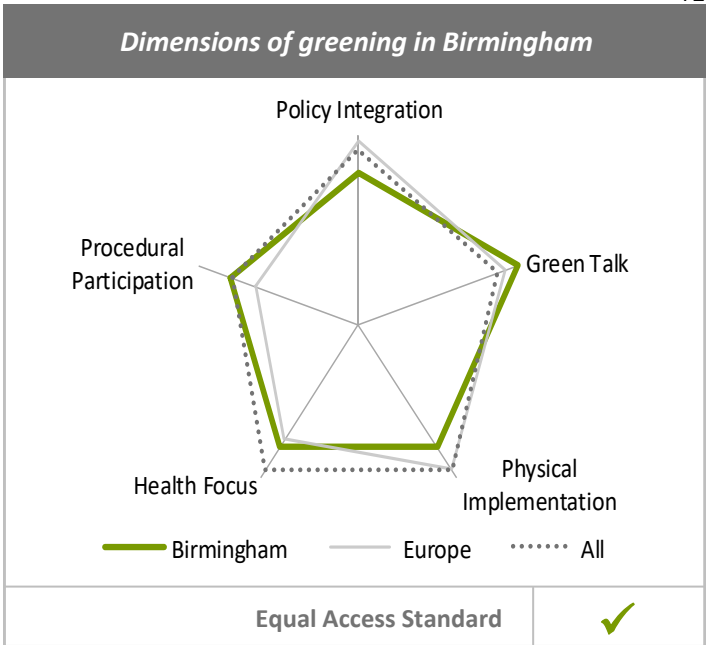
Local development frameworks were created in the 2000s to improve Birmingham's canals and rivers. Two particularly relevant Supplementary Planning Documents stand out; one on Parks and Open Spaces Strategy (November 2006) and the other on public open spaces in new residential developments (July 2007). The 2006 Parks and Open Spaces Strategy highlighted the need to ensure residents of deprived wards have access to greenspaces and stressed the need to seek external funding for parks and open space investments. The Strategy was intended to mark the end of a period of neglect for urban parks in the city.[8]

Parks and green infrastructure have also entered Birmingham's policy and planning conversations as part of a general urban sustainability orientation. Particularly since 2005[9], a focus on planning toward sustainable development has emerged around three interlinked themes: economic revitalization, urban and social regeneration and environmental quality.[10] Birmingham´s sustainable community strategy, "Birmingham 2026", was released in 2008 by Be Birmingham and Birmingham City Council.[11] It sought to make Birmingham "the first sustainable global city in modern Britain", with policies to enable Birmingham residents to succeed economically; stay safe in a clean, green city; be healthy; enjoy a high quality of life; and make a contribution. In 2010, the non-statutory "Birmingham Big City Plan" for "the most ambitious, far-reaching development project ever undertaken in the UK" was adopted with an aim to create a world-class city centre by promoting sustainable growth and improving public spaces. As a planning and regeneration framework, it divides the city into 7 areas and identifies 65,000 m$^2$ of new and improved public spaces.[12] In the Plan, sustainable development and climate change adaptation are integrated into the future transformation of the city centre via projects in energy, mobility, and green infrastructure (such as green oases and green open spaces).[13] Since then a 6.75 acre urban park, Eastside City Park, was constructed as the first major, new city centre park in Birmingham in over 130 years.

Birmingham has introduced even stronger greening discourse in the past five years; a 2013 Green Living Spaces Plan was developed to outline Birmingham's vision to be one of the world´s leading green cities[14] through seven green living space principles: an adapted city, the city´s blue network, a healthy city, productive landscapes, greenways, ecosystem and green living spaces (green infrastructure). The most recent comprehensive city plan, Birmingham Plan 2031, places significant emphasis on physical greening

New Hall Valley Country Park opened
**2005**

Parks and Open Spaces Strategy adopted
**2006**

Birmingham Big City Plan created
**2010**

**2008**
Birmingham 2026: Sustainable Community Strategy adopted

**2012**
Eastside City Park opened

**2013**
Green Living Spaces Plan created

through its environment and sustainability policies. In this plan, open space access and provision standards are provided for old and new developments. Policies are also outlined for the further extension of the green infrastructure network, the planting of trees and woodlands for flood risk mitigation, and for the prioritization of garden allotments and open space over new development.[15]

In recent years brownfield and industrial redevelopment has played a significant role in the greening of Birmingham. The Longbridge industrial area, planned since 2009, is slated to welcome a new three-acre urban park and other open spaces, as well as a mixed-use urban ecocentre. The 2016 Greater Icknield Masterplan infuses a large brownfield residential redevelopment with plans for significant green infrastructure and provisions for biodiversity, flood risk prevention and food gardens.

*Author: Melissa Garcia-Lamarca*

**Notes**

1) As of the 2011 Census, 46.9% of residents in Birmingham identified as belonging to an ethnic group other than White British (Irish and other White residents make up about 4.8% of the population). From: https://www.birmingham.gov.uk/info/50065/population_and_census/1003/population_in_birmingham/3

2) The system lies under the responsibility of the City Council. (See: 2006 Birmingham City Council Parks and Open Spaces Strategy)

3) Super output areas are UK census geographies containing between 1,000 and 15,000 residents.

4) Almost half of Birmingham's Wards are below the 2 hectares of public open space per 1000 population standard set by the City in 2007.

5) After which time a Local Development Framework (LDF) system came into place.

6) For example, the Handsworth Parks Association began as a group of residents fighting to attract funding for the regeneration of public recreation grounds under threat of sale and development.

7) For the Eco-Scape Project, see: http://trekbirmingham.com/articles/greening-the-city-the-ecoscape-project/

8) The Strategy was informed by the main findings of the pan-European "EU URGE-Project", a 2001-2004 research project on the Development of Urban Green Spaces to Improve the Quality of Life in Cities and Urban Regions. Birmingham City Council represented the UK on the project.

9) With the adoption of the 2005 revisions to the Unitary Development Plan.

10) In order to tackle social exclusion, planning seeks to counter the trend in which the socially and financially disadvantaged are concentrated in the City by promoting housing in the City Centre ("City Living") and providing "a quality environment and the infrastructure necessary to support it." (See: Birmingham Unitary Development Plan – 2005 Alterations, pp.11)

11) Be Birmingham is a "local strategic partnership that brings together partners from the business, public, community, voluntary and faith sectors to deliver a better quality of life in Birmingham". (See: Birmingham 2026: Sustainable Community Strategy)

12) Implementation of the projects in the plan will partially depend on private-public partnerships and working with Marketing Birmingham "to market the masterplan as a whole and the opportunities within it to the investment markets." (See: 2011 Birmingham Big City Plan.)

13) From the Big City Plan, several detailed masterplans for sections of the city centre have been produced, including: Birmingham HS2 Curzon (July 2015); Snow Hill (October 2015); Birmingham Smithfield (September 2016).

14) Birmingham is already part of the Biophilic Cities Network.

15) The policy for garden allotments states that "land will only be released for development where it can be shown that the site is not required to satisfy the demand for allotments in the area, or equivalent alternative provision will be made available." For land in areas where demand has been satisfied, it should first be assessed "whether it can be used as other open space where there are deficiencies. If this land is not required for other open space use then it can be considered for development." See the 2017 "Birmingham Plan 2031" document.

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# Boston

## Background/Context

Its green public spaces play an essential part in Boston's role as a centre of American history. Founded in 1634, the Boston Common and the Public Garden are America's first public parks and remain central to public life in Boston. Occupied by the British during the American Revolutionary War and site of slavery abolition protests during the American Civil War, the Boston Common is perhaps the essential public space of American history and a signifier of a rich history of greening in Boston. In 1878, the city that housed the first American public park also launched an early land preservation effort in the Back Bay Fens area. By 1891, Boston was the base for the first regional land trust ever formed, The Trustees of Reservations. A few years later, Boston became home to one of the most established park systems designed by renowned landscape architect Frederick Law Olmsted, known as "The Emerald Necklace." Today, green spaces from community gardens to high end parks remain high on the list of priorities for Boston's 667,000 residents (as of the 2015 United States Census), the majority of whom are non-white and rent their homes.[1]

## Greening Trajectory

In the 1980s, Boston was an archetypal formerly industrial city in decline. The central city had large swaths of vacant and underutilized land. A history of racial conflict led to an intense "white flight" to the suburbs and many mostly minority neighbourhoods in the city were left with a declining tax base. This decline left the strong historical legacy of parks and greenspace vulnerable to degradation. Typical of Boston politics, a combination of foundation funding, elite-centred organising, and grassroots activism stepped in to maintain and enhance greenspace throughout the city. In 1985, The Globe Foundation and The Boston Foundation gave starter grants to a group of concerned citizens calling themselves the Boston Greenspace Alliance to advocate for parks. The Alliance successfully convinced government officials to better fund parks and the Boston Foundation



*Dewey Square Park on Rose Kennedy Greenway –* CC-BY-SA-4.0

provided continued funding for the Alliance into the 1990s. Alliance members were central to the publication in 1987 of *The Greening of Boston: An Action Agenda*. The action agenda established a "common language" for discussion about greenspace in Boston for the following years.

In the 1990s, a foundation was laid for greatly expanding the greenspace network in the city. The already established Boston Urban Gardeners, Dorchester Gardenlands Preserve, South End Lower Roxbury Open Space Land Trust and The Boston Natural Areas Fund joined the Boston Greenspace Alliance to create a robust civil society focused on urban greening. The Boston Urban Gardeners soon

Boston Natural Areas Fund Greenways to Boston Harbour Program
**1992**

**1990**
Boston Natural Areas Fund report on the

**1994**
Garden Futures Formed

**2002**
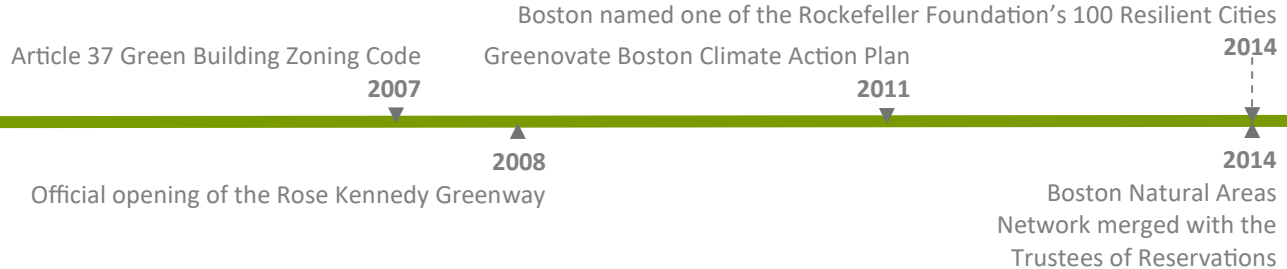Garden Futures and Boston Natural Areas Fund merge to form Boston Natural Areas Network

merged with the Boston Natural Areas Fund to create the Boston Natural Areas Network, which would go on to steward nearly 800 acres of "urban wilds," own 55 urban gardens, and provide services to all 176 gardens citywide. The Fund also initiated the Greenways to Boston Harbor Program, which created roughly 14 miles of greenways along waterways in Boston. This level of activism was perhaps the hallmark characteristic of greening initiatives in Boston in the 1990s – greening was the focus of many non-profit groups who partnered with public agencies to steward and expand greenspace throughout the city. This active civil society intervention in urban greening led to a flourishing of community gardens and community greenspaces and to stewardship programs focused on legacy parks and greenways.



Dimensions of greening in Boston

— Boston — Midwest and Northeast US ⋯⋯ All

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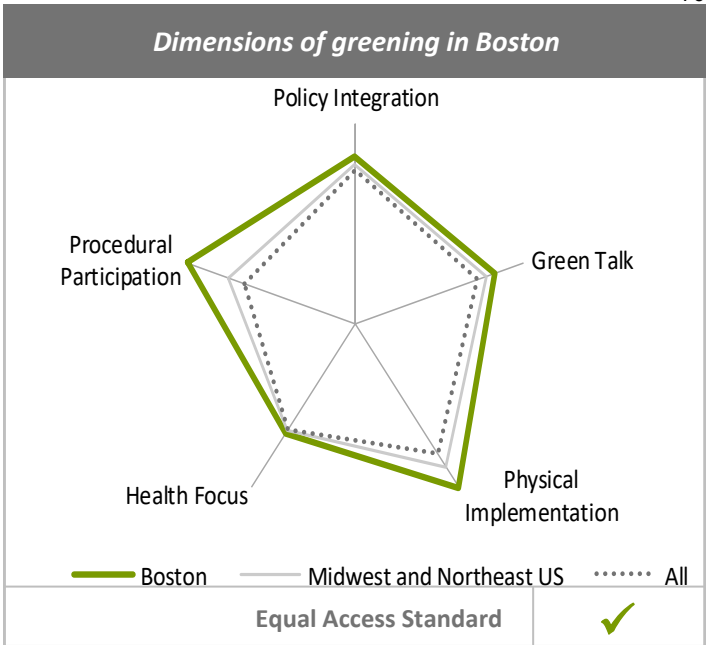
The social infrastructure built in the 1990s for supporting Boston's greenspace network also extended to legal and physical infrastructure. The years between 1991 and 2006 comprised the period of construction for the "Big Dig" project, which buried a portion of Interstate Highway 93 and, in the process, generated space for development of the City's newest hallmark greenspace in the centre of its downtown. The Rose Kennedy Greenway, which replaced the highway, officially opened in 2008 and is now one of Boston's most visited greenspaces. Meanwhile, by the mid-1990s, Boston had one of the most developed systems nationwide for permanently protecting community gardens and other community green spaces focused on urban food production within several land trusts. For example, in 1991, the South End Lower Roxbury Open Space Land Trust was developed to protect eight newly established community gardens. That same year, The Food Project was founded. The group, which focused on combining urban agriculture and youth development, became a popular and longstanding greening program within the city. In all, greening was an essential response to the decades of infrastructural decline and disinvestment that preceded the 1990s.

By the start of the 2000s, Boston had a robust civil society and public sector program for urban greening at the neighbourhood scale, which partially explains why the city was slower than some to substantially advance sustainability initiatives. Despite this slower entry into urban sustainability, in 2007 Boston did launch the first municipally mandated green building zoning standard in the country and the Mayor signed an innovative executive order on climate change mitigation that required reductions in city emissions. At roughly the same time, it also launched an initiative to expand its urban tree canopy as a climate adaptation measure that addressed urban heat island effects. Green building, emissions reductions, and increasing the urban forest canopy were the main city-level initiatives that augmented existing community garden and greenspace work in the early 2000s.

During the 2010s, the social infrastructure built around greening since 1990 consolidated into a centralized force for creating and preserving neighbourhood green space. The consolidation began in 2009 with the merger of two of the oldest community garden groups in the city – Boston Urban Gardeners and the Boston Natural Areas Network. In 2010, this merged group showed its agenda setting power when it launched a 3-year program to double the space used for community gardens in the Dorchester neighbourhood. This group also partnered with the City in 2012 to plant 100,000 trees in Boston before 2020. Then, in 2014, another merger took place between these groups and the Trustees of Reservations.

Boston named one of the Rockefeller Foundation's 100 Resilient Cities

**2014**

Article 37 Green Building Zoning Code

**2007**

Greenovate Boston Climate Action Plan

**2011**

**2008**
Official opening of the Rose Kennedy Greenway

**2014**
Boston Natural Areas Network merged with the Trustees of Reservations

With this merger, greening advocacy mostly shifted to the Trustees as the major group in Boston. This put neighbourhood scale greening in the hands of a stable institution with an established track record in the region. It also moved the greening agenda in Boston closer to the wider mainstream environmentalist agenda of the Trustees of Reservations, rather than the grassroots agenda of specific neighbourhoods.

It soon became clear that in the 2010s Boston would also make a strong entry into the arena of urban sustainability and resilience planning. The major sustainability planning initiative was released as the "Greenovate Boston" document in 2011. The plan called for expansion and care of green infrastructure throughout the city. Building on Greenovate Boston, the Climate Change Preparedness and Resiliency Policy (and Checklist) of 2013 required that all new developments consider current and future climate impacts in the environmental review process. The bike network plan of the same year contains a 5-year implementation strategy to complete 75 miles of bike network. Some of that network will be off road greenways with bike and pedestrian access. It also has a 30-year vision for "green links" which are long continuous greenways with bike and pedestrian access. The following year, Boston was named one of the Rockefeller Foundation's "100 Resilient Cities," which provided funds for expanding resilience programming. Finally, in 2017, the Mayor announced that Boston will become carbon-free by 2050.

In all, greening has risen since the 1990s from a major goal of neighbourhood activism to a central part of Boston's policy and vision. The key areas of implementation for urban greening are currently around emissions reduction, bike infrastructure, tree planting, and new parks and gardens especially around high end developments. These include projects like Fenway Farms, a large rooftop farm above the front offices at Fenway Park baseball stadium and uncovering the section of the Muddy River that runs through the newly redeveloped Fenway neighbourhood. This current agenda builds on Boston's history of community organizing and its current rapid economic growth and rising real estate prices.

*Author: James J.T. Connolly*

**Notes**

1) The 2010 census data showed that the city was just under half White (47%), with the remainder of the population mostly comprised of residents who identify as Black (22%), Latino/a (18%) and Asian (9%). Roughly 34% of the housing units in the city are owner occupied and roughly 45% of the population has a college degree or higher. The median home value was almost $400,000 (US) and the median income was roughly $55,000 (US).

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# Bristol

## Background/Context

Bristol is the most populous city in Southern England after London, with a population of 454,200.[1] It is the UK's 8th largest city. The rapid growth of Manchester, Liverpool and Birmingham during the Industrial Revolution far surpassed Bristol, but the city now has a strong economy built on the creative media, electronics and aerospace industries. Bristol is multicultural- 16% of the population identifies as a minority ethnic group- but segregated.[2] It is one of the least deprived English core cities but has deprivation "hotspots" that are among the most deprived zones in England.

Bristol was ranked as Britain's most sustainable city by the Forum for the Future's 2008 Sustainable Cities Index and was the EU's European Green Capital 2015. Green space makes up 29% of the city, with close to 90% of Bristol's population living within 200m of parklands and waterways.[3] However the Parks and Green Space Strategy (2008) notes that Bristol has a significant amount of poor quality informal green space with lower levels of use due to the fact that it is perceived as less safe and inaccessible.

## Greening Trajectory

Bristol's vision to be a green city is apparent in its urban development agenda. In 1997, Bristol City Council (BCC) set strong land use policies to protect and enhance green areas in the Bristol Local Plan. Green spaces such as Oke Wood Park community woodland, consisting of four acres of native woodland and open grassland, were supported by a range of actors. The woodland creation was financially supported by the Forestry Commission, WWF, Countryside Agency, the Forest of Avon, Future Forests and BCC. Furthermore, half of Bristol's nature reserves were established between 1990 and 2015. These included Troopers Hill (1995), Royate Hill (1996), Narroways Millennium Green (1997), Manor Woods Valley (1998), Callington Road (2009), and Avon New Cut (2015).[6] Bristol's Local Nature Reserves are statutory sites protected by law and are managed in partnership with Avon Wildlife Trust.



*College Green–* Brizzleboy|CC-BY-SA-3.0

Green space protection provided by the 1997 Bristol Local Plan was strengthened in 2011 when BCC adopted a new land use policy document, the Bristol Development Framework Core Strategy. The latter sets out the city's development plans between 2011-2026, providing a spatial vision, strategic objectives and delivery strategy. The overarching priorities for the vision and objectives are ensuring a sustainable future for Bristol, balancing social, economic and ecological considerations, including providing a healthy environment and addressing social and health inequalities in inner city areas. By 2026 the city aspires to

Bristol Local Plan adopted
**1997**

**1995**
Troopers Hill Nature Reserve established

**2001**
Oke Park Wood opened

be a leading European city with regards to innovative industry, enterprise, culture, environmental quality, lifestyle and urban design, reinforcing itself as a European Science city and Green Capital.

Bristol's Core Strategy includes a green infrastructure policy which aims to maintain the integrity and connectivity of the strategic green infrastructure network. It recognises how the quality of life in Bristol is influenced by a range of green infrastructure elements, such as parks, gardens, open spaces, landscapes, and trees, as well as biodiversity, green travel routes, and spaces for local food production within the city. The Urban Pollinators project, commissioned by the University of Bristol between 2011 and 2014 as



**Dimensions of greening in Bristol**

Policy Integration — Green Talk — Physical Implementation — Health Focus — Procedural Participation

Bristol — Europe — All

| Equal Access Standard | ✓ |
|---|---|

part of this strategy, established 15 wildflower meadows in existing green spaces across the city, including in parks, playing fields and school grounds.[4] Bristol City Council is also one of several local councils that backs the 2011 West of England Green Infrastructure Network, noting the benefits and importance of green infrastructure and the strategic connections of the region.
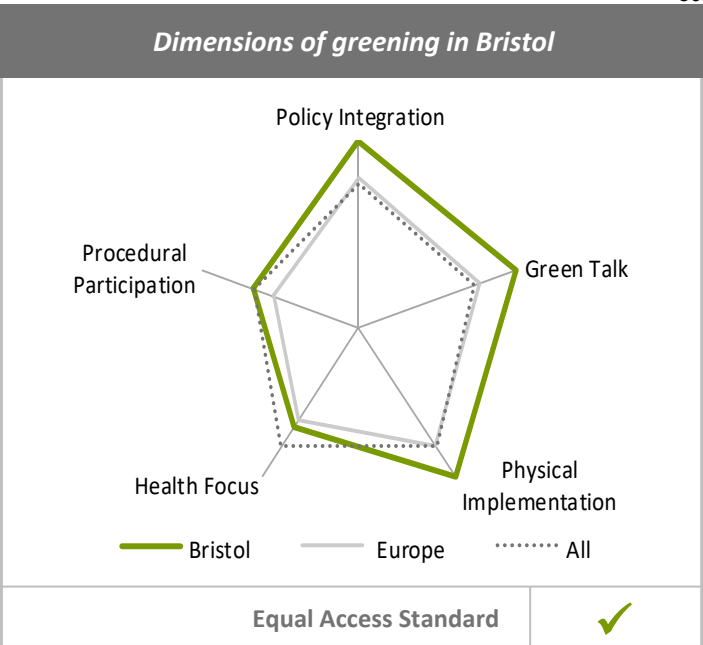
In 2007, the Safer Parks project was established to reduce crime and anti-social behaviour in Bristol's parks and green spaces, with £700,000 dedicated to the Parks Improvement Programme. The latter sought to transform four of Bristol's most deprived parks through maintenance, capital investment, outreach and park staff. Despite the majority of the population living close to green spaces, Bristol reports having a significant amount of less used and poor quality informal green space that is perceived as less safe and inaccessible.[5] Improving the quality of green space and make it more accessible to a wider population is one of many challenges tackled in Bristol's Parks and Green Spaces Strategy, launched in 2008. This document outlines a 20-year investment programme for the future provision of green spaces, whose quality, distance and quantity standards are incorporated into the Bristol Development Framework. It sets the goal of creating up to 70 new children's play spaces over the next 20 years. The Strategy includes an Equalities Impact Assessment, a requirement of Bristol City Council for all new policies, and highlights how some vulnerable groups and people require more than what is currently provided by parks. However, austerity measures have been affecting the implementation of the plan: in early 2017 Bristol City Council announced plans to stop park maintenance completely by 2019-2020, expecting all parks to be self-sustaining.[7] These recent austerity measures make it unclear as to if/how the Parks and Green Spaces Strategy will be implemented.

Bristol has a significant quantity of allotments, or food growing sites: 2,851 plots on 108 sites, three of which are located on housing estates and in a park on a temporary basis. In 2009, BCC adopted the ten-year Allotment Strategy that seeks to maximise participation and promote the enjoyment and benefits of food growing, with an awareness of the value in ensuring ethnic minority access to and use of allotment space.

Safer Parks project began
**2007**

**2008**
Parks and Green Space
Strategy launched

Urban Pollinators project began
**2011**

**2015**
Bristol awarded European Green Capital

Bristol has also developed its urban development and greening agendas using existing brownfield sites. As the European Green Capital, one of the city's ambitions was "to make Bristol a world-leading, nature rich (biophillic) city where people are connected to a nature rich landscape".[8] From 2005-2015, 98% of business development and 94% of new homes were on brownfield sites including inner city regeneration projects, creating high-density, mixed-use neighbourhoods such as the Harbourside and Temple Quarter. Several parks – for example Netham Park and Hengrove Park – were built on former brownfield sites in 2010 and 2012 respectively.

In recent years, Bristol has also introduced projects and initiatives that address climate change mitigation and adaptation. For example, the City and local partners constructed the Severnside Wetlands Nature Improvement Area in 2015 as a 550-hectare wetland conservation site with coastal and fluvial flood defences, while the Bristol Green Capital Partnership, founded in 2007, aims to make Bristol "a low carbon city with a high quality of life for all". The partnership now has over 850 member organisations, including businesses, the public sector, charities and community organisations.

*Author: Melissa García-Lamarca*

**Notes**

1) Population as of mid-2016, according to Bristol City Council.

2) See the Casey Review: https://www.gov.uk/government/publications/the-casey-review-a-review-into-opportunity-and-integration as well as segregation in Bristol's schools: http://www.bristolpost.co.uk/news/bristol-news/bristol-schools-more-ethnically-segregated-285

3) The amount of open space per resident varies hugely within Bristol. In 2007 the level of greenspace was 3.8 hectares per 1000 residents (38 square metres per capita), although with a predicted population growth of 53,800 by 2026 this figure would reduce to approximately 33 sq metres per capita. This varies greatly between central and Victorian districts (quite low) and the outer suburbs. For more information, see the Bristol Parks and Green Space Strategy 2008.

4) For more information about the Urban Pollinators Project, see: http://www.bristol.ac.uk/biology/research/ecological/community/pollinators/

5) According to Bristol's 2008 Parks and Green Space Strategy (page 18).

6) A full list of Bristol´s nature reserves can be found here: https://www.bristol.gov.uk/museums-parks-sports-culture/nature-reserves

7) For further information see http://www.bristolpost.co.uk/news/bristol-news/bristol-parks-under-threat-funding-192005 and https://www.bristol247.com/news-and-features/news/bristols-parklife-threat/

8) "Nature" is one of Bristol 2015's key focus areas. See: https://www.bristol2015.co.uk/theme/nature/

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West of England Nature Partnership, 2015. "Severnside Wetlands Nature Improvement Area." Retrieved from: http://www.wenp.org.uk/wp-content/uploads/2015/03/Severnside-Wetlands-NIA.pdf

# Colorado Springs

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

## Background/Context

Colorado Springs is the second largest city in the Western state of Colorado with 456,560 residents. Founded as a resort town in 1871, today it is ranked by a number of national indices rank the city among the top ten places to live in the United States. Other popular rankings and publications refer to Colorado Springs as one of the best places for business and careers and as a tourist destination on the rise. The city is surrounded by mountains, wilderness areas, and by significant military infrastructure. The Colorado Springs economy is in large-part based on the large military presence in the area as well as the aerospace, electronics and tourism industries. Inequality, however, is significant with 13% of residents living in poverty and roughly the same proportion living without health insurance.

The city is rich in natural amenities and dramatic landscapes, including forests, canyons, mountain streams, grasslands, buffs and mesas. Managed and constructed greenspace is also substantial; the Parks, Recreation and Cultural Services Department manages over 9,000 acres of parkland including nearly 160 developed parks, 10 undeveloped parks, 48 open space and special resource areas, and approximately 270 miles of trails.

## Greening Trajectory

The parks and open space system in Colorado Springs was established at the founding of the city and has seen continuous expansion and connection ever since. Today, the primary greening narratives in Colorado Springs are concerned with the preservation and active use of the abundant nearby natural features. Encouraging residents to get outdoors and engage in physical activity is a programming focus, while planning in the City is largely centered on pedestrian-oriented design and maintaining the historical legacy of the city while allowing for the evolution of its character.

*Memorial Park–*

Colorado Springs is surrounded by wilderness areas and the city itself has a high baseline number of legacy parks, trails, open space areas and cemeteries per capita.

The City has increased its stock of parkland and trails over time to serve a growing population, adding more than 2,000 acres of parks and over 4,700 acres of open space between 1990 and today. In response to the limited funding available for greening projects in the 1980s and 1990s and increasing land development pressure, the 1996 Open Space Plan developed a list of key lands in need of protection and proposed a collective funding mechanism for the acquisition, development and maintenance of trails, open space and parks. The Trails, Open Space and Parks (TOPS) Program was voted in by residents in 1997, establishing a 0.1 percent tax on all sales in the city and a process for the

TOPS sales tax established | City Comprehensive Plan adopted
**1997** | **2001**

**1996** | **2000**
Open Space Plan adopted | 2000-2012 Parks, Recreation and Trail Master Plan adopted

use of the collected funds. Today the use of the TOPS sales tax proceeds is managed by a working committee and regulated by specific limitations enshrined in the City Code. The acquisition of parks and open space in Colorado Springs thus gained particular momentum in 1997 and has maintained its pace, with residents voting in 2003 for the extension of the TOPS program until 2025.
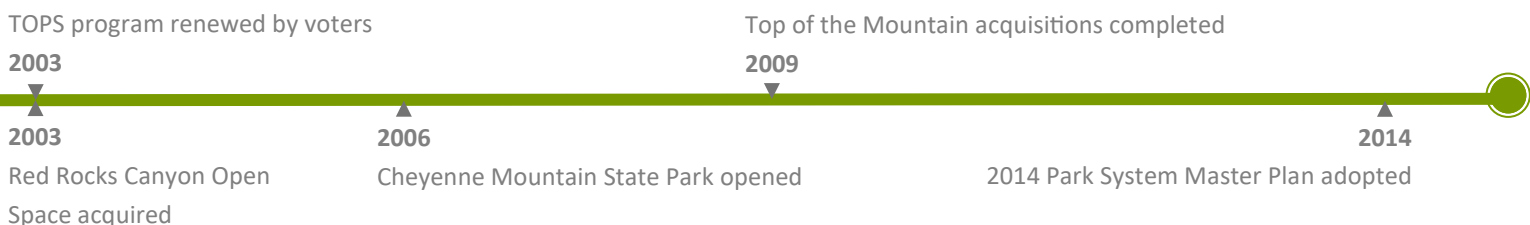
Examples of the kinds of acquisitions and park development projects TOPS allowed the City to undertake include several large tracts of open space gained for public use on the city outskirts: In 2000, a handoff through the Trust for Public Land allowed the City to acquire the 646 acres that make up the Big Johnson Open Space and Bluestem Prairie Open Space today. Using TOPS funds, this land acquisition allowed the City to preserve its first natural prairie grassland area, which acts as a community nature buffer and wildlife corridor with limited public access. In 2003, the Red Rocks Canyon Open Space, a 789-acre city park, was acquired for public use, with multi-use trails, picnic areas, rock climbing options, and an off-leash dog area provided to encourage recreational use of the area. In 2006, the highly prized Cheyenne Mountain State Park was opened, as part of a 2000 agreement between the state-level Colorado Parks and Wildlife and the City for the management of the co-owned property under TOPS ordinance rules. In 2009, the City contributed another 549 acres to the park, expanding the public recreation space to include Cheyenne Mountain itself and the rest of the Top of the Mountain area. In the most recent (2014) Park System Master Plan, the department for Parks, Recreation and Cultural Services Department states that the city now possesses the "right amount of park lands but a need for expanded recreation opportunities".
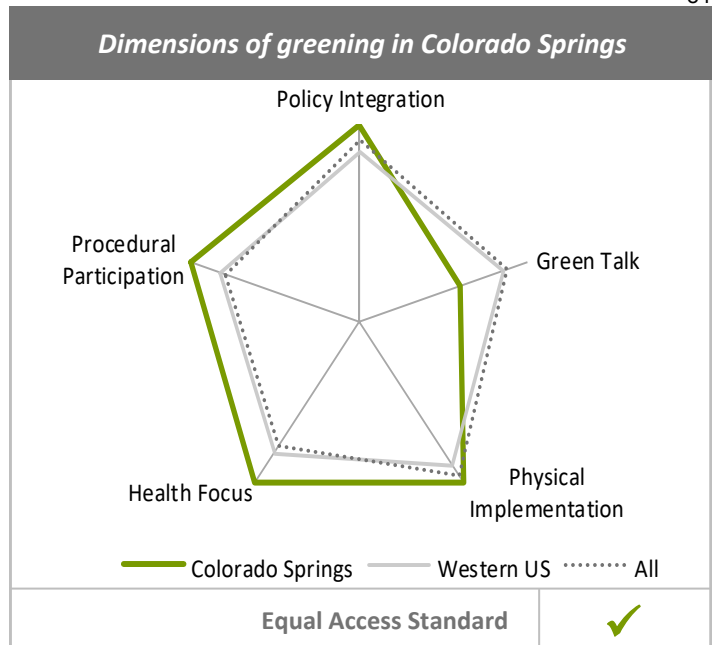
One strong narrative around the City's greening efforts focuses on increasing the use of open space and parks for both residents and tourists. While parks provision currently meets the expectations of residents, the Parks, Recreation and Cultural Services Department has placed its recent focus on adding trails and parks that further connect the existing parks and open space system and accommodate more recreational activities. Other strategies for increasing use were outlined in the City's 2001 Comprehensive Plan and include improving park maintenance and fostering a positive relationship between nature and the built-environment. Since the 2000-2010 Parks, Recreation, and Trails Master Plan, the City has been working toward a parks system that is integrated, convenient and provides 3 acres of community parkland and 2.5 acres of neighborhood parkland per 1000 residents.

Despite adequate park provision, the acquisition of vital lands for open space expansion and corridor connectivity remains an important goal; 2020 Land Use Maps show the extent to which Colorado Springs is planning on acquiring land to meet key goals of the 2014 Parks System Master Plan. In part, land acquisition by the City is done through an ongoing conservation easement program used for annexing new land for open space as well as using park and open space dedications to increase protected green areas. Beyond protecting, enhancing and restoring natural ecosystems, habitats, urban forests and watersheds

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**Dimensions of greening in Colorado Springs**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

—— Colorado Springs  —— Western US  ⋯⋯ All

**Equal Access Standard** ✓

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TOPS program renewed by voters
**2003**

**2003**
Red Rocks Canyon Open Space acquired

**2006**
Cheyenne Mountain State Park opened

Top of the Mountain acquisitions completed
**2009**

**2014**
2014 Park System Master Plan adopted

through their land acquisition and conservation programs, the Parks, Recreation and Cultural Services Department seeks to preserve a number of natural monuments.

Another key aspect of greening in Colorado Springs has to do with stormwater management. Present in a number of City documents, the safe and sustainable control of stormwater is articulated as an important element of development in the city. Development plans are to use design and implementation best practices to minimize environmental hazards from floods, erosion, and other issues pertaining to the city's particular geology. As part of its stormwater management strategies, Colorado Springs will create urban trail corridors meant to absorb runoff. Tree-planting and streetscape improvements such as shade trees, medians, and parkways of "a variety of landscape materials and colors" support the City's stormwater goals and help propel its built environment toward greater livability and health.

Colorado Springs has gradually oriented itself to develop with density in mind and to increase the use of multi-modal transportation and neighborhood-led development, even though the city land area is still comprised of 32% vacant and agricultural land. There is an emphasis within the City's land use and development strategies on creating a livable, pedestrian-oriented, transit-oriented city while maintaining and using natural features, scenic areas and greenways. Much of the city's modern development and growth has taken place within the current greening and sustainability paradigm seen in cities around the globe. While there is no explicit equity lens emphasized in greening and sustainability planning, the neighborhood level is treated as an important unit for organizing, social cohesion and decision-making around neighborhood preservation and development.

*Author: Stephanie Diane Loveless*

**Notes**

1) Population as of 2015 Census estimate, with 78.8% of residents identifying as White, 16.1% as Hispanic/Latino, 6.3% African American, 1% Native American or Alaskan, and 3% Asian.

2) Forbes Magazine and TripAdvisor.

3) See: City of Colorado Springs website at https://coloradosprings.gov/communications/article/news/10-days-cos-5-top-ranked-city)

4) 2015 statistics from The Bureau of Labor Statistics, Census Reporter, and the United States Census Bureau.

5) El Paso County Assessor Department, June 2008. "City of Colorado Springs - Existing Land Use." Map retrieved from: https://coloradosprings.gov/sites/default/files/planning/landuse08.pdf

6) The population of Colorado Springs increased by more than 60% between 1990 and 2015. (U.S. Census Bureau, 1990; Census Reporter, 2015.)

7) Anleu, B.S., 2017. "Colorado Springs' TOPS program 'a true success story' after 20 years." The Gazette - online publication. Accessed at: http://gazette.com/colorado-springs-tops-program-a-true-success-story-after-20-years/article/1601698

8) Prioritization was based on the ecological services and "supplemental community value" that a site provides.

9) Trails and Open Space Coalition, 2017. "TOPS." Accessed at: https://www.trailsandopenspaces.org/tops/

10) The TOPS program was extended to the year 2025 through voter approval in 2003 and continues to enjoy very high support among residents. (See: City of Colorado Springs Park System Master Plan, 2014.)

11) For more information on this state-city collaboration, see the Cheyenne Mountain State Park 2013 Management Plan.

12) See Chapter 4, "Community infrastructure/Services," of the 2001 Comprehensive Plan: https://coloradosprings.gov/sites/default/files/planning/comp_plan-chap_4.pdf

13) City of Colorado Parks, Recreation and Cultural Services Department, 2014. "Colorado Springs Park System Master Plan." pp. 151, 156

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# Copenhagen

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

## Background/Context

Copenhagen was founded in the 12th century and established as a municipality in 1840. With 591,481 residents, the city's population accounts for over ten percent of the population of Denmark.[1] The City, and country, have low unemployment rates, but high educational attainment, life expectancy, voter turnout, and sense of community; 80% of Copenhageners report being satisfied with life in the City. Income inequality and poverty are, however, on the rise. [2]

Copenhagen is experiencing a period of growth in its population and expects an increase of 100,000 people by 2027. The city is becoming increasingly more cosmopolitan with planners and decision-makers aiming to attract international businesses and brand the city as innovative, creative and sustainable. The city has won such awards as the European Green Capital in 2014 for being a notably liveable and environmentally progressive urban centre. By 2015, the City had set goals for becoming the world's best cycling city, a leader in green policy and politics, a green and blue capital, and a clean and healthy big city.

## Greening Trajectory

Denmark's first environmental policies addressed problems related to an outbreak of cholera in 1850 and the pollution generated by Copenhagen's waterfront industries in the 1880s. Water pollution remained Denmark's primary environmental concern until the mid-1980s, when air pollution reduction and other environmental concerns began receiving more attention.[3] Since the 1990s, Copenhagen has undertaken water clean-up and redevelopment efforts on its formerly industrial waterfront areas; several sections have been converted into new swimming areas, recreation zones, and residential developments over the years.



*Bike Rack* © Dash76 | Megapixl.com

Starting in 1995 the City began issuing yearly environmental reports that included environmental sustainability goals and a section on green spaces. The following year, the city became host to the annual Princes' Award for environmental film, strengthening Copenhagen's reputation as an environmental leader among European cities.[4] Capping off the 1990s, the City articulated its goal of becoming an environmental and sustainable capital city within its 1999 environmental report.[5]

Into the 2000s the City worked toward becoming a carbon-neutral "smart city" and increasing access to

First annual environmental report issued
**1995**

Harbour baths at Islands Brygge open
**2002**

green public space for all residents.[6] More recently, since the sudden and dramatic flooding from a cloudburst on July 2, 2011 and the subsequent Cloudburst Management Plan of 2012, there has been an increased emphasis on using physical green infrastructure for managing stormwater and rising sea levels.[7]
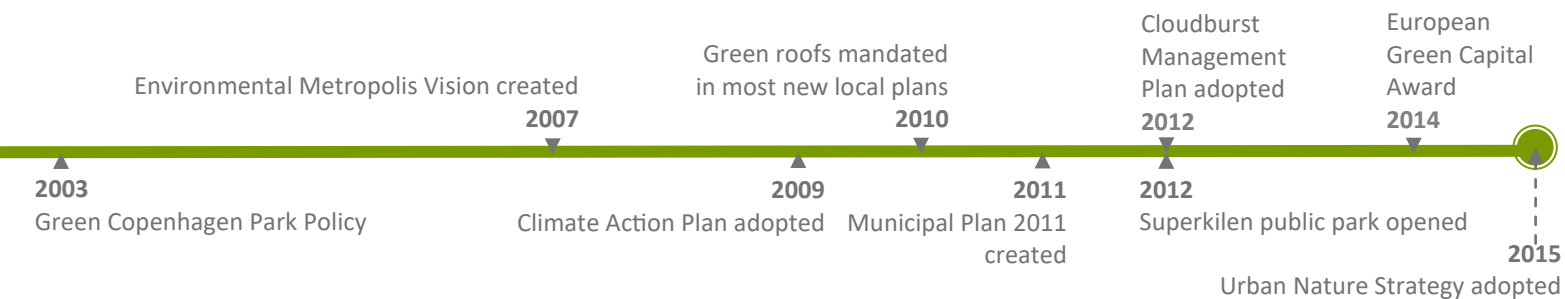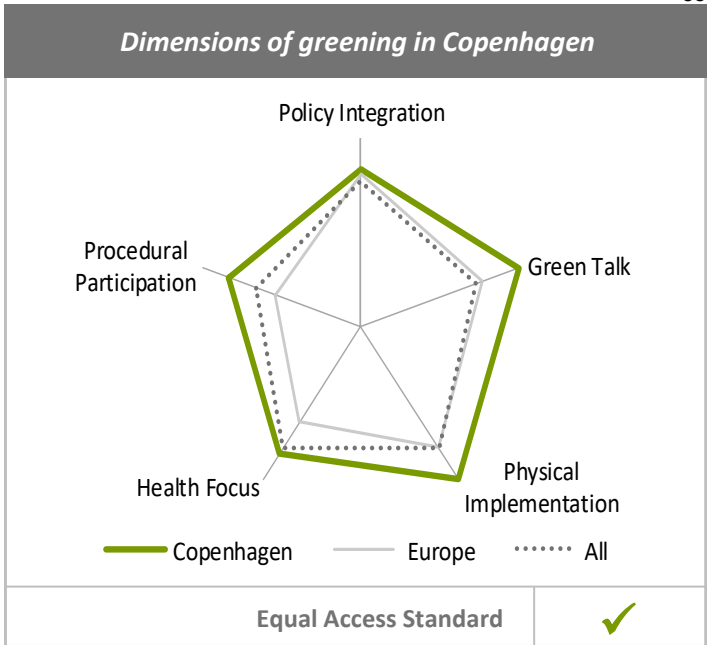
Today, Copenhagen continues to position itself as a leader in environmental policy and the city integrates international, national and municipal level sustainability and environmental goals into its policies. Environmental goals are included in nearly every domain of city planning which is evident in city plans for parking, building construction, cycling amenities, recreation, business, and public space creation.[8] The majority

**Dimensions of greening in Copenhagen**



| Equal Access Standard | ✓ |
|---|---|

of these environmental initiatives encompass some form of physical greening. For example, in the 2009 Copenhagen Climate Plan, the City calls for additional green areas as both a climate adaptation strategy for stormwater management, and as a way to boost the city's liveability.[9] Other comprehensive city plans such as the Municipal Plan 2011 mandate more greenspace in the form of parks, green roofs, gardens, and trees. The most recent (2015) municipal plan places even greater emphasis on the need for green areas in maintaining a high quality of life for a growing urban population and for the promotion of biodiversity, improved air quality, noise reduction, and climate change adaptation.

Before entering its era of environmental leadership, Copenhagen already had a large baseline of green spaces; many existing parks are former military areas and royal gardens that have been converted into publicly accessible green spaces. The public cemeteries in Copenhagen, which are often quite large, are also frequently visited green areas.[10] Cycling routes connect many of the city's green amenities through the Green Cycling Route, made especially to help residents and visitors experience these spaces.[11]

Copenhagen has specific plans for increasing municipal urban greenspace. The 2003 Green Copenhagen Park Policy provided the approach the city was to take in developing and maintaining its green spaces not just as part of the parks planning process, but also in other domains of municipal planning, with a view toward the development, protection, quality, and adequate supply of greenspace. In its 2007 Environmental Metropolis Vision for the year 2015, the City established a goal of providing 90% of residents access to a park, beach, or natural area within a 15 minute walk. This policy catalysed the creation of green spaces in parts of the city. Most notably, the Superkilen public park in the Nørrebro district was opened in 2012 with a design that accommodates use of green space areas, sports and games, picnics and barbecues. Dozens of everyday objects, recreation areas, public sitting areas, and plants were installed – some of which were imported or are replicas from cities around the world to reflect the 57 different cultures of the residents in the area.[12]

In its 2015 Urban Nature Strategy, plans for the further expansion of green areas are articulated. For the



Environmental Metropolis Vision created
**2007**

Green roofs mandated in most new local plans
**2010**

Cloudburst Management Plan adopted
**2012**

European Green Capital Award
**2014**

**2003**
Green Copenhagen Park Policy

**2009**
Climate Action Plan adopted

**2011**
Municipal Plan 2011 created

**2012**
Superkilen public park opened

**2015**
Urban Nature Strategy adopted

City, greenspace serves multiple functions such as $CO_2$ reduction, excess water management, and the creation of liveable, accessible, physically healthy, socially cohesive and socially integrated cities.[13] Neighbourhood plans are employed in operationalizing these broader municipal development, sustainability, environment, and climate plans; these local documents more directly address issues such as urban renewal, sustainability, water management, mobility, and liveability through concrete spatial planning.[14]

In the last several years, there has been greater emphasis on participatory planning and in some instances, co-governance of urban greenspace; the City capitalizes on the increased engagement of citizen volunteers in maintaining its natural areas, parks, and urban gardens. The 2010 program, Frivillig I det fri (Volunteer in the Open), supports residents in contributing to the upkeep of their natural environment.[15]The City places great emphasis on getting people out onto the streets, particularly through the development of 'byrums' - urban spaces that encourage people to relax, socialize, consume, and enjoy the numerous public and free events outdoors in the public realm.[16] Precedent for resident involvement in greenspace creation existed in the example of slands brygge, which was planned and financed by residents of the Islands Brygge former harbour area starting in the 1970s. The first section of the park was created by residents in 1984 after decontamination of the industrial area. Ten years later the City acted on a resident-led plan for the area, creating the well-known and highly utilized recreation areas that exist on the site today.[17]

Although edible urban gardens have been present in the city for decades,[18] there have been a number of garden additions to the city's landscape in the last five years.[19] Since the 2000s, several green roofs, outdoors sports areas, playgrounds and a handful of harbour and beach swimming areas have also been constructed. For example, the harbour baths and basins at Islands Brygge opened in 2002 with harbour waters deemed clean enough for bathing. Three years later, the Amager Strandpark beach park was redesigned and gained a new lagoon, artificial island, and diving facilities.[20] In addition to these projects, Copenhagen also developed a focus on green roof construction. By 2010, green roofs were mandated in local plans and could be seen covering urban structures at various scales.[21]

Beyond the carbon accounting initiatives of the early 2000s, and the more recent focus on stormwater management, City sustainability policy has been marked with an orientation toward liveability. In 2015 alone, policies and plans were developed for the planting of 100,000 new trees; for the improvement and expansion of urban natural spaces through citizen involvement; for the development of a green space cycling route; and for the implementation of several climate adaptation projects.  The City's publicly available plans on greening, sustainability and liveability date largely between the mid-2000s and today, when much of its current policy approaches were developed.

*Author: Stephanie Diane Loveless*

## Notes

1) Population as of January 2017. This includes 14% non-western migrants or descendants and 9% western migrants or descendants (Statistics Denmark, 2017. Retrieved from: http://www.statbank.dk/BY1)

2) Income inequality /poverty increase is notable in the country, but 20% of those living in poverty reside in Copenhagen.

3) After the oil crisis of the 1970s, energy conservation concerns accelerated the roll-out of larger-scale environmental policy agendas in Denmark – particularly those dealing with energy and transport.

4) See: "Københavnernes Grønne Regnskab 1998", p. 2. Retrieved from: http://kk.sites.itera.dk/apps/kk_pub2/pdf/597_TwR3lgSnEr.pdf

5) See: "Københavnernes Grønne Regnskab 1999", p. 1. Retrieved from: http://kk.sites.itera.dk/apps/kk_pub2/pdf/598_86WKILKYYB.pdf

6) Copenhagen has a goal of being the world's first carbon-neutral city by 2025.

7) See the Cloudburst Management Plan of 2012, "Københavns Kommunes Skybrudplan," at http://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=1018

8) Public spaces in this case include both green spaces and public spaces with other surfaces.

9) See: "Copenhagen Climate Plan" f2009. Retrieved from: https://www.energycommunity.org/documents/copenhagen.pdf

10) On the use of cemeteries as greenspace, see: http://www.kk.dk/kirkegaarde

11) Copenhagen is one of the foremost examples of a true urban cycling city and it seeks to be the world's best cycling city; Københavns Grønne Cycelruter, Teknik- og Miljøforvaltningen, København Kommune - 2015

12) Etherington, R., 2008. "Superkilen by Bjarke Ingels Group." Dezeen online magazine. Accessed at: https://www.dezeen.com/2008/10/05/suk-project-by-big-architects/

13) See: "Bynatur i København - Strategi 2015-2025." at: http://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=1447

14) Neighborhood-level plans include elements geared toward achieving city-wide sustainability agreements and goals.

15) Frivillighed i det fri." 2017 Volunteerism, Accessed at: http://www.kk.dk/artikel/frivillighed-i-det-fri

16) See the Community Copenhagen vision at: http://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=1448

17) For more on the creation of Havneparken, see: http://www.kobenhavnergron.dk/place/havneparken/?lang=en

18) For example, Enghaveparken in Vesterbro was established in 1928 as a public space for low-income residents to grow food, until it lost its central place in the community with the advent of urban renewal projects. Today the area is being turned into a formal park with large stormwater holding capacity. (Tredje Natur, 2016. "Enghaveparken her og nu."

19) See: http://www.kk.dk/storbyhaver

20) For the Amager Beach project, see: http://www.aok.dk/byliv/amager-strandpark. For the Harbour baths at Island Brygge, see: http://www.aok.dk/byliv/koebenhavns-havnebad-islands-brygge

21) The 1998 German construction law and Federal Building code provided the legal grounds for cities to require green roofs.

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# Denver

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

## Background/Context

Denver is the capital city of the western U.S. state of Colorado, located near the foot of the Rocky Mountains. Currently home to 693,060 people,[1] its population and economy have been growing rapidly since the 1990s, due in part to large-scale development and renewal initiatives. This period of investment in city infrastructure, parks, waterfronts, and distinct city districts has helped redefine Denver's character. With its easy access to the mountains and recreation amenities, Denver is often considered one of the most active, healthy and liveable cities in the United States.

Envisioned in recent years as a "city in a park," Denver has become greener with the creation of several large parks and recreation areas as well as river clean-up initiatives. Its park system includes over 200 parks, gardens, natural areas, golf courses, dog parks, skate and snowboarding parks, and playgrounds.[2] Over 1,700 acres of natural areas exist within city limits, including twenty-four lakes and a system of greenways for biking and walking. In addition to city parks, the Denver Parks and Recreation department manages 14,000 acres of mountain parks.[3]

## Greening Trajectory

Since Denver's founding in 1858, parks, parkways, and landscaped boulevards have been steadily added to the city's landscape.[4] A City Beautiful program at the start of the twentieth century led to a further boost in park creation and to the inclusion of mountain parklands into the city's park system. In 1929, Denver adopted its first comprehensive parks plan, outlining a goal of adequate park space provision for all city residents. Between 1929 and 2003 no new parks master plans were adopted. Before a new parks plan would be developed for the twenty-first century, Denver's Comprehensive Plan 2000 - a primary planning document guiding the city's development – provided a strategy for the city's greening activities. Referring to Denver as a 'green

*Berkeley Lake Park (redesigned in 2016)—* [Jeffrey Beall](#) [/CC-BY-ND-2.0](#)

oasis,' the plan envisioned urban quality-of-life improvements through the creation of a liveable city that maintains social, environmental and economic sustainability.[5] In terms of physical greening, the plan encouraged the preservation of existing greenspace as well as new greenspace development despite the already present challenges of reduced budgets, an aging park system, and a growing population.

In 2003, Denver finally adopted a new parks master plan to guide parks and recreation development between 2003 and 2008. This 2003 Parks & Recreation Game Plan focused on planning policies in a

Brownfield site acquired by City for development as Commons Park
**1991**

Northside Park completed
**1999**

Commons Park completed
**2001**

**1995**
South Platte River Commission established

**2000**
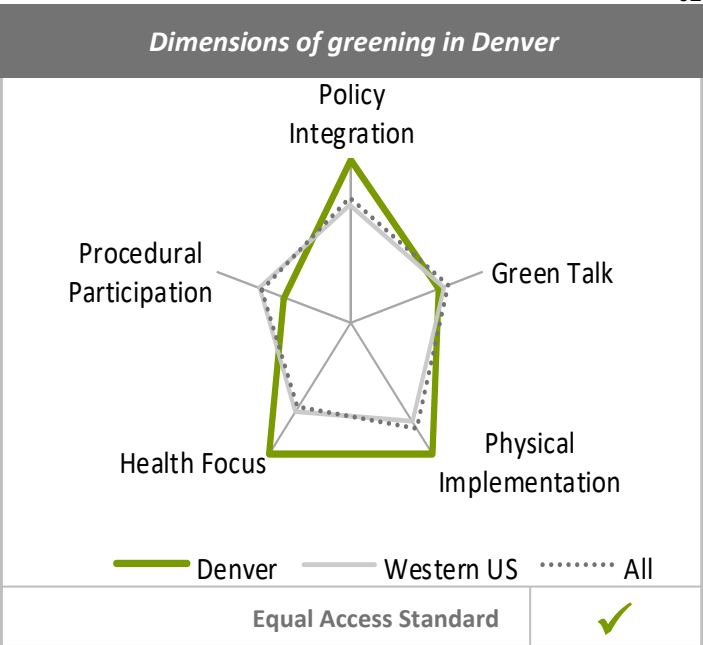Comprehensive Plan 2000 adopted

**2001**
Stapleton airport site begins work

broader and more abstract manner than the 1929 plan, which had emphasized park site identification and implementation.[6] The Game Plan introduced new standards for the city's parks, stressed the securing of parks funding, and addressed the city's expanded requirements for park development and maintenance.[7]

A decade later, the City released its 2013 Parks Resources, Allocations and Priorities Plan for parks in the urban core,[8] followed by an update to the Game Plan in 2017. In these more recent documents, Denver aspires "to be a nationally recognized leader providing model programs and dynamic public spaces," looking to expand city parkland by 2,300 acres during the 21st century.[9]



**Dimensions of greening in Denver**

Policy Integration — Green Talk — Physical Implementation — Health Focus — Procedural Participation

Denver · Western US · All

Equal Access Standard ✓

Since the 1990s, the physical implementation of Denver's green aspirations was often made possible by large-scale development plans and renewal projects. The creation of a new international airport,[10] large-scale redevelopment of the former airport site, and the redevelopment of Denver's downtown provided both development opportunities and funding for the creation of new parkland and other urban green spaces. Between 1975 and 2001, 21 parks or park projects were completed. Since 2001, redevelopment of the former 4,700-acre Stapleton Airport site has famously converted a large brownfield site into the mixed-use, pedestrian-oriented neighbourhood of Stapleton. Stapleton now includes over 50 new parks and greenways, including the 80-acre Central Park that opened in 2007.[11] Larger parks and green areas in the neighbourhood were set up to be publicly owned and managed, while smaller spaces are managed and maintained by community associations.[12] Stapleton's 1,250 acres of planned parkland represent 25% of Denver's park system.[13]

In the 1990s Denver also began implementing renewal plans for the city's underused, formerly industrial downtown area.[14] Renewal began with the Lower Downtown Historic District (LoDo) and its South Platte River shores. Extensive (and ongoing) clean-up projects on brownfield sites along the river shores further facilitated redevelopment of the area into one of the city's most vibrant districts today.[15] Partnerships between the City, private partners, and the Greenway Foundation[16] funded the remediation of a number of these sites and allowed for the creation or upgrade of several large parks along the waterfront and surrounding area, including Commons Park (acquired in 1991), Northside Park (completed in 1999), Confluence Park (undergoing renovation since the early 2000s), and Ruby Hill Rail Yard urban terrain park (opened in 2007). This linear riverfront system of parks was formalized as the South Platte River Greenway, with then-Mayor Wellington Webb establishing the South Platte River Commission in 1995 as an oversight body for the development and protection of the river corridor.

In the 1990s and 2000s, redevelopment work extended to districts surrounding the downtown. Working-class neighbourhoods such as Globeville, and more recently Elyria-Swansea, have seen redevelopment, new greenspace provision, further waterfront clean-up, and the expansion of existing parks like Globeville

Mile High Million Trees initiated
**2006**

Central Park, Ruby Hill Rail Yard opened
**2007**

Globeville Landing Park redesign
**2015**

**2013**
Parks Plan adopted

**2003**
The Game Plan master plan for parks is adopted

Landing in their communities. While public health improvement and flood protection have recently been used as policy narratives bolstering the introduction of new green assets in these neighbourhoods,[17] the gentrification potential of these and upcoming greening projects has made existing residents both increasingly concerned about displacement and more active in the planning of these amenities. [18]

Other prominent greening activities in Denver address health, liveability and climate change. For example, Denver Urban Gardens, a non-profit urban gardening program has operated since the mid-1980s, expanding the number of community gardens and farms available to residents throughout the 1990s and beyond. Municipal and non-municipal bodies have become increasingly involved and been supportive of urban gardening and local food production in recent years.[19] Climate action plans and policies have inspired initiatives in green infrastructure, green streets, and the Mile High Million Trees by 2025 Program; Denver considers trees to play a key role in liveability, as well as climate change adaptation and mitigation.[20]

Like many parks systems in the United States, Denver's is facing both spatial and fiscal challenges. In order to secure the future of its parks system, the City plans to lean more heavily on strategic partnerships and the inclusion of residents for parks provision and maintenance as a way to overcome shrinking budgets. The city's semi-arid climate places additional stress on maintenance operations and budgets, as do Colorado tax restrictions[21] and the lack of a developer impact fee requirement.[22] Spatial expansion of Denver's parkland through acquisitions is limited by long-standing restrictions on county annexations,[23] hampering the efforts of Denver Parks and Recreation to address park user conflicts arising from overcrowding and competing park uses. Even so, the department seizes opportunities to introduce new parks from time to time through bond measures or with the involvement of non-profit organizations such as the Trust for Public Land. Its recent parks plans also address equity issues pertaining to maintenance, appeal, quality and opportunity. Nowadays greening, as an urban improvement tool, factors into Denver's overall development plans as well as its sustainability, economic, and health strategies.

*Author: Stephanie Diane Loveless*

**Notes**

1) United States Census Bureau 2016 Population Estimates.

2) See the full list of park system amenities: https://www.denvergov.org/content/denvergov/en/denver-parks-and-recreation/parks.html

3) See Denver Parks and Recreation's 2017 Game Plan Update.

4) See the 2005 Design Guidelines for Denver's Designated Parkways and Boulevards: https://www.denvergov.org/content/dam/denvergov/Portals/747/documents/parks/Parkways/parkway-design-guidelines.pdf

5) See the City of Denver's Comprehensive Plan 2000, p. 5.

6) See 2015 Alessandro Rigolon thesis dissertation.

7) Ibid.

8) Management of the 14,000 acres of Denver mountain parks (outside of the urban core) is guided by the 2008 Denver Mountain Parks Master Plan. See: https://www.denvergov.org/content/dam/denvergov/Portals/747/documents/planning/master_plans/MountainPark_MasterPlan.pdf

9) Denver Parks and Recreation 2017 Game Plan Update, p. 94.

10) Plans for the Denver International Airport took shape in the 1980s and 1990s. Since replacing the old Stapleton Airport, Denver's has become one of the busiest airports in the world, bringing in substantial revenue for the City.

11) See community coverage of the park's opening: https://frontporchne.com/wp-content/uploads/2013/10/2007_10Oct.pdf

12) See 2015 Alessandro Rigolon thesis dissertation.

13) For a brochure on all of Stapleton parks, see: http://www.stapletondenver.com/brochures/parks-of-stapleton/

14) The 1986 Downtown Area Plan is credited with much of the success of downtown Denver's revitalization during the 1990s.

15) Downtown Area Plan, 2007; http://www.renewdenver.org/assets/files/50thAnniversaryReport.pdf

16) The City and The Greenway Foundation have partnered to invest over $40 million in improvements to the South Platte River and surrounding area since 1990. See The Greenway Foundation's past projects at: http://www.thegreenwayfoundation.org/success-stories.html

17) In 2014, the Denver Department of Environmental Health identified the improvement of existing parks and tree canopy expansion as methods by which to address public health concerns in Globeville and Elyria-Swansea.

18) The renewal plan for the Interstate-70 Highway, adopted in 2017, features a large *cover park* or *green cap* over the existing highway. For more information, see: https://www.citylab.com/equity/2017/01/in-divided-denver-a-highway-promises-reconnection/512660/; https://www.codot.gov/projects/i70east

19) See the mission and composition of the Denver Sustainable Food Policy Council: http://www.denversfpc.com/#purpose-1

20) For more information on the Million Trees by 2025 program, see: http://milehighmillion.org/pages/section/who-we-are

21) The 1992 Taxpayer Bill of Rights (TABOR) limits government taxation and spending and in turn limits Denver's ability to fund public services such as parks under changing economic realities. See Denver's 2000 Comprehensive Plan, page 17.

22) Developers in Denver are neither required to pay impact feeds for parks, nor to set aside extra land for green areas. (Commentary by Dr. Alessandro Rigolon, May, 2017.)

23) The 1974 Colorado Poundstone Amendment prohibits the annexation of areas without the approval of their voters.

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# Detroit

## Background/Context

Detroit City is located in the State of Michigan in the Mid-Western region of the United States with a current population of about 677,000.[1] According to the 2010 US census, Detroit's population is about 83% African American, 11% White, and 7% Latino/Hispanic[2]. The rate of unemployment in 2014 reached a peak high of 50% (Safransky, 2014) and, for the same year, median household income for Detroiters was only $26,095 annually.[3]

Detroit is currently contending with the social and ecological ramifications of its deeply industrial past. The city is part of the rustbelt, a formerly highly industrial region that has experienced deindustrialization since the 1950s. In part, deindustrialization led to economic decline and a shrinking population in the city, which was acutely compounded by the economic crisis starting around 2007. As a result, the city filed for bankruptcy in 2014. Between 2000 to 2010 alone, Detroit lost one-quarter of its population,[4] and then experienced a further 5% decline between 2010 and 2017 (Safransky, 2014; Censusreporter.org, 2017). In addition, due to former industrial uses, Detroit has a large amount of environmental toxins that remain in the ground and water, affecting people and the environment in the city.[5]

## Greening Trajectory

Detroit has had a continuously declining municipal budget for green space and other basic infrastructure since post-war deindustrialization and population decline took hold in the city in the late 1960s. Since its peak staff size for parks and urban forestry in the 1960s and 1970s of over 400 people, the number of employees in this sector reduced to 22 by 2012.[6] This steep decline in resources meant that, by the 1990s, only the most serious issues related to maintaining green infrastructure received attention. As a result, starting in the 1990s, greening in Detroit has largely been funded and executed with cooperation from the



*Grand Circus Park–* Mikerussell|CC-BY-SA-3.0-migrated

municipality by many volunteers and non-municipal organizations including private foundations, non-profit groups, and county, state and federal government.

Representative of the non-governmental push for greening in Detroit, in 1990, the non-profit group *The Greening of Detroit* completed its first tree planting project in response to the more than 500,000 trees lost in the city between the1950s and 1980s due to disease and lack of maintenance. Over the course of the next 25 years, the organization planted over 80,000 trees with the help of volunteers throughout the city. By the early 2000s, The Greening of Detroit expanded to community gardening and then, by 2010, it

Miliken State Park and Harbor redevelopment began
**1999**

**1994**
Land Use Task Force recommends creating connected system of green spaces

**2001**
GreenWays initiative launched

**1990**
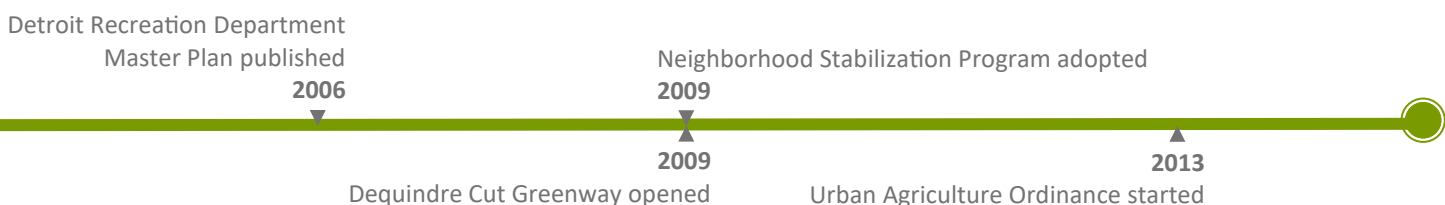First tree planting by The Greening of Detroit

started working closely with city agencies on issues of vacant lot cleanup and green workforce training. As a result, this group was the leading force for greening in the face of deep municipal budget cuts during the 1990s and early 2000s.

In 1994, the City did begin to put together a process for planning green interventions. It convened the Mayor's Land Use Task Force that year to advise on a wide range of land use concerns. The Task Force focused on suggestions for clean-up and reuse of large formerly industrial sites. It also recommended leveraging the large amount of unused vacant land in the city to create a linked system of green spaces throughout Detroit. Specifically, the Task Force suggested creating a 12,000 acre system of parks, bike paths,



Dimensions of greening in Detroit

and community gardens from existing parks and vacant unused land. These citywide greenbelts were meant to define community boundaries and buffer neighbourhoods from industrial land uses.[7]
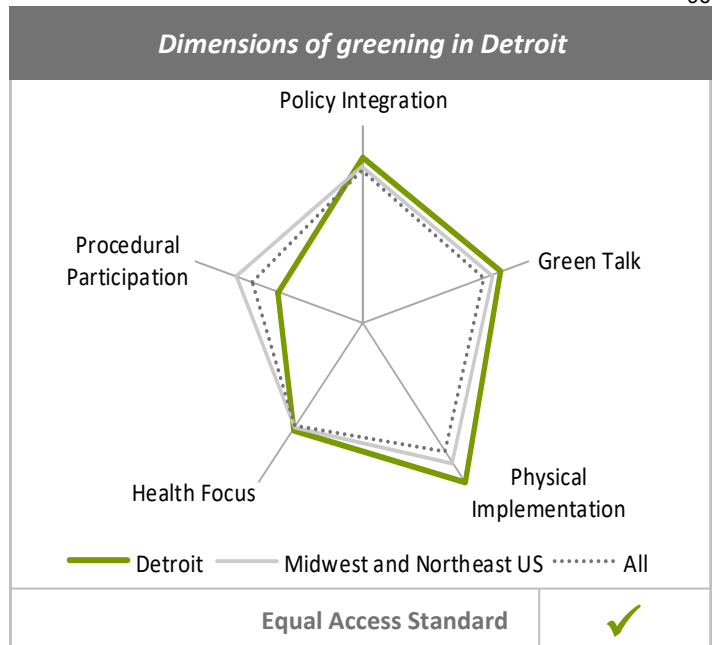
Unfortunately, by the late 1990s, the City was moving more in the direction of closing parks than toward building a larger and more integrated system as called for by the 1994 Task Force, but a few projects did go forward that moved toward an interconnected greenway system. From 2001 to 2006, the GreenWays Initiative sponsored by the Community Foundation for Southeast Michigan provided grants to Detroit and other nearby cities to fund the creation of new greenways. A number of projects were completed in the city at the time and today the Greenways are maintained by The Greening of Detroit. As well, starting in the late 1990s, a number of downtown and waterfront green infrastructure projects went forward in Detroit. One key project was the "31-acre green Oasis in the midst of downtown Detroit" called the Milliken State Park and Harbor development. The park design began in partnership with the Project for Public Spaces in 1999 and the first section of Miliken State Park and Harbor opened in 2004 followed by the wetlands portion in 2009. Another key project, the Dequindre Cut Greenway is a two-mile path near the waterfront that also opened in 2009. In addition, in 2015 Gabriel Richard Park near the waterfront received enhancements, and Detroit currently has plans to revitalize the eastern waterfront in the near future as well.[8] By the late 1990s, the City also focused on stormwater management to protect the Rouge River. During the 1990s and early 2000s, the Detroit Water and Sewerage Department promoted greywater infrastructure as a way of reducing wastewater flow, but by 2010 the city partnered with a regional water management organization to develop a green infrastructure program for wastewater reduction. This has led to new trees, greened lots and green water collection areas throughout the city. Recently, the City also partnered with Friends of the Detroit River around water management programming and participated in the 2013 – 2016 Great Lakes Restoration Project.

Starting in 2006, the city launched an official planning process for the creation and maintenance of green infrastructure. This process was part of a major revision of existing city plans, which were originally developed for an area of over 900,000 residents, while by then the number was closer to 700,000 residents and still falling within city limits. The 2006 Detroit Recreation Department Master Plan reported

Detroit Recreation Department Master Plan published
**2006**

Neighborhood Stabilization Program adopted
**2009**

**2009**
Dequindre Cut Greenway opened

**2013**
Urban Agriculture Ordinance started

that the entire parks system needed maintenance and upgrades.[9] The Plan recommended that the city close 92 parks, build 27 new parks and renovate 192 parks.[10] The 2016 Detroit Environmental Agenda report confirms that there were a number of parks closed and several placed in a "limited maintenance" category by 2009. But, following the 2006 report recommendations and with public input, 69 parks were improved, 52 open space opportunities have been identified, 89 parks were slated for improvements, and six new parks were created along with a few expansions and relocations.[11]

By 2008, greenspace took on a central role in strategies for economic recovery in the city. The 2008 Master Plan of Policies outlines goals for filtering more resources to the parks, recreation and open space system in Detroit, offering diverse recreation programs, providing safe, accessible parks, protecting and utilizing the riverfront and promoting the reuse of vacant land and urban agriculture.[12] In 2009, in response to the economic crisis and a high number of property foreclosures, Detroit issued the Neighborhood Stabilization Program highlighting the benefit of using green spaces and citizen engagement in stabilizing property markets.[13] The 40 parks within areas slated for neighbourhood stabilization received resources transferred from the federal government for maintenance and renovation. Soon, urban agriculture became a preferred method for revitalization by greening. Urban agriculture became easier with 2013 Urban Agriculture Ordinance which increased areas that could be zoned for these activities. The ordinance made it possible, for projects like the Hantz Farm to acquire 1,500 vacant lots amounting to 140 acres in order to create an urban farm for growing high quality timber.[14]

Most recently, the 2016 Detroit Environmental Agenda highlights the need for safe access to parks and cleanliness in parks. Further development of parks, trails, and greenways are among the priorities laid out in the agenda.[15] In 2017 the city released the newest Parks and Recreation Improvement Plan[16] and many of the updates to the new Plan are centred on how the changing population density has impacted park needs. Of the 75 largest US cities, Detroit his ranked last on park spending per person and, in response, the 2017 plan aims to increase park spending to an "acceptable" level.[17] There are plans to improve 40 parks that did not receive updates after the 2006 plan and 52 other areas will be converted to open space, including creation of more greenways.[18] Despite these new plans, though, under reduced municipal budgets it appears as though the City's primary greening strategies are and will continue to be heavily reliant upon community-based stewardship.

*Author: Stephanie Diane Loveless*

**Notes**

1) According to censusreporter.org

2) 2016 estimates from census.gov. See: https://www.census.gov/quickfacts/fact/table/detroitcitymichigan,MI/PST045216

3) According to censusreporter.org

4) According to http://censusviewer.com/city/MI/Detroit; http://www.nytimes.com/2011/03/23/us/23detroit.html

5) Detroit Environmental Agenda 2013. See: http://www.detroitmi.gov/How-Do-I/Volunteer/Keep-Detroit-Beautiful-Forms

6) For more information, see: http://americanforests.org/wp-content/uploads/2012/11/AF-CS-Detroit.pdf

7) See: https://www.newspapers.com/newspage/98023244/

8) See: http://detroitriverfront.org/riverfront/west-riverfront/west-riverfront-park

9) Ann Arbor, University of Michigan, April 2012. EVER GREEN: An Enduring System of Parks and Greenways in Detroit. Available from: https://taubmancollege.umich.edu/pdfs/student_work/planning/ever_green.pdf

10) According to PhD Fellow from University of Michigan and expert on greening in Detroit, the City is no longer planning to close 92 parks, although a few parks have been transferred to churches or other partners, and others are poorly maintained.

See: http://www.detroitmi.gov/Portals/0/docs/Parks/2017%20Parks%20and%20Recreation%20Improvement%20Plan.pdf

11) ibid p. 51

12) ibid, p. 46

13) City of Detroit, Planning and Development Department, 2009. Neighborhood Stabilization Program Plan. Available from: http://www.detroitmi.gov/Portals/0/docs/Planning/PDF/NSP/detroitNSP_R31_29_09_2.pdf

14) See: https://www.citylab.com/design/2013/10/140-acre-forest-about-materialize-middle-detroit/7371/

15) Detroit Environmental Agenda 2013. See: http://www.detroitmi.gov/How-Do-I/Volunteer/Keep-Detroit-Beautiful-Forms

16) 2017 Parks and Recreation improvement Plan, found here: http://www.detroitmi.gov/Portals/0/docs/Parks/2017%20Parks%20and%20Recreation%20Improvement%20Plan.pdf

17) 2017 Parks and Recreation improvement Plan, p. 18 found here: http://www.detroitmi.gov/Portals/0/docs/Parks/2017%20Parks%20and%20Recreation%20Improvement%20Plan.pdf

18) ibid p. 30; Ann Arbor, University of Michigan, April 2012. EVER GREEN: An Enduring System of Parks and Greenways in Detroit. Available from: https://taubmancollege.umich.edu/pdfs/student_work/planning/ever_green.pdf

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# Dresden

## Background/Context

With a population of approximately 553,000 residents[1] (2017) and located next to the Czech Republic, Dresden is the capital city of the Federal State of Saxony in Eastern Germany and the second largest city of the Federal State after Leipzig. Since Germany's reunification in 1990, Dresden's demographic development has been quite unsteady: In the late 1980s and 1990s, thousands of residents emigrated from the city to suburban areas and Western Germany, but Dresden's population started growing again quickly during the 2000s, and it is now one of the ten fastest-growing cities in Germany. As of 2013, 8.7% of those residents were considered as migrants to Dresden and, as of 2006, 4.7% of Dresden's residents were foreign, including 1,200 asylum seekers.

Although Dresden has become a cultural and tourism attraction since the reconstruction of the Frauenkirche church and the Neumarkt and has rebranded itself into a business and research center, the city is confronted with higher unemployment (7.1%)[2] than the rest of Germany and acute housing needs in a context of population growth, a unique trend in an otherwise declining State of Saxony. Much of the current housing construction is taking place through urban infill densification and housing construction and the redevelopment of post-industrial brownfields, much of it in and around the city center.[3]

Although Dresden sold its subsidized housing corporation WOBA Dresden GmbH to the US-based private investment company Fortress Investment in 2006, it is currently funding a new housing corporation to buy back houses, build new houses, and attempt to regain control over the subsidized housing market.

From an environmental standpoint, sitting on a floodplain of semi-natural meadows, Dresden is crossed by the River Elbe and is neighbouring to the Ore Mountains and the Elbe Sandstone Mountains. Green space areas are extensive through the city, taking either the shape of parks and greens spaces or small habitats of endangered and rare plants. The Northern and Eastern fringes

*Blüherpark—* NoRud|CC-BY-SA-4.0

of the city also hold large urban forest areas. In addition, Dresden has several nature and landscape protected areas and more than 55,000 allotment gardens within the city-region. While much of Dresden's current focus is on housing, the city has committed to a future urban development that will protect and expand green spaces.[4]

## Greening Trajectory

Dresden's green stock has a long history, with much of the city green space being former private gardens within royal palaces dating from the 15th century. Much of the other park development dates
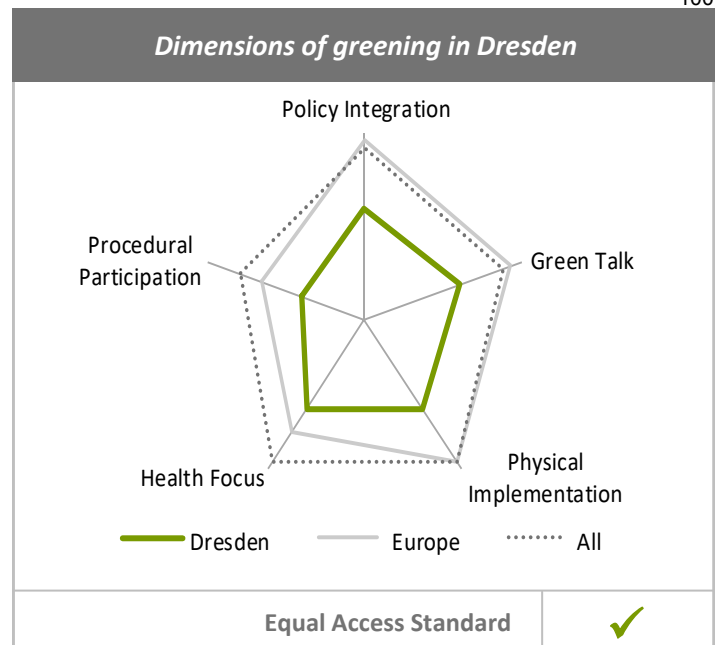
Adoption of inner City Planning Strategy '94

**1994**

**1990**

Restorations of Park Schloß Albrechtsberg & Volkspark

from the 19th century and has taken place in the area of the former town fortifications.[5] Other green spaces have had a public character, including ecclesiastical gardens and city avenues built from the 18th century onwards as promenades for residents connecting the city with surrounding villages. This historical tradition combined with Dresden's recent active green agenda has made the city one of the greenest cities in Germany. Today, Dresden boasts 570 parks and green areas with a total area of 314 hectares in the administration of the state capital Dresden. Greenspaces and forests make up 62% of the city's surface with a total of 53.201 street trees (2015 data) of a great species diversity[6]. Building on the 1994 Planning Strategy for the City of Dresden, one of the main greening focuses of the city of Dresden has been to restore these historical gardens, including the Park Schloß Albrechtsberg, many of which were heavily abandoned in the 1970s and 1980s.

**Dimensions of greening in Dresden**



Dresden — Europe — All ·········

| Equal Access Standard | ✓ |
|---|---|

During the 2000s, the City also dedicated much support to the development of community gardens (Kleingarten) and playgrounds. These investments build on the 2008 "Living History – Urban Townscape, Dresden – Inner City Planning Strategy," which is centered on responsible and sustainable urban development in the urban city center and on the preservation of the city's urban and natural landscape qualities and high quality green space[7]. Some of those include the Kleinergarten Strehlen[8], Hechtgruen, and Karreegarten gardens created in 2013. 'Kleingärten' are mostly community initiatives supported by the municipality, or the Federal State of Saxony. There are currently 369 'Kleingärten' -clubs in Dresden on 792 hectares, whose ownership is divided between the City of Dresden, the Federal State of Saxony, various housing cooperatives, the railway industry, the forest, the church, private persons and foundations. Since 2004, the development of neighborhood playgrounds has also been part of Dresden's agenda, with 152 playgrounds built between 2004 and 2011. In all these micro community and municipality directed initiatives, 'vulnerable' social groups such as social welfare recipients, minorities, and migrants are defined as some of the preferential target groups. Yet, 29% of the population still suffers from a poor access to green spaces (2011)[9].

In 2012, the Urban Gardening Network Dresden[10] was created to connect garden projects within the City-region of Dresden, enhance the quality of green infrastructure, promote environmental education, and encourage sustainable food production. This network includes community gardens, intercultural and multigenerational gardens, community supported agricultures and beekeeping initiatives. Since 2012, many new community gardens have emerged thanks to the advocacy work of the network and have received the support and cooperation of the city administration's Office for Green Space. Some of these gardens are integrated in eco-communities (i.e., Oease-marsdorf Dresden created in 2014[11]), whose expansion the city is also supporting.

In recent years, Dresden has placed a focus on the redevelopment of the Historic Old Town and its

Construction process of
152 playgrounds began
**2004**

Restoration of Beutlerpark
**2009**

**2008**
Adoption of City Planning Strategy '08;
Restoration of Blüherpark

**2013**
Weißeritzgrünzug green corridor completed

surrounded areas, combining new housing development, cultural and social facilities, car parking facilities, and preserved green space to bring together "intensified interconnection of open spaces and higher residential quality" under the principle of "graduated density" (2008 Planning Strategy). The focus of this strategy is also on development a secondary system of pedestrian and biking routes to interconnect the different city districts. For example, the Lingner Altstadtgarten east of the Historic Old Town on the former grounds of VEB Robotron is a multi-purpose redevelopment project meant to build new housing and attract new businesses within a neighborhood that was heavily bombarded in 1945. Another area, the "Park District Johannstadt," is being planned as an attractive residential location on high-quality green and open spaces. In that process, parks, such as Grosser Garten, are seen as enhancing the location value of some districts, for example the Lingnerallee and the Robotron complex. Some of these development projects such as the Lingner Altstadtgarten also include new green space areas even though their main objective is housing construction. Part of the city centre redevelopment has included the revitalization of open and green spaces. From 2006 to 2008, the City restored and redevelopped the historical Blüherpark[12], one important green amenity between the city centre and "Großer Garten." Most of the work consisted in the reconstruction of the main axis of the historical Palais Secundogenitur, which took place within the framework of the ERDF EU- project GreenKeys[13] – Urban Green as a Key for Sustainable Development." This prject aimed at improving the supply of green open spaces by paying attention to good design, construction, maintenance, and cost for Urban Green.

As a city heavily impacted by flooding, Dresden has also dedicated efforts to restoring and maintain the network of urban water courses. The lower course of 25-km Prießnitz river runs along an artificial and heavily-sealed canal through the dense district of Neustadt. To make the river more accessible, improve ecological quality, and address flooding, the city will begin a new restoration project in 2018. The ultimate outcomes of this multi-functionality project are linked to the EU Water Framework Directive of achieving a healthy ecology, clean water, wildlife preservation, landscape protection, and enhancement of ecosystem services. The 2008 City Strategy also highlights the need to preserve the unique interactions between the Elbe meadows and the central city districts in order to protect Dresden's identity and attractiveness. In 2012-2013 the city created the Weißeritzgrünzug green corridor[14] along the small river Weißeritz, which had flooded heavily in the past. Several brownfields along the river have also been cleaned and will be later converted into green spaces.

Last, Dresden has developed other green strategies which, although not spatially instantiated, are creating climate adaptive urban structures, expanding local climate protection, protecting diversity and heterogeneity of natural resources, minimizing climate change intensification, and creating multifunctional open spaces and closed material cycles in the area of waste management. Many of them are highlighted in the 2016 City Development Concept 2025+. In order to improve green infrastructure and ecosystem functions supporting multifunctional green infrastructure, Dresden has also drafted the Landscape Plan Dresden plan in 2014-2015, but it has so far not yet been adopted. One of the listed projects includes the connection of the forests of Dresdner Heide with the center city via Alaunpark and Priessnitz. Another much expected project is the construction of the green promenade[15] (Promenadenring) around the old city centre to be initiated in 2018.

*Author: Carmen Pérez del Pulgar*

**Notes**

1) See: http://www.dresden.de/de/leben/stadtportrait/statistik/bevoelkerung-gebiet/Bevoelkerungsbestand.php

2) According to Kommunale Statistikstelle. See: https://www.dresden.de/media/pdf/statistik/Statistik_4301_Arbeitsmarkt_nach_Monaten.pdf

3) Artmann, et al. 2017

4) Ibid.

5) For more information, see: http://www.dresden.de/de/stadtraum/umwelt/gruenes-dresden.php

6) For more information, see: http://www.dresden.de/de/stadtraum/umwelt/gruenes-dresden/strassenbaum.php

7) The Inner City Planning Strategy 2008 can be found at: https://www.dresden.de/media/pdf/stadtplanung/stadtplanung/spa_Leitb_DD_Leitbild_Kurzfassung_englisch_Internet.pdf

8) For more information, see: https://kleiner-garten-dresden.de

9) Artmann, Bastian and Grunewald, 2017. See: https://www.researchgate.net/publica-tion/313164712_Using_the_Concepts_of_Green_Infrastructure_and_Ecosystem_Services_to_Specify_Leitbilder_for_Compact_and_Green_Cities-The_Example_of_the_Landscape_Plan_of_Dresden_Germany

10) Frantzeskaki, Borgström, Gorissen, Egermann and Ehnert, 2017. See: http://kth.diva-portal.org/smash/get/diva2:1141091/FULLTEXT01.pdf and https://www.dresden-pflanzbar.de/gaerten/

11) Garden Network Dresden. See: https://www.dresden-pflanzbar.de/gaerten/oease-marsdorf/

12) For more information, see: https://www.dresden.de/media/pdf/gruenflaechen/Broschuere_Blueherpark.pdf and http://greenkeys.org/casesreport/dresden.htm

13) GreenKeys website: http://greenkeys.org

14) For more information, see: https://www.stesad.de/weisseritzgruenzug-flosshofterrassen.html

15) For more information, see: http://www.dresden.de/de/stadtraum/planen/stadtentwicklung/stadtplanung/stadtteilplanung/promenadenring.php and http://www.dnn.de/Dresden/Lokales/Der-Promenadenring-wird-gebaut-Dresden-ergruent

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# Dublin

## Background/Context

Dublin, with 553,165 residents, is the nation capital and largest city in Ireland.[1] The Dublin City County, however, is one of four counties making up the Dublin urban metropolitan area of more than 1.3 million inhabitants.[2] This area was one of the fastest growing regions in Europe between 1990 and 2006 as Ireland prospered during its Celtic Tiger years of rapid economic growth. Even after the 2008 economic crisis, the city has experienced positive inward migration.

Dublin competed for the 2015 European Green Capital Award. Although not shortlisted as a finalist, the Dublin candidacy highlighted the city's extensive cycling network,[3] its energy savings record,[4] its 78 m$^2$ of greenspace provision per person, and its diverse, smart, and green-innovation-based economy. Located in Leinster province on Ireland's east coast, at the mouth of the River Liffey, the area is rich in biodiversity, with Dublin Bay earning UNESCO Biosphere designation in 2015. The city has over 60,000 street and roadside trees and a Parks and Landscape Services Division that manages over 1,500 hectares of parks, green spaces, urban trees and the Bull Island Biosphere.

## Greening Trajectory

The city's rapid urban development over the last two decades has strained all city infrastructure, including its green and blue spaces. Dublin City has a high overall level of green space provision, but limited interconnectivity among its green and open space areas continues to be an issue. The highly dense and largely heritage-protected inner city, surrounded by a circular canal system, is limited in the degree of land use change it can accommodate, thus much of the city's green space amenities have been created in the ring of lower-density suburbs that surround the city core.[5] While the municipal City Council plays the primary role in greening Dublin proper, the



*The Grand Canal—* Giuseppe Milo | CC-BY-2.0.

councils of the three surrounding counties contribute much to the planning and implementation of greening in the larger urban metropolitan area.

Between 1990 and 2006 the area of urban green space within the four Dublin area counties increased by 29.8%, from 7,140 hectares to 9,270 hectares, but the area covered by the built fabric increased at a higher rate.[6] Quantified by the Dublin Digital Atlas, these changes in Dublin's urban greenspace landscape have not been evenly distributed; some older, central green spaces have been lost to development,[7] while others - largely peripheral former farmlands or semi-natural areas - have been transformed into new urban greenspace as the surrounding city expanded. Similarly, socio-economic

North Bull island Special Amenity Area protected
**1994**

Planning and Development Act adopted
**2000**

**1999**
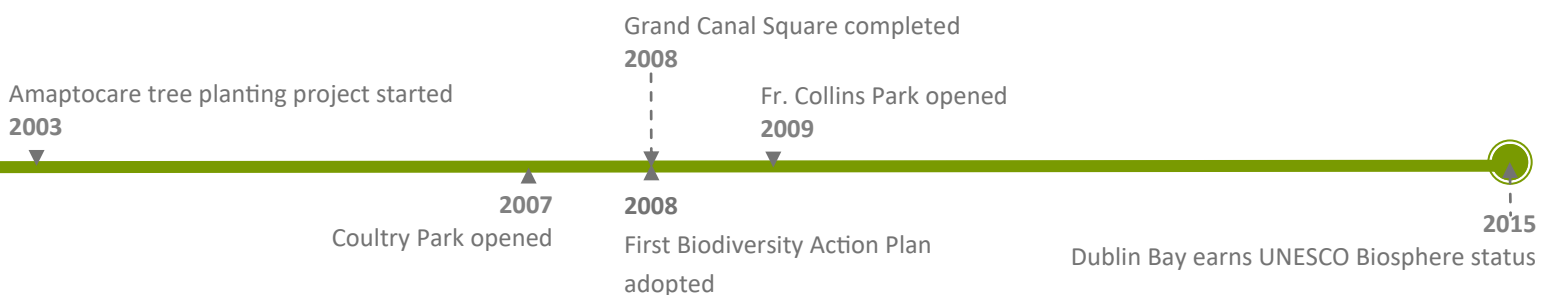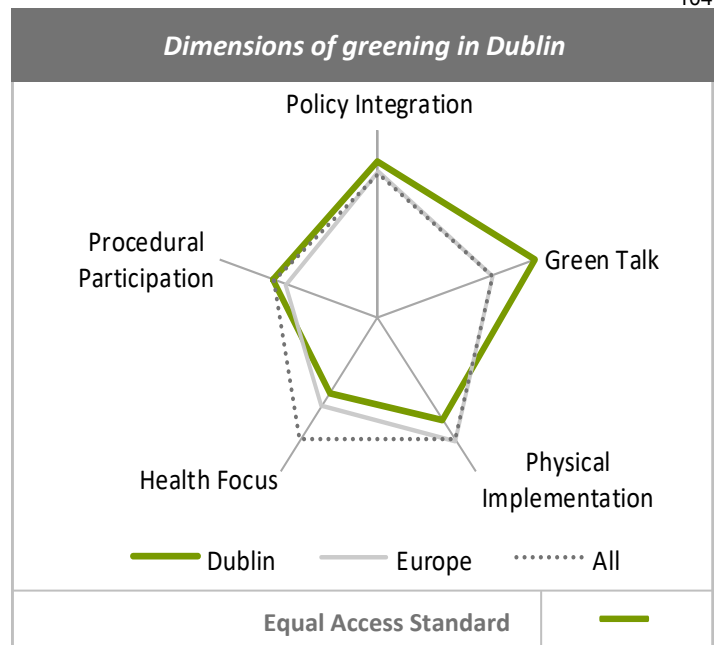Special Amenity Area Order for Howth natural areas

**2000**
Tolka Valley Park wetland installed

status in the city is related to green space accessibility.[8] In a 2016 joint initiative between four Dublin local authorities, the municipal Office of Public Works, and local researchers, tree canopy and green space distribution maps were created and revealed the fact that traditionally affluent neighbourhoods in Dublin have significantly more trees and greenspace, while neighbourhoods that have faced a history of deprivation contain a greater proportion of derelict and vacant land.[9]

Dublin's primary urban planning instrument is its City Development Plan. This municipal plan sets the policies, objectives, and zoning that guide how and where development will take place in the city. The current plan (2016-2022) envisions Dublin being internationally recognized "as one of Europe's most sustainable, dynamic and resourceful city regions" within the next 25 to 30 years and posits a strong rhetoric around greening and sustainable development. Focusing on compactness and densification as well as growing a diverse, smart, green, innovation-based economy, the plan accounts for a future urban fabric well connected socially, rich in alternative transport options, and "interwoven with a quality bio-diverse green space network."



**Dimensions of greening in Dublin**

Previous city development plans in the mid- to late 2000s articulated similar visions of greening and sustainability and developed a zoning classification system for the protection and improvement of the city's green and open space assets. Greening-related zoning instruments include classifications for: the preservation, provision and improvement of recreational amenities, open space, and green networks;[10] the protection and improvement of canal, coastal and river amenities;[11] and the assurance that existing environmental amenities are protected in any future use of certain lands.[12] Beyond the comprehensive City document, local area plans exist on a sub-city scale to guide physical development; between 2012 and 2013, Dublin City Council prepared Green Infrastructure Strategies for all of its local area plans. These strategies included a joint approach with an adjoining local authority where there were transboundary developments proposed. The other main policy and planning documents coordinating greening and sustainability in Dublin municipality are its Biodiversity Action Plan, the Dublin City Sustainable Energy Action Plan, area-specific green infrastructure strategies, and Dublin City parks strategies and plans.

The Parks and Landscape Services Division of City Council plans, designs, and implements new parks and redevelops existing parks in the city. It also advises on the landscape components within city development planning and approves open space portions of new developments.[13] The 2016 Dublin City Parks Strategy, however, was the Division's first such document for guiding the delivery and connectivity of quality parks and parks services.[14] Nonetheless, Dublin had conserved several natural areas for public enjoyment and has received several new parks during the 1990s and 2000s; the north-eastern areas of North Bull Island and Howth were preserved thanks to provisions in the national Planning and Development Act of 1963, while urban parks and public spaces such as the neighbourhood Coultry and Poppintree parks, the landmark sustainable Fr. Collins Park[15] and the emblematic Grand Canal Square were created.

Grand Canal Square completed
**2008**

Amaptocare tree planting project started
**2003**

Fr. Collins Park opened
**2009**

**2007**
Coultry Park opened

**2008**
First Biodiversity Action Plan adopted

**2015**
Dublin Bay earns UNESCO Biosphere status

A new national Act in 2000 helped - alongside increasing concerns about sustainability, biodiversity, pollution, and climate change - to influence Dublin's development and its management and design of parks toward greater interconnectivity and multifunctionality. The construction of coastal wetlands (such as the Tolka Valley Park wetland) and the redevelopment of the city's docklands and surrounding areas has addressed biodiversity and climate change adaptation goals as well as the longstanding issue of industrial land and waterway pollution in the city.[16] City Council is continuing this model of new park development; the central Liberties neighbourhood is set to receive its first public park in over 100 years with the construction of Weaver Park on a much-contested former social housing complex site in the industrial area.[17]

Community-based greening activity has also grown in recent years. Tree-planting and public art efforts have been incorporated into some public housing redevelopments,[18] while interest in community gardening and allotments has increased, with City Council facilitating efforts wherever possible.

*Author: Francesc Baró*

## Notes

1) 2016 Census figure from the Central Statistics Office. According to the 2011 Census, Dublin residents, by ethnicity, were: 90.04% White (78.37% White Irish; 11.29% White Other; 0.37% Irish Traveller); 4.21% Asian/Asian Irish; 1.30% Black/Black Irish; 1.51% Bi-Racial/Other; 2.94% Not Stated.

2) The Greater Dublin Area includes the four administrative counties of the Dublin urban metropolitan area plus the counties of Meath, Kildare and Wicklow. With a total population of 1,904,806 inhabitants, the area is home to about 40% of Ireland's total population. See the 2010 Dublin Area Regional Planning Guidelines: http://emra.ie/dubh/wp-content/uploads/2015/02/Greater-Dublin-Area-Regional-Planning-Guidelines-2010-2022-Volume-I.pdf

3) 90% of the primary road network in the city has cycle facilities.

4) Dublin saved 13,446 MWh in 2011.

5) While the central portion of the city hosts 25% of its residents and covers more than 15% of its land area, only 5% of public green spaces in the city are located there. See the 2013 Sustainability Report (the most recent comprehensive sustainability document for the municipality): http://www.dublincity.ie/sites/default/files/content/YourCouncil/CouncilPublications/Documents/SustainabilityReport2013.pdf

6) The share of green space thus decreased slightly from above 24% in 1990 to 23.6% in 2006, according to the Dublin Digital Atlas. The Dublin Digital Atlas illustrates key geographical aspects of urban environmental change in the Dublin city-region over the period 1990-2006, including greenspace changes. The atlas was developed by the Urban Environment Project (UEP), a research initiative led by the University College Dublin (UCD). See: http://www.uep.ie/outputs/index.html

7) In the housing boom during the Celtic Tiger years of Ireland's economy, many central green spaces were converted into building sites or paved areas. The current lack of adequate housing supply and office space further endangers existing greenspace. See Brennan et al. (2009): https://www.researchgate.net/publication/281108311_Where_have_all_the_parks_gone_Changes_in_Dublin%27s_green_space_between_1990_2006

8) Mayor et al. (2009) performed a hedonic analysis of the value of parks and green spaces in the Dublin area, finding a house price increase of 7 to 9% occurring with every 10% increase in the share of green space and parkland near the home. Information on the 2016 study from the University College Dublin School of Geography researchers can be found here: http://www.ucd.ie/newsandopinion/news/2016/feb/29/affluentareasofdublincityhavemoretreesandgreenspaces/

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10) Zone Z9 in the zoning code .

11) Zone Z11 in the zoning code.

12) Zone Z12 in the zoning code.

A new national Act in 2000 helped - alongside increasing concerns about sustainability, biodiversity, pollution, and climate change - to influence Dublin's development and its management and design of parks toward greater interconnectivity and multifunctionality. The construction of coastal wetlands (such as the Tolka Valley Park wetland) and the redevelopment of the city's docklands and surrounding areas has addressed biodiversity and climate change adaptation goals as well as the longstanding issue of industrial land and waterway pollution in the city.[16] City Council is continuing this model of new park development; the central Liberties neighbourhood is set to receive its first public park in over 100 years with the construction of Weaver Park on a much-contested former social housing complex site in the industrial area.[17]

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10) Zone Z9 in the zoning code .

11) Zone Z11 in the zoning code.

12) Zone Z12 in the zoning code.

# Edmonton

## Background/Context

Edmonton, with 899,447 residents, is the capital city of Alberta and the northernmost major city in North America.[1] Located on Treaty 6 territory[2] between prairie farmlands and the resource-rich lands of the North, Edmonton acts as the "Gateway to the North"; its economic and population growth has fluctuated significantly with the booms and busts of the region's oil industry.[3] A once vibrant centre in the 1970s, Edmonton's downtown declined after the fall of oil prices in the late 1980s and government budget cuts in the mid-1990s.[4] Renewal efforts have aspired to make the city centre more people-friendly and greener.

Within the larger city, Edmontonians have access to significant natural amenities and opportunities for recreation. The North Saskatchewan River Valley passes through the city's centre and forms the largest municipally-owned urban park in North America, with 7400 hectares that include 20 major parks and 160 kilometres of pathways. The City also operates neighbourhood parks and natural areas on the urban tablelands, above the river valley and its ravines. Today two thirds of residents live within ten minutes of a natural area park in the city's tablelands.[5]

## Greening Trajectory

Although the banks of the North Saskatchewan River had been disturbed for logging, coal mining, and manufacturing in the 19th and early 20th centuries, Edmonton, unlike many large cities had not used its riverbanks for significant industrial purposes in more recent decades and had already made major investments and spent strategic energy in acquiring and piecing together river valley properties by the 1990s.[6] A renewed conceptual connection between parks, social cohesion, health, mobility and sustainability has, in the last decade, inspired reconsideration of the park development process and the urban needs that parks are capable of meeting.

*Trail into the river valley, near downtown—* [Public Domain]

The Ribbon of Green Concept Plan of 1990 was created by the Edmonton Parks and Recreation Department in fulfilment of the requirements for accessing $15 million in Alberta Heritage Savings Trust Fund monies designated for urban parks in Edmonton. The concept plan articulated a collective public vision for the future development and management of the North Saskatchewan River Valley, nicknamed the "Ribbon of Green" since adoption of this document.[7] The plan took environmental sensitivity as its guide, proposing only nodal parks and a system of trails to be developed, so as to increase public access while preserving natural landscapes and animal habitats.[8] It sought to piece together open spaces and

Naturalization Master Plan submitted
**1994**

Louise McKinney Riverfront Park first phase completed
**2002**

**1997**
Downtown Plan created

**1990**
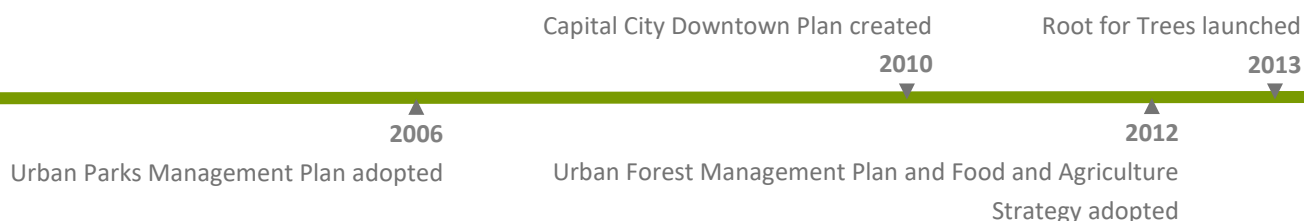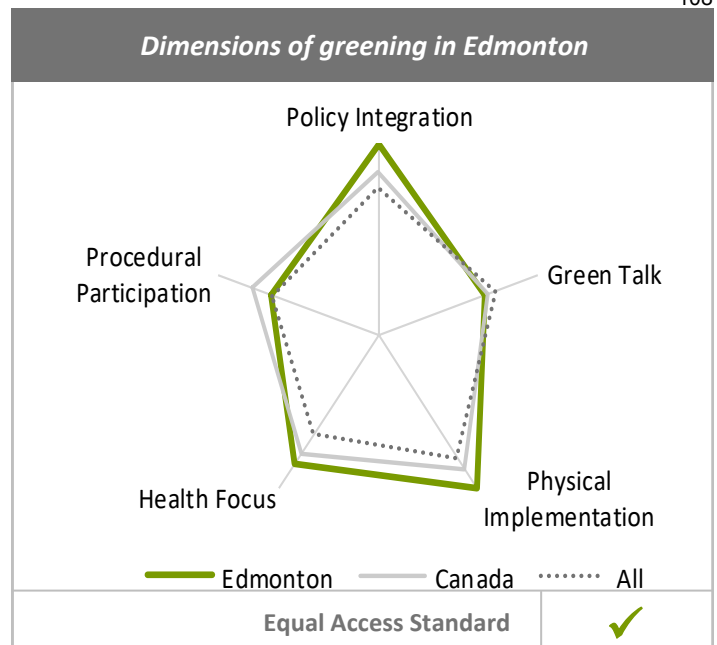Ribbon of Green concept adopted

parks the four quadrants of the city to eventually make up the present 7400 hectares – tripling the urban park area of that time. Five major parks (Big Island, Terwillegar, Twin Brooks, Buena Vista, and Hermitage) were included the proposal. Where river valley parcels have not been publicly acquired over the years, the City has largely relied on its zoning processes to control development of this resource-rich area and to ensure its environmental protection. Although rich in trails and greenspace today, the river valley system is not easily accessible to the many residents living in the north-central and north-western parts of the city.[9]

Fluctuations in the regional economic situation allowed for more ambitious plans and park acquisitions during some years and encouraged volunteering and naturalization programs in years of budget cuts and suburban prioritization. The concept of "naturalizing" high maintenance landscapes into more natural spaces was introduced in Edmonton as an environmentally-responsible and cost-saving open space management strategy with the externally developed 1994 Naturalization Master Plan for naturalizing Edmonton parks, pathways and 200 hectares of roadway buffers with the assistance of sponsors and volunteers.[10]



Dimensions of greening in Edmonton

Policy Integration — Green Talk — Physical Implementation — Health Focus — Procedural Participation

Edmonton · Canada · All

Equal Access Standard ✓

Since the late 1990s, renewal efforts sought to bring resident activity back to the downtown through the addition of parks, tree-planting, and mixed-use spaces. The award-winning 1997 Downtown Plan inspired much of the recent revitalization in downtown Edmonton. Created as a replacement and reality check to the megaproject and office tower-heavy plan of 1980, the plan is credited with the creation and enhancement of promenades, squares, public open spaces, and a riverfront park; the conversion of rail infrastructure into mixed use neighbourhoods; an improved pedestrian environment; and the increase in real estate values with the boost of residential construction. The planning and design of the landmark Louise McKinney Riverfront Park was initiated as a result of the 1997 plan to connect the downtown and the river. With its first phase finished in 2002, this park has become "the front door to the river valley parks system and gateway to trails throughout the city".[11] Similarly, a 2009 Area Redevelopment Plan for the low-income and disinvested downtown Quarters neighbourhood included a proposal for a "green street" called the "Armature". The first such City-led project in Edmonton, the pedestrian-oriented street now connects the four districts of The Quarters and will eventually contain all-season parks, urban plazas, and various commercial and social activities as part of a planned transformation into a "vibrant, diverse, and inclusive community." Building off the 1997 document, the 2010 Capital City Downtown Plan envisioned a "sustainable, vibrant, well designed, and accessible" downtown, to be achieved by a focus on healthy communities, a healthy natural environment, place-making, densification, better active transport networks and the addition of connected parks and open space. Out of the nine catalyst projects it proposed, at least five were related to parks or sustainability.

The 2006 Urban Parks Management Plan argued that parks increase social capital and public health. It further reasoned that urban parks increase property values and "revitalize individuals and communities".[13]

Capital City Downtown Plan created
**2010**

Root for Trees launched
**2013**

**2006**
Urban Parks Management Plan adopted

**2012**
Urban Forest Management Plan and Food and Agriculture Strategy adopted

This non-statutory plan for the 2006-2016 period concluded that a variety of park and park program needs had been compromised for developer interests and that existing standards, processes and practices were not amenable to contemporary demands such as connectivity between open spaces or diverse park programming. The plan suggested acquiring parkland at rates that would meet future population growth, rewriting policy frameworks which limit park development in older neighbourhoods, and updating the public input, design, and management of parks to better meet the language and recreational needs of Indigenous and new immigrant populations, low-income, older, and disabled residents.[14]

Comprehensive strategic plans for the city have also incorporated greening agendas in recent years. The Municipal Development Plan of 2010 (named "The Way We Grow") was built around the vision of an Edmonton that can be sustained socially, economically, and culturally into the future, and for this it proposed, among other goals, an orientation toward complete, walkable, healthy and liveable communities; the creation of high quality urban spaces; the preservation, enhancement, and connection of the City's natural spaces and parks; and a resilient and integrated local agriculture system.[15] The subsequent Environmental Strategic Plan of 2011 ("The Way We Green") was a compilation of the city's overall thoughts and efforts on issues related to greening, sustainability, and resilience.

The City has also developed urban forestry and agriculture policy and programming. The Urban Forest Management Plan of 2012 valued the publicly owned portion of the urban forest at $1.2 billion and inspired the 2013 launch of the community greening Root for Trees Program.[16] Meanwhile, food and urban agriculture issues have been incorporated into several city plans and are the focus of the 2012 "fresh: Edmonton's Food and Agriculture Strategy." Developed by a committee of stakeholders and guidance from a public consultation process, the strategy recommends the integration of agriculture into public space, the creation of an edible landscaping and forestry strategy, and the inventorying of public and private spaces which can be used for agricultural activity.[17]

*Author: Tatjana Trebic*

## Notes

1) 2016 Edmonton Municipal Census population count. As of the 2006 Canadian census, 23% of the population identified as a visible minority.

2) Treaty 6 territory is the traditional homeland of several First Nations and the Métis peoples.

3) The city population grew from 148 people in 1878 to nearly 900,000 today. Edmonton's migrants came largely from rural Alberta and other Canadian provinces until the 1970s, with overseas migrants joining in the 1990s. https://www.edmonton.ca/city_government/facts_figures/population-history.aspx

4) Downtown Edmonton became abandoned in the evenings and on weekends, with landlords struggling to secure retail and office tenants, and the city's workers retreating to suburban homes and shopping malls.

5) For more information on the tablelands natural parks, see: https://www.edmonton.ca/city_government/environmental_stewardship/natural-area-parks.aspx

6) A disastrous flood in 1915 wiped out many of the homes and businesses located in the river valley. After this event, the valley became preserved as a natural asset and recreation amenity. For more information on the flood that affected decades of land use and development in Edmonton, see: http://www.cbc.ca/news/canada/edmonton/flood-of-1915-the-worst-in-edmonton-history-1.3737170

7) Ribbon of Green plan is currently under review with a new strategic plan expected to be finished in 2018.

8) In 1993, external consultants produced an *Inventory of Environmentally Sensitive and Significant Natural Areas*, identifying and classifying important natural areas in the city. Two years later, City Council published *Policy C-467: Conservation of Natural Sites in Edmonton's Table Lands* for protecting and incorporating natural areas into future urban development. This policy exists together with provincial legislation that allows cities to demand 10% of new development land holdings be given for school

and recreational purposes to the municipal reserve. For more information on the provincial policy, see: http://mgareview.alberta.ca/wp-content/upLoads/media/Land-Dedication-Reserves-Discussion-Paper.pdf

9) Although there are a number of neighbourhood parks in the tablelands beyond the river valley, much of the planning and attention since the 1990s has been given to the river valley system of parks.

10) This plan for 1994 to 1998 prioritized sites for naturalization and proposed a funding model of sponsorship, with some supplement from city funds and unused mowing funds. In addition to parks, the plan included the planting of 100,000 trees and shrubs per year through donated time and materials. Today, naturalization has become part of some stormwater management projects and is implemented by both the Engineering and Parks departments in addition to the work done by community groups.

11) City of Edmonton Activities, Parks & Recreation website: https://www.edmonton.ca/activities_parks_recreation/parks_rivervalley/louise-mckinney-riverfront-park.aspx

12) For more information on the Armature project, see: https://www.edmonton.ca/projects_plans/quarters/the-armature.aspx

13) The plan theorized that parks and their resulting effect on property values would in turn increase municipal tax revenue, attract home buyers, retirees, companies and workers, and improve the image of communities facing a downturn.

14) The UPMP is being replaced by "Breathe: Edmonton's Green Network Strategy" in 2017, in which a significant shift in the City's open space planning will be developed; open space provision and access standards will be determined functional assessments of park amenities and catchment areas.

15) The plan was informed by citizen views, collected between 2006 and 2009, on land use, growth, and development, as well as their vision for their city in 2040.

16) For more information, see: https://www.edmonton.ca/city_government/documents/root_for_trees_2015_annual_report.pdf.pdf

17) The City of Edmonton has also funded the Sustainable Food Edmonton (SFE) non-profit to act as community garden facilitator and funds a grant program through SFE for new and expanding community gardens.

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# Fort Worth

## Background/Context

With 833,319[1] residents, Fort Worth is the second largest city in the Dallas-Fort Worth-Arlington "metroplex" in North Central Texas. Between 2000 and 2010, it was the fastest growing large city in the US. Established in 1849, Fort Worth was the westernmost stop on the national railway network in the 19th century and was located strategically on the path of cattle drives. Multiple oil discoveries occurred in the region between 1910 and 1920, and in 2007, extraction of natural gas began from reserves located directly under the city.[2] Today, the city's top employers are the aerospace industry and the military.

Fort Worth has 273 parks over an area of nearly 12,000 acres. Several lakes lie within and around the city; a dam built on the West fork of the Trinity River in 1914 created the 30 million US gallon Lake Worth. Spread across five counties, the city engulfs several smaller standalone municipalities, breaking up its geography in several places.

## Greening Trajectory

Over the past few decades, Fort Worth has proposed several large-scale greening projects and initiatives, including the implementation of bicycle and pedestrian infrastructure, the linking of existing parks and recreation areas, and the creation and expansion of city parkland. Fort Worth parks are classified into three tiers for planning purposes: Neighbourhood Based Parks, Community Based Parks and Special Use & Nature Based Parks. The City has focused its parks planning on attaining parks provision goals, thus as the city grows, additional parkland is sought and planning focuses on matching service provision to population growth trends. In many City plans, the upkeep, improvement, and increase in parkland is deemed important for economic development, as well as improvements in the health of the city's population.[3] In 1977,

*Trinity River* ⬤ [Public Domain](#)

responding to concerns about population growth outpacing and overburdening the city's park resources, the Fort Worth City Council adopted its first park dedication policy. In April of 2000 the policy was updated and renamed the "Neighborhood and Community Park Dedication Policy," to be revised again in 2009. This policy, based on national standards, requires 2.5 acres of parkland per 1,000 residents for neighbourhood parks, 3.75 acres per 1,000 residents for community parks, and that developers construct or provide the funding for construction of first phase improvements for neighbourhood parks as a project cost, with the City committing to appropriate maintenance funds once the improvements are completed.[4] In a further response to the need to provide adequate infrastructure and resources for

City ordinance passed to increase park provision standard
**2000**

**1990**
Trinity River Vision Master Plan adopted

a growing population, the city appointed a Sustainability Task Force in 2009 to investigate ways to ensure the city could keep pace with growth. Among its recommendations to date are pedestrian infrastructure improvements as well as community education campaigns and a pilot community gardening program.

In addition to the City Comprehensive Plan and the 1998 and 2004 Park, Recreation and Open Space Master Plans,[5] various specific area plans, city pedestrian plans and bicycle plans call for increases in and improvements of city parks and green space. One notable specific area plan, the 1990 Trinity River Vision Master Plan (updated in 1999 and 2003), recommended the improvement of 43 miles of the Trinity River Corridor along the

**Dimensions of greening in Fort Worth**

Clear and West Forks of the river. The scope of improvements was later expanded to include 88 miles of river and creek corridor over 20 years. The plan emphasized the importance of using green space around river corridors to connect parks and lakes, activity centres, and neighbourhoods. The 2003 version of the plan also contained recommendations to "improve the river's accessibility to the public; to attract more people to its banks; to develop an urbanized Downtown waterfront while maintaining the natural character of the more remote areas; and to increase awareness of its presence and beauty by citizens and visitors." This plan was developed further into the Trinity River Vision Neighborhood & Recreational Enhancement plan in August, 2009, which includes specific trail extensions, linkages to neighbourhoods and trailhead improvements.
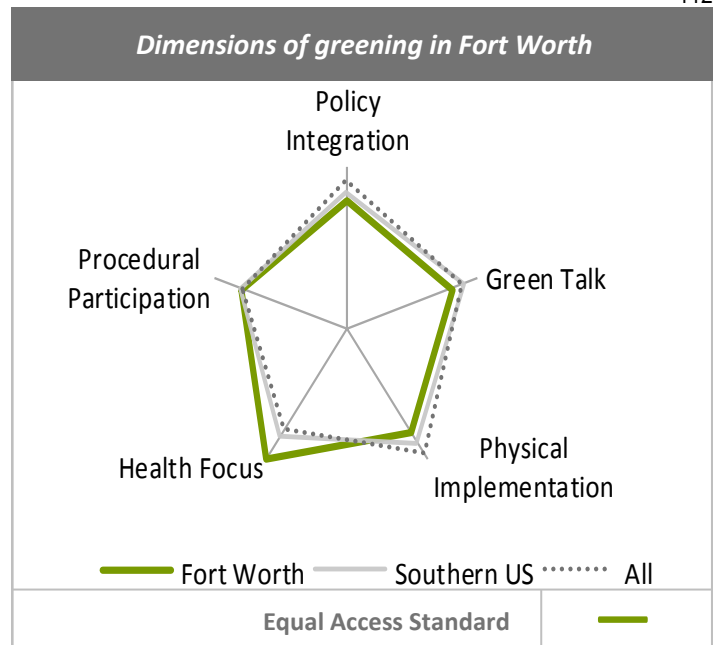
The plans to develop the Trinity River aligned with efforts to redevelop downtown Fort Worth as an urban centre. Much of the growth in population during the 2000s had occurred in the Far North, Far Northwest, Far South, Far Southwest and Far West sections of the city. Efforts to revitalize the city centre resulted in high density residential development and commercial redevelopment in the downtown in recent years. These developments in turn placed a strain on existing central urban parkland and created a demand for more urban park space as well as for links to recreational opportunities along the river corridor. The City, seeing the important role of urban parks and public plazas in the downtown, opened Sundance Square Plaza in 2013 as a central plaza for the downtown area.[6]

Between 2013 and 2015, following goals from the City's Comprehensive Plan and 2010 parks plan update, over 60 acres of new parkland were added to the city parks system, including 3 new parks and several expanded parks.[7] Along with increasing park acreage via land acquisition and renovations of existing parks, comprehensive city plans have also focused on making Fort Worth "the safest large city in the US", extending this goal into the realm of greenspace by promoting the upkeep of existing facilities such as playgrounds and trails to maximize safety and walkability.[8]

Although the Fort Worth economy has now largely recovered, in the aftermath of the 2008 economic recession the implementation of some plans has been significantly affected by funding challenges. For

| Trinity River Vision Master Plan update **2003** | City approves Nature Centre and Refuge user fee **2006** | City appoints Sustainability Task Force **2009** | Walk Fort Worth Pedestrian Transportation Plan **2014** |

**2004**
New Parks, Recreation and Open Space Master Plan

**2013**
Sundance Square Plaza opened in the downtown

**2003**
Nature Center and Refuge Master Plan

example, the 2003 Nature Center and Refuge Master Plan had identified needed capital improvements in the amount of $64.6 million over a forty-year period for the 3300+ acres of green open space being protected, with a majority of this funding to be raised from private and community sources. While the city did approve a user fee in 2006 for the facility to be initiated, fundraising for the capital project itself, as well as other similar projects planned by the city, remains a challenge; enhancing the nature centre and refuge is not at the heart of the development strategy for the City-wide park system. For the City, the key focus continues to be its park dedication policy and the creation and enhancement of community and neighbourhood parks in close proximity to new residential developments and currently underserved areas. This strategy insures that greenspace in the future city is in close proximity to its regular users.

*Author: Helen V.S. Cole*

**Notes**

1) 2015 U.S. Census Bureau population estimate. As of the 2010 census, 58.3% of the city's population had identified as belonging to an ethnic or racial minority (61.6% of residents identified as White (but only 41.7% non-Hispanic white), 34.1% as Latino or Hispanic, 18.9% as Black, and 3.7% as Asian).

2) Many land owners in the city became eligible to receive royalty for mineral rights.

3) Fort Worth is involved in the Blue Zones Project, funded and administered by a private organization, which aims to work with city planners and other stakeholders to make city environments heathier, including modifying environmental design to encourage physical activity among residents. Although it does not seem to directly influence the development of green or open spaces in the city, it focuses on community connectivity and reducing barriers to walking as much as possible.

4) The City has an overall standard of 21.25 acres per 1,000 residents for of all types of parkland combined, including regional a parks. The 2000 Neighborhood and Community Park Dedication Policy standards were developed to provide adequate close-to-home parkland.  (See: City of Fort Worth 2015 Comprehensive Plan Progress & Priorities Biennial Report.)

5) Fort Worth has had a series of parks master plans since the early 1990s: in 1992, the first Park and Recreation Department Strategic Plan was developed, followed by the 1998 and then the 2004 Park, Recreation & Open Space Master Plans. The 2004 plan was updated in 2010 and then replaced by the 2015 Park, Recreation & Open Space Master Plan. The original parks master plan that formed the blueprint for the City's parks development was created in 1909 by landscape architect, George Kessler.

6) The development included 3 new mixed-use buildings along the plaza edge, including retail and restaurant space and luxury housing. The plaza now hosts many public and high profile events.

7) Since this update to the 2004 plan, the 2015 Park, Recreation and Open Space Master Plan has been created.

8) This safety orientation is also a part of the 2009 Comprehensive Bicycle Transportation Plan 2014 and the Walk Fort Worth comprehensive pedestrian transportation plan, which aims to build out city infrastructure that is suitable for pedestrian activity, thereby encouraging physical activity among residents and reducing traffic accidents involving pedestrians.

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Trinity River Vision Authority, Blue Zones Project: https://fortworth.bluezonesproject.com/

# Glasgow

## Background/Context

Glasgow is Scotland's largest city, with a population of around 600,000.[1] It was a major centre of the Scottish Enlightenment in the 18th century and was one of the UK's main hubs of transatlantic trade. Glasgow boomed with the industrial revolution, but manufacturing has declined dramatically in recent decades – up to 77% of the city's population worked in this sector as of the early 1980s, now it is 7% – and there has since been significant relative growth of tertiary industries.

In Gaelic (it is said), Glasgow means "Dear Green Place". The city has 91 public parks and over 3,500 hectares of green space, accounting for over 20% of the city's total area, but inequalities exist in terms of quality and access. Over 1,300 hectares or 7.5% of Glasgow's land is vacant and/or derelict, concentrated in the north and east of the city, and 60% of residents live within 500 metres of derelict land. Glasgow was the European City of Culture in 1990 and hosted the Commonwealth Games in 2014, the latter being an important trigger of city greening projects. In 2015 Glasgow held its first green themed year, celebrating its aspiration to be one of the most sustainable cities around.[2]

## Greening Trajectory

The Glasgow City Development Plan, adopted in 2017 to replace the City Plan 2 (2009) and City Plan 1 (2003), articulates how Glasgow's core aims will help guide development. Two of Glasgow's four strategic outcomes are to be a sustainable place and a green place; all outcomes feed into a sustainable spatial strategy codified in various sustainability and environmental policies. These include protecting and enhancing the city's green network, enhancing the natural environment and improving the water environment vis-à-vis adapting to climate change and flood risk. The city's climate change strategy recognises greenspace as a crucial component of the city's strategy to manage runoff and sustainable drainage systems.



*George Square–* [Public Domain](Public Domain)

The City Centre Strategy 2014-2019 creates nine new city centre districts and area development frameworks for each district, where district strategies aim to be overarching, long-term placemaking frameworks for Glasgow city centre's neighbourhoods. One of several key principles underpinning the development frameworks is integrated green infrastructure, and a fundamental objective of the Strategy is the greening of the city through quality landscaping and environments. The City Centre is one of several key catalyst projects.

Biodiversity Action Plan published
**2001**
▼

Glasgow's City Plan 2 designated several key areas for urban regeneration, including the City Centre, Clyde Waterfront and Clyde Gateway. The later covers the East End of the city, with some of Scotland's poorest communities and a significant amount of vacant and derelict land. The Scottish Government deemed the Clyde Waterfront and Clyde Gateway to be priority areas for Scotland in the early 2000s. These sites were deemed strategic due to their proximity to the City Centre, the concentration of deprived communities and the availability of land (largely brownfields/vacant) and hence "development opportunities". Green networks have been promoted throughout and development was spurred by the Commonwealth Games (2014). Similarly, Glasgow North, M80 and M8 East are regeneration areas considered to be

**Dimensions of greening in Glasgow**



strategic growth corridors. M8 East has several environmentally important sites that are being extended as local nature reserves; M80 has many vacant or derelict sites as well as greenspaces and Glasgow North has undergone canal regeneration and is slated for open space and green network improvement.
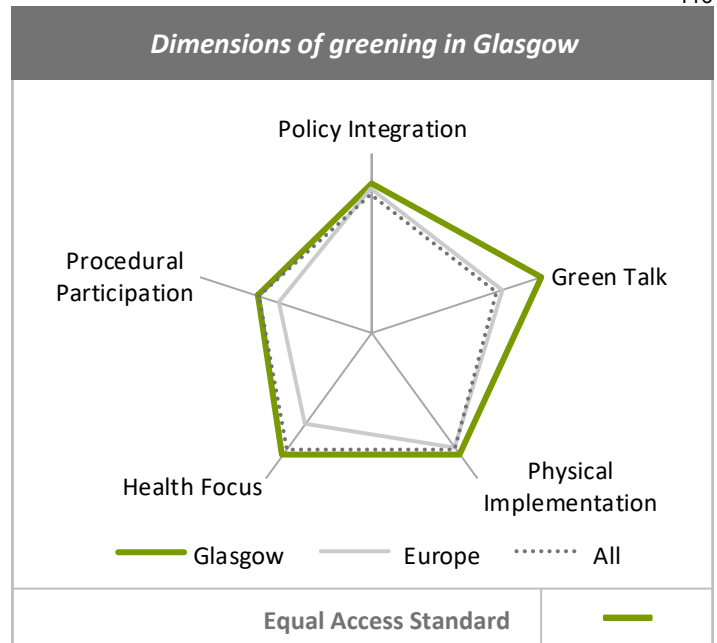
The Glasgow council-led initiative called Sustainable Glasgow, a partnership between government, academia, and business, was formed in 2010 to make Glasgow a world-leading centre for sustainable policy, innovation and action. Sustainable Glasgow drove the Green Year 2015, and appointed a chief resilience officer in September 2014. The first of its kind in the UK, the position was funded by the Rockefeller Foundation's 100 Resilient Cities (100RC) Network, an $100 million initiative to build urban resilience in 100 cities around the world.[3] Glasgow has since developed a resilience strategy that will act as "a roadmap to greater resilience", focusing on four dimensions: health and wellbeing, economy and society, infrastructure and environment, and leadership and strategy.

An extensive amount of greening has taken place since the 2000s. The Forth and Clyde Canals have been regenerated since 2007, with focus being placed on drainage and creating the site as a linear park. Between 2003 and 2014, dozens of projects have been carried out along the Clyde Waterfront, a 20-kilometre corridor along the River Clyde that is a key regeneration project in Scotland. Many projects, coordinated by local and national government, include new or refurbished green spaces. Some examples include Pacific Quay, a commercial and leisure centre with a high quality green space named Festival Park, the extensive refurbishment of Richmond Park and Govan's new Riverside Walkway.[4] The development of Glasgow Harbour is ongoing since the early 2000s and will have an 11-acre public park and a 3 km riverside walk/cycleway.[5] Further east is Clyde Gateway, Scotland's largest and most ambitious regeneration programme, where four environmental improvement projects were delivered between 2008 and 2011 in response to requests from communities at a total cost of just over £3.5 million.[6]

A key actor in both the Clyde Waterfront and Clyde Gateway has been the Glasgow and Clyde Valley Green Network Partnership (GCV Green Network), an entity that brings together Glasgow, seven other local authorities and five government agencies to protect and enhance existing green network assets. It seeks to

| | East End | | Commonwealth Games |
| Glasgow Harbour redevelopment | Development Strategy | | sustainability plan published |
| **2003** | **2008** | | **2010** |

| **2003** | **2006** | **2009** | |
| Glasgow City Plan 1 published | GCV Green Network created | Glasgow City Plan 2 published | |

**2015**
Glasgow's Green Year

act as a catalyst for green space development in the region, with a vision to create 30 square kilometres of urban green infrastructure in the Glasgow City Region, among other green interventions.[7] The GCV Green Network is also driving the creation of the Seven Lochs Wetland Park on the east edge of Glasgow. Seven Lochs will be Scotland's largest urban nature park, 16 square kilometres containing seven lochs, five local nature reserves, a country park, the seven lochs trail and historic sites. Around 4,000 new homes are being planned in the area, with the aim of integrating green infrastructure into housing developments.

Finally, Glasgow is in the early stages of implementing part of the £1.13 billion Glasgow City Region City Deal which is funding twenty separate major infrastructure projects (some green) to transform the city region over the next 20 years.[8]

*Author: Melissa García-Lamarca*

**Notes**

1) Glasgow is the most ethnically diverse city in Scotland, with 15% of its population self-identifying as an ethnic minority (2011). Details on the ethnic groups and changes since 2001 can be seen here: https://www.glasgow.gov.uk/CHttpHandler.ashx?id=17783&p=0. Also important to note is that Glasgow has the lowest life expectancy of any UK city at 72.9 years and there are significant health inequalities that are connected to gender and class. For further information see: http://www.nhsggc.org.uk/your-health/public-health/the-director-of-public-health-report/dph-report-2007-08/full-report/4-increasing-health-inequalities/

2) For further information, visit: http://www.greenglasgow.com/

3) Information on Glasgow appointing its first resilience officer: http://www.theplanner.co.uk/news/glasgow-appoints-uk%E2%80%99s-first-ever-resilience-officer

4) For more information on Pacific Quay and Festival Park, see: http://www.clydewaterfront.com/projects/pacific-quay--secc/public-amenity/e50---pacific-quay-and-festival-park. More details on the Richmond Park refurbishment: http://www.clydewaterfront.com/projects/glasgow-city-centre/public-amenity/e134---richmond-park. An explanation of the Riverside Walkway here: http://www.getintogovan.com/now-open-govans-fabulous-new-riverside-walkway-2/

5) More on the Harbour's planned green spaces: http://www.glasgowharbour.com/green-space/

6) For details on environmental improvements, see: http://www.clydegateway.com/physical-transformation/local-environmental-improvements

7) For further information see: https://www.gcvgreennetwork.gov.uk/index.php

8) For further details see: http://www.glasgowcityregion.co.uk/

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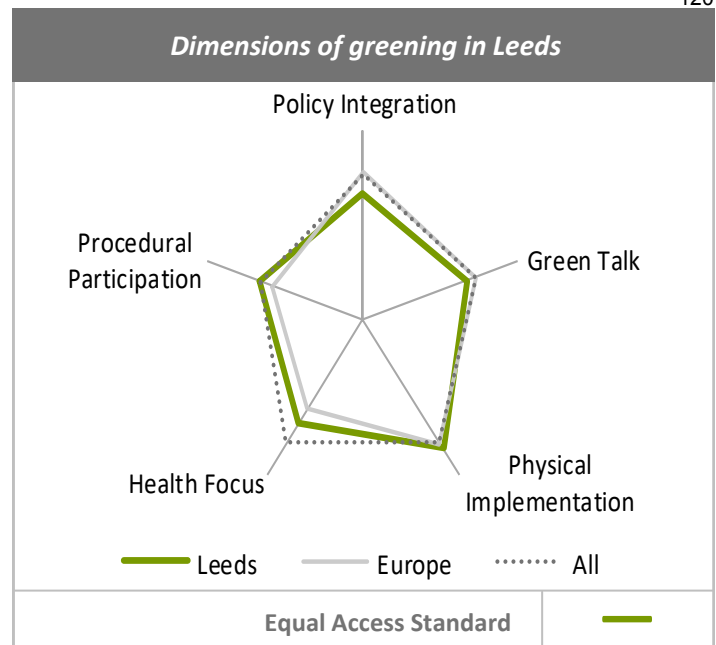
# Leeds

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

### Background/Context

Leeds is a city of 798,800 people, the third largest in the UK. The leading financial and legal centre in the UK outside London, it is home to some of the largest financial institutions in the country. After an era of deindustrialization and unemployment in the 1970s and 1980s, Leeds redefined itself in the 1990s and became one of the fastest growing cities in the UK.[1] Still, some 20% of the population lives in the most deprived neighbourhoods in the country, many residing inner city areas.[2]

Straddling the River Aire and bounded by a green belt that covers two thirds of the district area, Leeds is considered one of the greenest cities in the UK with 7 major parks, 62 community parks, 95 outdoor sport facility sites, 155 hectares of local green space, 144 playgrounds, and 97 allotment (food growing) sites. Distribution, however, is not even across the City and there is a marked lack of quality green space within the city centre.

### Greening trajectory

The Unitary Development Plan for Leeds, written over the course the 1990s and approved in 2001, spoke of the emerging environmental agenda and the opportunity it represented for Council to achieve environmental gains addressing residents' key concerns.[3] The reviewed and revised UDP of 2006 stressed the need to safeguard greenspace due to the losses of many such areas to development; policies for the development of city centre housing and affordable housing in the late 1990s and early 2000s did not include strong green space provision requirements, resulting in little or no greenspace around the constructed dwellings.[4]

Using a Planning Policy Guidance Note from 1991 to raise the status of greenspace, the 2006 UDP formalised the role of greenspace in Leeds' urban environment as "an important land use in its own right in conferring amenity, quality of life



*Clarence docks © Sakhanphotography | Megapixl.com*

and a sense of identity to established communities and proposed extensions." The 2006 Plan proposed a number of sites for greenspace additions, in particular as part of redevelopment projects on former Mill sites and through the development of a network of Urban Green Corridors. It also identified streets for pedestrianisation and specific sites for protection as nature conservation areas or for recreation and agricultural uses. Under this framework and with the Heritage Lottery Fund as a financial partner, Roundhay Park underwent a £8.2 million refurbishment by City Council starting in 2003.[5] In 2010, the Green Corridor Project began creating a green historic walking path, turning underused land into green space that would connect the city centre to Holbeck Urban Village and surrounding communities.

Leeds becomes largest 'Environment City' in the UK
**1993**

**1991**
Leeds Nature conservation strategy adopted

**2002**
Waterfront strategy created

The Leeds Core Strategy was adopted in 2014 as the main document defining the overall vision and strategic-level policies to guide the delivery of development and investment decisions, as well as the overall future for Leeds and its District. It replaced the Unitary Development Plan of 2006. Picking up threads outlined in this previous plan regarding the environment and urban regeneration, one of its six main objectives includes the proper management of environmental resources, namely protecting and creating new habitats and green infrastructure and improving their quality, connectivity and accessibility. Several components of the document's Spatial Development Strategy underline the value of green infrastructure and the importance of linking, extending, and improving access to it. Specific policies delineate the key green corridors to be enhanced in order to increase the amount, distribution and accessibility of greenspace.



**Dimensions of greening in Leeds**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

Leeds — Europe — All

Equal Access Standard

Sustainability visioning and planning in Leeds has occurred through partnerships between City Council and various other city stakeholders. In the early 1990s, City Council established a Leeds Green Strategy and in 1993, the City became the largest 'Environment City'[6] in the UK in recognition of environmental work in its public, private and voluntary sectors. However, the discourse around sustainability has been broadened and elevated in more recent years. The Leeds Initiative[7] partnership developed "Leeds 2030," the Leeds Sustainable Community Strategy vision document for 2011 to 2030, which articulates the long term ambition and aspirations for the city. Developed with feedback from citizens and businesses, it paints a vision of Leeds as the best city in the UK,[8] with one of its top priorities is being "a cleaner, greener city" in terms of its economy, growth, and buildings. Whereas none of the main aims in the previous Vision for Leeds (for 2004 through 2020) included greening explicitly, this new vision places "being green" at the top in city discourse.

Since the late 2000s, there has been an increased focus on greenspace distribution, quality, and accessibility. In 2009, the Parks and Green Space Strategy for Leeds was developed with information gathered through a 30,000 household survey on park accessibility and satisfaction. A Green Flag standard quality assessment was also performed on 150 green spaces, finding the majority of parks significantly below the standard, with community parks performing worst. The strategy aims to increase engagement among communities and other sector partners in promoting and providing accessible and attractive parks and greenspaces for all, and in particular to encouraging green space provision as part of major regeneration projects.[9]

In the 2012 State of the City report, co-authored by Leeds City Council and the Leeds Initiative, two new city centre parks are proposed to remedy the lack of quality greenspace in the city centre: 0.65 hectares of new high-quality green space at the Sovereign Street mixed-use development site will link existing public spaces and pedestrianized areas to the north as well as to the proposed City Centre Park in the South Bank

Roundhay Park refurbishment begins
**2003**

Green Corridor Project initiated
**2010**

**2009**
Parks and Greenspace Strategy

**2014**
Leeds Core Strategy

Leeds regeneration project.  Sovereign Street's new £2.5 million green space is meant to be "a catalyst for further development of the area" and a child-friendly space in line with Leeds' goal to be a child-friendly city.[10]

The most recent large-scale implementation of green infrastructure provision goals is being manifested through a series of highly ambitious regeneration projects around the River Aire's city centre shorelines. With a strong "sustainable growth" and greening discourse and plans for state-of-the-art flood resilience infrastructure[11] that includes new public spaces, the City and the Leeds Chamber of Commerce hope to regenerate 180 ha of land on the south side of the River Aire, putting the river at the heart of the city centre, and transforming South Bank "into a distinctive European destination for investment, living, learning, creativity and leisure."

*Author: Melissa García-Lamarca*

**Notes**

1) Financial and consumer services have largely replaced the city's industrial heritage as its leading economic drivers. Leeds is also fairly diverse today, with a 17.4% ethnic minority population.

2) 18% of Leeds residents live with a limiting long-term illness or disability, and 6-10% of the population identifies as lesbian, gay or bisexual.

3) Without an overarching focus on greening or environmental sustainability, the UDP did outline the policy for planning agreements with developers where a financial contribution toward a community benefit was required, stating that funds collected would be used to achieve, strategic initiatives in the Plan such as the provision or improvement of greenspace, playing fields, and other environmental initiatives.

4) According to the 2009 Parks and Green Space Strategy for Leeds: http://www.leeds.gov.uk/docs/Small%20PGS%20strategy%5B2%5D.pdf

5) Leeds had already established a Nature Conservation Strategy in 1991.

6) A high profile national program that gave designations to a number of cities for their environmental performance. See: http://ec.europa.eu/environment/archives/emas/toolkit/toolkit_4_3_12.htm

7) The Leeds Initiative, founded in 1990, is a partnership made up of Leeds City Council, National Health Service Leeds, the voluntary sector, private sector and local universities.

8) Being 'best' means: Leeds will be fair, open and welcoming; Leeds' economy will be prosperous and sustainable and all of Leeds' communities will be successful.

9) A strategic aim of the document is the promotion of parks and green spaces as "places to improve health and well-being and prevent disease through physical activity, play, relaxation and contemplation." See: http://www.leeds.gov.uk/docs/chapter%204%20PPG17%20Parks%20and%20Gardens.pdf

10) 2012 Leeds State of the City Report. See: http://www.leeds.gov.uk/council/Pages/State-of-the-city-report.aspx

11) Projects such as this fall in line with the Fresh Aire initiative outlined in Leeds City Region's 2010 green infrastructure strategy, an ambitious 150 page document outlining how green infrastructure will "harness the potential of existing environmental resources to promote sustainable economic growth and to tackle climate change" across the region.

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# Liverpool

**Health Improvements**

**Downtown Revitalisation**

**Vulnerable Neighbourhood Regeneration**

**Post-industrial Redevelopment**

**Climate Preparedness and Resilience**

**Nature Preservation and Restoration**

## Background/Context

Liverpool, a North West England city of 466,415 residents[1], lies on the eastern end of the Mersey Estuary where it grew as a major port and rapidly expanded as a city during the Industrial Revolution. Although once described as "the New York of Europe", Liverpool's infrastructure and economy suffered significantly both during World War II and starting in the mid-1970s with the sharp decline of its docks and manufacturing industries. By 1989, 41% of its residents were living in poverty. At the end of the 20th century significant focus was placed on regenerating the city. A 2004 UNESCO World Heritage Site designation and a European Capital of Culture award in 2008 triggered and consolidated major investments in the waterfront and in commercial leisure and tourism.[2]

Liverpool is home to the oldest Black African community in the UK and the oldest Chinese community in Europe.[3] The city has 96 municipal, district and neighbourhood parks covering 1,075 hectares, but quality, perceived value, and distribution remain an issue; the city centre and surrounding inner city areas have the lowest levels of green space.[4]

## Greening Trajectory

The 2002 Liverpool Unitary Development Plan provides the current statutory framework to guide development and protect and enhance the environment of the city. Environmental improvement appears among the plan's major themes, alongside economic regeneration and reduction of inequality. Its Open Environment section aims to protect and enhance open spaces throughout the city and proposes the development of a hierarchy of public open space in order to ensure a convenient and accessible network of quality open spaces for all residents. This plan also identified potential sites of nature conservation value and park deficiency areas for the purpose of informing City Council decisions around the creation of new open spaces.



*Newsham Park-* [Bob Edwards](#)|[CC BY 2.0](#)

The 2002 UDP will be replaced by Liverpool's Local Plan in 2017, which will contain policies for green infrastructure and landscape management alongside other planning concerns such as new housing sites. The Liverpool City Council, through consultation, has identified some green spaces for potential redevelopment in the draft of this plan. From the perspective of citizens groups, the Local Plan is being developed in the context of central government cuts that reduce the City Council's budget. With no statuary obligation to fund and require parks and greenspace, there may be no money to maintain these public green spaces by 2017.[5]

Liverpool Nature Strategy and Action Plan adopted
**1997**

Mersey waterfront regional park & Liverpool waterfront revival started
**2002**

**1998**
Liverpool Loop Line converted

Recent large-scale park and open space refurbishments have been carried out in Liverpool, to an extent, through collaboration with non-governmental partners or as part of larger regeneration projects: in the mid-2000s, Stanley Park received a near £20 million upgrade with new gardens, a walkway, a conservatory renovation, and tree replanting funded by the European Commission through City Council and the Liverpool Football Club[6]; the 95-hectare Sefton Park was refurbished with £5 in funding from the Heritage Lottery Fund Urban Parks Programme.[7] In 2002 the Liverpool City Region regional authority became involved in efforts to revive the city and regional waterfront, developing and securing investment for multiple projects along the 135 km stretch of the reconceptualised Mersey Waterfront Regional



**Dimensions of greening in Liverpool**

Park. This laid the groundwork for further redevelopment of the waterfront with the injection of investment and publicity following the culture and heritage designations Liverpool obtained in the mid-2000s.
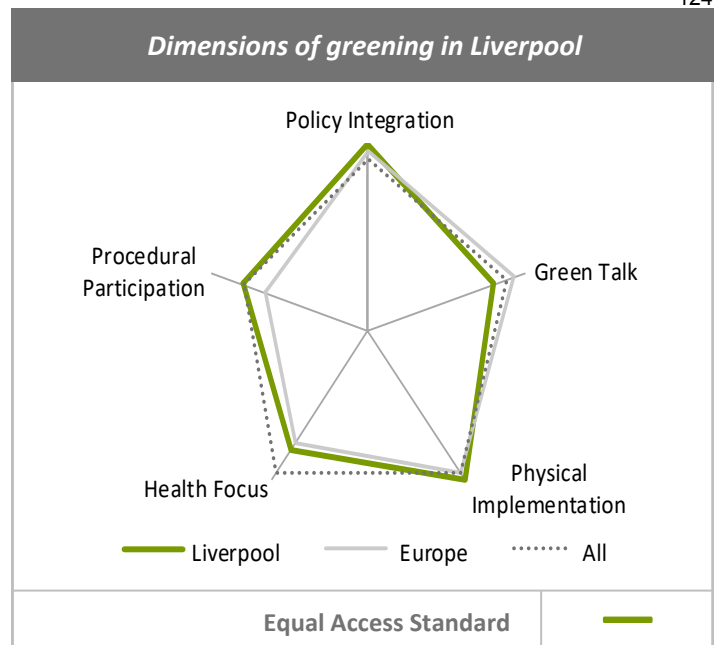
Prior to the current contestations between green space protection and development, Liverpool had a sustainable development plan for 2005-2008 that was originally adopted in 2001 and revised in 2004 as a key part of the local implementation of the UN Agenda 21 voluntary action plan.[8] In this document, the City noted that over 95% of land built on for residential use in Liverpool from 2003 to 2005 had been on brownfield sites. In fact, the majority of potential building sites identified in the 2002 UDP and in the forthcoming 2017 Local Plan are brownfield and other lower valued spaces. A portion of future development, however, is slated to occur on a significant number of plots of greenspace.

Other sustainability planning initiatives and partnerships such as Low Carbon Liverpool[9] and the Mayoral Commission on Environmental Sustainability[10] argued for the transcendence of institutional and political boundaries to create collaborative and joint regional visions for sustainability. The reports of these groups on a range of environmental, green infrastructure and landscape management issues had been intended to aid the development of a coherent environmental strategy for the City through the upcoming Local Plan.

Nature conservation in the city has been guided since 1997 by the 'Liverpool Nature' Strategy and Action Plan which led to the planning and development of several wildlife corridors, nature reserves and patches of wildlife spaces in existing parks. In 1998, the City Council started converting an abandoned railway line into a cycling and walking path lined by woodlands; this "Liverpool Loop Line" has turned into a linear park with adjoining landscaped open areas since the early 2000s. In 2004, 70 acres along the Mersey Estuary between the Garston Docks and the city's airport were formalized into the Speke Garston Coastal Nature Reserve, which now acts as a site for both species conservation and recreation. In 2010 City Council and the Primary Care Trust commissioned The Mersey Forest[11] to complete a Green Infrastructure Strategy for the City which found that 62% of the city area is covered by green infrastructure – including private

Speke Garston Coastal Nature Reserve opened
**2004**

Liverpool Green Infrastructure Strategy adopted
**2010**

**2007**
Stanley Park restoration began

**2008**
Sefton Park restoration began

gardens -  but with highly uneven distribution; 22% of the city area contains 80% of its accessible green infrastructure and some areas have no green infrastructure. The proposed strategy was intended as a blueprint to obtaining the greatest benefits possible from the city's natural environment through its sustainable management and through the enhancement of green infrastructure that supports  "a safe, more inclusive, sustainable and enjoyable city." Green infrastructure was also framed as a tool for providing essential life support functions and for climate change adaptation in a city "where healthy living is a natural choice".

The Strategic Green and Open Spaces Review Board released its report in 2016 in response to negative feedback the Liverpool City Council received against the redevelopment of two green spaces; local people felt that the City was not giving voice to local needs. With 58% of the City of Liverpool's budget having been cut by the UK government since 2010, planning for greenspace maintenance is carried out under a context of austerity. Seeking to propose cost-effective solutions, the Mayor-commissioned report outlined a series of thematic benefits that green infrastructure could deliver, highlighting the cross-cutting nature of green space benefits.[12] Echoing the voices of citizen groups fighting for the protection of greenspace, the Board proposes not building on parks, but instead creating a green network of parks and cycle/walking trails to improve mobility and connectivity between the amenities that exist, all the while finding alternative funding mechanisms to ensure the long-term viability of green space management.

The reality of financial difficulty for the City has given recent rise to grassroots initiatives fighting to stop the sale of public greenspace for housing and other developments and to oppose construction on greenspace in general. This kind of local opposition stopped the Everton Football Club form building a new stadium on Walton Hall Park in north Liverpool. As in other English cities, many of Liverpool's parks and open spaces also have dedicated friends groups who work with the City Council to promote and improve the city's green spaces.  The City has responded to the spike in citizen engagement by re-establishing its Parks Forum in 2016/17. The forum is meant to provide support for friends groups as they formulate their arguments to City Council for the better provision and management of the city's green spaces.

*Author: Melissa Garcia-Lamarca*

**Notes**

1) 2011 UK Census population for Liverpool.

2) The nominating organisation (Liverpool Culture Company) aimed to show Europe's "greenest" capital of culture. For the scale of Liverpool riverfront revival projects see: https://www.theguardian.com/society/2002/jun/27/communities.uknews

3) Just over ten percent of residents identify as a racial minority, with 8.5% identifying as non-white British and Irish and 2.5% as having mixed ethnicity.

4) According to the city's 2005-2009 sustainable development plan.

5) Most notably the group *Our Ground* campaigns to save public greenspace in Liverpool. See post titled "Liverpool's draft Local Plan" at: http://www.ourground.net/

6) The European Regional Development Fund awarded a grant in 2006 for the improvement of the park. See: http://www.liverpoolecho.co.uk/news/liverpool-news/multi-million-pound-makeover-given-11779330 and http://www.liverpoolfc.com/community/regeneration

7) See: http://www.bsg-ecology.com/project/sefton-park-restoration-liverpool-ecological-survey-and-assessment/

8) The plan covers the period 2005-2008 but was titled "Liverpool's Sustainable Development Plan 2006-2009".

9) A partnership between the University of Liverpool, Liverpool Chamber of Commerce and Liverpool Vision that developed a series of 2008-2013 working papers on sustainability for the region.(See http://www.lowcarbonliverpool.com/index.php)

10) See the Mayor of Liverpool's Commission on Environmental Sustainability Report from March 2015: https://liverpool.gov.uk/mayor/mayoral-commissions/commission-on-environmental-sustainability/

11) The Mersey Forest is a partnership of local and national government agencies focused on environmental improvement and tree-planting programs. A 500 square-mile community forest area in Merseyside and North Cheshire – an area that includes Liverpool – has also been named The Mercy Forest. (See: http://www.merseyforest.org.uk/about/what-is-the-mersey-forest/)

12) Maps of the current gaps in distribution of greenspace benefits across Liverpool can be correlated with the geography of ill health in the city as there are major health inequalities within in Liverpool, with generational compounding of hereditary and community ill health.

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# Louisville

### Background/Context

Located along the Ohio River, Louisville is one of the oldest US cities west of the Appalachian Mountains, founded as a key shipping transfer point. It was home to the DuPonts, a wealthy Industrial Era family that donated large public lands and infrastructure to the city. The DuPont estate gardens, for example, served as a foundation for what became in the early 1900s a large system of parks and parkways designed by well-known landscape architect Frederick Law Olmsted. Consolidated in 2003 with the surrounding Jefferson County, Louisville is the largest city in the state of Kentucky with roughly 750,000 residents in the metro area in 2014. The city, surrounded by relatively affluent suburbs, is home to the University of Louisville. As a result, Louisville has an abundance of young, if transient, professional-minded college students and college graduates. Per the US Census, the city is representative of many in the American South with a majority white population (roughly 73% in 2015) and the bulk of the non-white population consisting of blacks, mostly African-Americans (roughly 22% in 2015).

### Greening Trajectory

Louisville's greening trajectory since 1990 is primarily characterized by the creation, expansion, and upgrading of the city's parks and was recently enhanced by extensive sustainability planning efforts.

Louisville seeks to be a "city of parks" with one of America's most expansive "greenprints."[1] Building on a rich legacy of a park system originally designed by Frederick Law Olmsted and aggressive waterfront redevelopment since 1990, the city plan developed in 2000 called for 8,800 acres of new parkland. The greening initiatives and parks development that followed since 2000 comprise one the largest expansions of green infrastructure in the city's history. This parks expansion is supported by a wider partnership between business, non-profits, and government to develop urban sustainability programming throughout the city.

*Waterfront Park—*

The parks-driven greening of the city since 1990 was initially linked to an economic development strategy for redeveloping Louisville's industrial waterfront. In 1986, The Waterfront Development Corporation was established in Louisville and in 1991 the agency's park-led plan for redevelopment of the mostly industrial waterfront was adopted by the City Council. The first three phases of a four-phase plan for a new Louisville Waterfront Park and the surrounding waterfront neighbourhood were developed by 2014 with roughly 85 acres of parkland added to the city since 1990. Phase I of the park was completed in 1999, Phase II in 2004, and Phase III was completed in 2014. Phase IV plans, which would add another 22 acres of parkland, were certified but development had not begun as of 2017. The new waterfront parkland served as an amenity for a newly developed adjacent high tech and creative

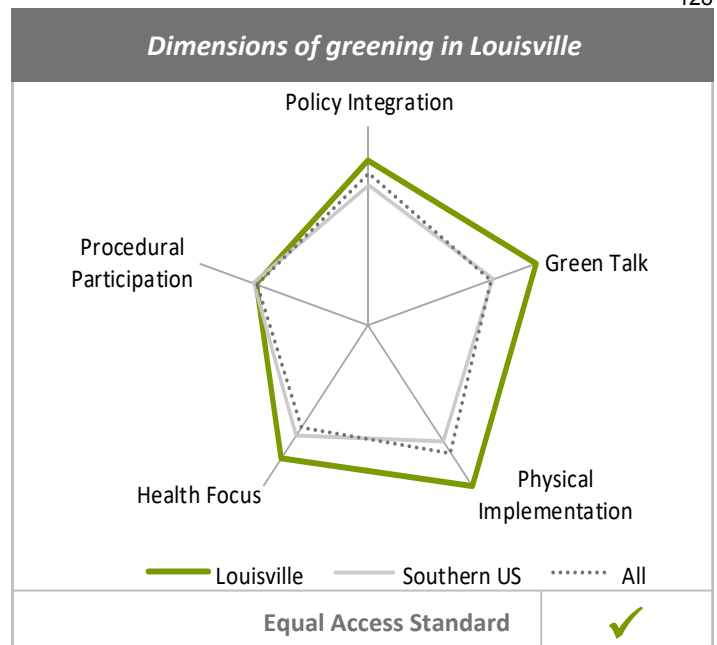Cornerstone 2020 Plan adopted
**2000**

**1991**
Waterfront Master Plan published

*Sidebar labels (left margin):* Health Improvements · Downtown Revitalisation · Vulnerable Neighbourhood Regeneration · Post-industrial Redevelopment · Climate Preparedness and Resilience · Nature Preservation and Restoration
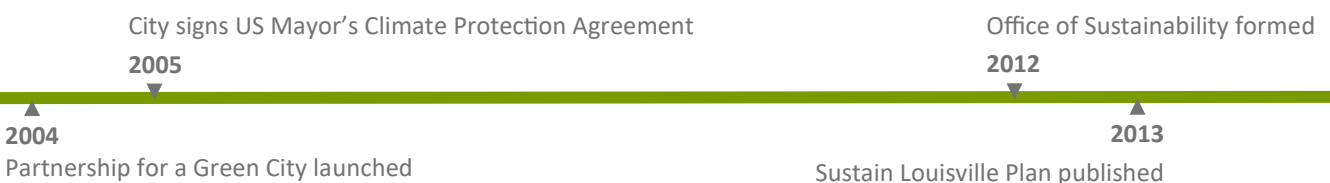
industry business district and has been accompanied by several new large-scale event spaces. The Waterfront Park received the Urban Land Institute's distinction as a "Top Ten Urban Park" in 2006.[2]

In 2000, the City finalized the 5-year planning process for the Cornerstone 2020 plan for growth over 20 years with extensive greening goals. In Cornerstone 2020, greening is central to the "Mobility" and "Livability" sections of the plan. The mobility section of the plan focuses on orienting transportation and transit systems toward reduced environmental impact and preservation of ecosystem services. Specifically, it seeks to reduce emissions, lower noise, and protect natural landscapes and stream corridors. The livability strategies in the plan refer almost entirely to natural environmental resources. It seeks to manage water quality and quantity; reduce air pollution; minimize waste; protect land, habitats and biodiversity; enhance environmental review processes; enhance and maintain public open space and parks; and promote citizen stewardship of stream corridors and greenways. The plan specifically calls for establishing a new park on the Portland Wharf section of Waterfront Park, and focuses on the Ohio River and the Jefferson County Memorial forest as essential green/blue spaces in the community. In all, it calls for 8,800 new acres of parkland in addition to expanded greenways, flood zones, habitat preservation, agriculture, and urban forests.



**Dimensions of greening in Louisville**

As a complement to the 2000 Cornerstone 2020 plan, the City launched the "City of Parks" initiative in 2005. The goal of this initiative was to create a roughly 100 mile long continuous green hike and bike trail around the city (The Louisville Loop) and add parks, including roughly 4,000 acres of the Floyd's Fork floodplain in Eastern Jefferson County. As part of the initiative, the Mill Creek Trail section of The Louisville Loop was completed in 2007 to connect two existing sections and create over 20 continuous miles. As of 2017, the Louisville Loop had added a number of additional, though disconnected pieces to this continuous 20 mile stretch. Also under this initiative, The Parklands of Floyd's Fork began to be open to the public in 2011 and the entire park was opened in 2016. The City of Parks initiative is now managed by a non-profit group, 21st Century Parks.

The 21st Century Parks organization is indicative of an overall strategy to employ public-private partnerships in order to accomplish the city's greening goals. Just before the City of Parks initiative was launched, a 2004 program called Partnership for a Green City also reflected this strategy. The partnership developed environmental education and training programs for green practices that were carried out within large private institutions in the city. This combined public- and private-sector push for greening contributed to support for the 2005 signing of the US Mayor's Climate Protection Agreement, which committed the city to greenhouse gas reductions. The 2009 Climate Action Report sought to accomplish these reductions through greening by creating new carbon sinks, emissions reductions in public and private facilities, and green infrastructure. Also in 2005, the city signed a consent decree to eliminate

City signs US Mayor's Climate Protection Agreement
**2005**

Office of Sustainability formed
**2012**

**2004**
Partnership for a Green City launched

**2013**
Sustain Louisville Plan published

sanitary sewer overflows, which led to the installation of green infrastructure for water management throughout the city. The provision of green infrastructure was particularly seen as a public-private agenda, so that by 2011 a new Green Incentives and Savings Program was created to generate financial incentives to offset green infrastructure costs in private development. This approach was supported by the city's first Office of Sustainability formed in 2012 to promote the health, wellness and prosperity of its citizens and create a city-wide culture of sustainability. The Office launched a green infrastructure incentive program to further stimulate the use of green infrastructure solutions. Similarly, Louisville Sustainability Council formed in 2012 as a coalition of business, government and non-profit groups working to make Louisville a "green leader." One action group within the Council particularly focuses on greening the built environment.

Most recently, Louisville has engaged deeply with the sustainability and climate action initiatives that have characterized policy in many cities. These initiatives incorporate greening to a high extent. The Sustain Louisville plan was launched in 2013 as the city's first sustainability plan. Much of the environment section of the plan focuses on traditional air and water quality issues. Meanwhile, the "Community" section calls for increased opportunities for active lifestyles (including greenspace), reforesting parks, expanding green infrastructure, and expanding tree canopy. In essence, the spatially specific greening initiatives are viewed within the plan as community initiatives rather than strictly environmental programs. This framing of greenspace as social rather than ecological is an interesting expression of how greening has become embedded in the culture of Louisville. The extension of greening into other realms was also reflected in the 2015 Neighborhood Greening Plan, which was developed from a grant from the Funders Network for Smart Growth and Livable Communities to assess whether greening could improve public health.

Overall, Louisville has built on its history as a green city and focused on greening in a substantial way since 1990. It has created a number of environmental sustainability plans focused on air and water quality. Importantly, though, it has also created a number of greening initiatives specifically framed as "social" improvements.

*Author: James J.T. Connolly*

**Notes**

1) For more information, see: https://louisvilleky.gov/government/city-parks

2) For more information, see: https://louisvillewaterfront.com/about-wdc/what-we-do/project-history/ and https://louisvillewaterfront.com/about-wdc/what-we-do/project-history/timeline/

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# Lyon

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

## Background/Context

With 506,000 residents, Lyon is France's third largest city.[1] While the surrounding region is characterized by agricultural production, the city's main centres of economic activity include car industries, high-tech chemical and biotechnology companies, textile firms, IT groups, and nuclear engineering companies. Known as a young, dynamic, and attractive city with its medieval district classified as a UNESCO world heritage site, Lyon has recently been ranked France's second most liveable city.[2]

Lyon is located in the East-central part of France near the Alps mountain range and crosses the Rhône and Saône rivers. According to the *Observatoire des villes vertes* (Observatory on Green Cities)[3], the city is France's second for investments in green spaces. Host to one of Europe's largest urban parks[4] and to the recent large-scale conversion of the Rhône's industrial left bank into parkland, Lyon is also the fourth greenest city nationally.[5] Much of its greening is connected to municipal efforts to improve health outcomes in the city; both the city and metropolitan government are highly engaged in creating sustainable and green resources for Lyon's residents.

## Greening Trajectory

Framed by the 1990 National Environment Plan which laid out France's commitment and key interventions toward sustainable development and by the overarching guidance of national ministries, Lyon has developed several sustainability, climate and comprehensive city plans. In a pioneer decision in France, the City created an environmental office (*cellule environnementale*) in 1990, which it launched under the name, *Mission Ecologie Urbaine* (Urban Ecology Mission) in 1991 and tasked with creating strategy on metropolitan environmental issues, preparing transversal environmental interventions, and mainstreaming environmental protection as a local policy. As a result, in 1992 City Council adopted an "Urban Ecology Charter"



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with a series of actions aimed at addressing the city's energy, water, waste management, air quality, noise reduction, greenspace, and local vegetation needs. That same year, the *Observatoire de l'Environnement du Grand Lyon* (Grand Lyon Environmental Observatory) was created to monitor the implementation of the Urban Ecology Charter and to ensure that various environmental indicators were being considered in the provision of local services and interventions. In practice, much of the city's environmental investment has been focused on preserving and promoting the local ecological heritage, on the management of urban services (waste, water, and infrastructure), on brownfield clean-up and redevelopment and, later on, greenspace creation.

Urban Ecology Mission launched
**1991**

*La Confluence* brownfield redevelopment project begins
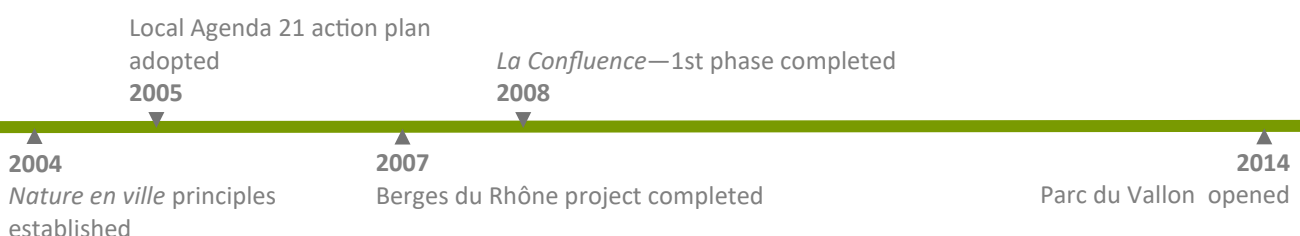**1998**

**1992**
Urban Ecology Charter adopted

Since 1998, the municipality has worked to clean-up and restore the 150-hectare area where the Rhône and Saône rivers converge in what is known as *La Confluence* project. A key sustainable urbanism *projet urbain*[6] (urban project), this has been one of the largest brownfield redevelopment sites in Europe. Prior to redevelopment, the Confluence area was a residential neighbourhood in a former industrial enclave. With the completion of the project's first phase in 2009, the site has received new greenspace, as well as other infrastructure, housing, and commercial space. Meant to attract 16,000 residents into a new mixed-income, mixed-tenure and mixed-use community, the project financed its numerous amenities, in part, by incorporating them into the housing project design and subsequently demanding higher rents. The site is branded a new world class neighbourhood.[7] Since its inception, the Confluence project has received several labels and designations, including "*eco-quartier*" (eco-district), "Sustainable Neighbourhood," and "Concerto."[8]

**Dimensions of greening in Lyon**
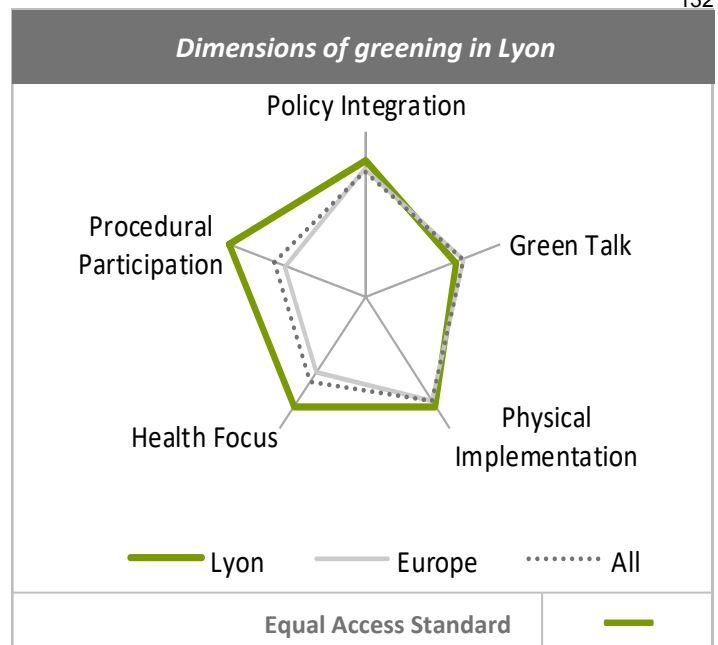


Since the late 1990s, the City has given special attention to green spaces in new developments, in addition to maintaining existing parks and gardens.[9] Yet, it was not until 2005/2006 that greening reached an inflection point in Lyon. With the 2005 adoption of the city's first Agenda 21 sustainable development action plan, a broader approach to greening and sustainability was adopted; in 2006 when carparks on the left bank of the Rhône were converted into green spaces, the city's greening really took off.[10] In order to centralize interventions related to greenspace, Lyon now has a Director of Public Green Spaces who oversees the maintenance, planning, management and programing of Lyon's parks, gardens and other green spaces.[11] From an institutional standpoint, this greening work has been framed and supported by the Grenelle Environmental Roundtables, which were national multi-stakeholder dialogues held in 2005 and 2008 to establish new rules for minimizing the use of land and resources by promoting densification and eco-districts and encouraging environmental protection through the development of natural spaces.

Lyon's greening interventions are also supported by the *Plan Local d'Urbanisme* (PLU, or Local Urbanism Plan), adopted in 2005. The plan's main objectives are to prevent urban sprawl; promote public transport, biking, and walking; develop new green spaces and green buildings; improve (rain) water management; and reduce health impacts of soil pollutants. This strategy builds on *nature en ville* (nature in the city) principles established in 2004 by the municipality to uncover and bring nature back into the city.

In Lyon, greening interventions have often been embedded in large-scale urban development projects (*projets urbains*) that incorporate greening, resilience, social cohesion, and carbon-reduction programs. Among such initiatives was the Berges du Rhône (Banks of the Rhône) redevelopment project, which integrated new paths, existing parks, and several natural landscapes into a large riverfront public park, adding 17 hectares of new green space to the city when it was inaugurated in 2007. The construction of the *Parc du Vallon* in the La Duchère neighbourhood was similarly part of a larger redevelopment. Formed

Local Agenda 21 action plan adopted
**2005**

*La Confluence*—1st phase completed
**2008**

**2004**
*Nature en ville* principles established

**2007**
Berges du Rhône project completed

**2014**
Parc du Vallon opened

in 1962 to house the families of migrant workers in massive housing blocks, the neighbourhood had been increasingly marginalized since the 1980s. In 2001 it became the beneficiary of a *Grand Projet du Ville* (Great City Project) that sought to convert 40% of the area into greenspace by increasing the number of squares, gardens, and green roofs, and by building an 11-hectare park, which opened as *le Parc du Vallon* in 2014. The new quarter's greening features were included as elements with the potential to enhance the social cohesion and social development of the neighbourhood.[12]

While Lyon continually emphasizes the incorporation of nature in the city and the provision of greenspace for citizens' enjoyment and well-being, since 2010 citizen participation in greening projects has noticeably increased. Over the last decade, community-sponsored or -owned green spaces have been on the rise; Lyon has been nationally recognized for its large number of community gardens. In 2001, the city had no community gardens; however, by 2015 there were 35 such spaces.[13] With a call for proposals in 2009, the City invited managing community organisations to create new gardens and in turn receive financing and support. In 2014 Lyon created guidelines for community gardens, as well as charters for citizen greening of streets and public spaces.

Recently greenspace initiatives have also been integrated within health interventions at the neighbourhood scale through the already existing *Ateliers Ville Santé* health workshops and an upcoming public health study on parks. Lyon will be conducting the first health impact study performed in France on a park (Parc Zénith) or green corridor.[14]

As of 2015, Lyon's environmental interventions are framed within the new metropolitan governance structure of *Le Grand Lyon* (Greater Lyon)*;* large-scale infrastructure projects and environmental planning are now integrated at the metropolitan level, although public parks and gardens remain managed by individual cities.[15]

*Author: Galia Shokry*

**Notes**

1) 2014 Population.  In the same year 13% Lyon residents had an immigrant background, largely from Algeria, Tunisia, Morocco, Portugal, and Italy. (National Institute of Statistics and Economic Studies: http://www.insee.fr/fr/themes/tableau_local.asp?ref_id=IMG1B&millesime=2013&niveau=2&nivgeo=COM&codgeo=69123)

2) See: https://www.imercer.com/products/quality-of-living.aspx

3) The Observatory is a body of city greening professionals, organized by the national professional landscaping organization. See: http://www.lesentreprisesdupaysage.fr/tout-savoir/etudes-chiffres-cl%C3%A9s#lobservatoire-des-villes-vertes

4) The Parc de la Tête d'Or spans 370 hectares.

5) See Lyon Area Economic Development Agency news:  https://www.aderly.com/2014/02/lyon-4th-greenest-city-in-france/

6) Through its *projets urbains*, Lyon has combined its efforts to address the city's environmental problems with measures to address economic and social concerns. See: http://www.lyon.fr/page/projets-urbains/urbanisme-durable.html

7) For more on European examples of cities that have capitalized on de-industrialization projects as sustainability and growth management solutions, see Wertheim (2012).

8) For more information on the designations, see: https://frenchamerican.org/sites/default/files/documents/media_reports/sustainablecities_final_lowres_web.pdf

9) See Boulens (2017).

10) Written communication with Daniel Boulens, Director of Public Green Spaces of Lyon.

11) For details, see: http://www.urbalyon.org/AffichePDF/Reperes_europeens_-_ville_et_biodiversite_un_nouveau_defi_pour_la_ville_europeeenne--1883

13) For more on community and shared gardens, see : http://www.lyoncapitale.fr/Journal/Lyon/Actualite/Environnement/Lyon-au-top-des-villes-vertes-et-connectees

14) See: http://www.lyonpremiere.com/Lyon-distingue-par-l-Observatoire-des-Villes-Vertes_a11725.html

15) Written communication with Daniel Boulens, Director of Public Green Spaces for the City Lyon.

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# Malaga

## Background/Context

Malaga has a population of 569.009 (2016)[1] and is Spain's sixth largest city. One of Europe's oldest cities, today tourism and construction are key drivers of Malaga's economy, particularly due to its strategic location on the Costa del Sol. The latter is a tourist area that has seen rapid and uncontrolled growth since the 1960s and attracted over 12 million tourists in 2016 alone, with 1.2 million of these staying in the city of Malaga. Malaga is considered to be one of the most equal cities in the autonomous community of Andalusia, but it still has relatively high levels of poverty.

Malaga's development of green space has been one of its main foci within its pioneering and strategic sustainability strategy. Indeed, green space in the city has grown almost five-fold from 1.3 square metres per inhabitant in 1995 to 6.6 square metres per inhabitant in 2010. At the same time, many grassroots groups in Malaga are critical with the city's reporting on green space because they argue that some spaces included here are not really green.

## Greening Trajectory

Malaga began to engage with sustainability in the early 1990s, where one of the original four areas of the First Strategic Plan for Malaga (I PEM) from 1992-1996 was to promote "Malaga as a Sustainable European City"[2]. This creation or restoration of many parks and green areas was outlined here, and from 1996 to 1999 120 hectares of green areas were inaugurated. During this period Gibralfaro and Morlaco Hills were renovated and several parks such as Parque del Norte, Parque de Huelín, Parque la Virreina, Parque del Mar and the extension of Parque Periurbano de la Concepción were built. Part of these new green infrastructures were funded with European funds, through the EU URBAN programme,[3] while the remainder was funded with the Operational Local Environment Program (POMAL) from the Spanish Ministry of



*Parque de Huelin—*

the Environment. Social inclusion objectives were explicitly included in the plan, which also contains a strong discourse regarding quality of life and environmental protection. As part of the I PEM, the Foundation CIEDES ("Centro de Investigaciones Estratégicas y de Desarrollo Económico y Social de Malaga") was created. This foundation, a public-private entity, co-manages urban plans and their evaluation.

Inspired by Agenda 21, in 1995 the Malaga Green Charter was launched, making Malaga the first Spanish city to launch a municipal sustainability agenda after the 1992 Rio Summit. This charter strives to make

First Strategic Plan for Malaga (I PEM) approved; Parque del Oeste inaugurated
**1992**

Malaga's Urban Environment Observatory established
**2000**

**1995**
Malaga Green Charter adopted

**1997**
Wins 2nd European Prize for the Sustainable City

Malaga a sustainable city, including some of the I PEM programme and additional actions. In 1997 Malaga received the 2nd European Prize for the Sustainable City awarded by the Council of Municipalities and Regions of Europe for the Malaga Green Charter, while in 1998 it received the Dubai Best Practice Award for leading sustainability agenda, including its noteworthy effort in constructing green spaces.

Malaga's Urban Environment Observatory[4] (OMAU), a public agency dealing with the environmental planning of the city, was created in 2000 in the context of its coordination of the Network 6 urban environment portion of the EU-funded URB-AL programme. Created by the European Commission, this programme furthered connections and initiated specific projects between various European and Latin American cities. The programme and OMAU's four urban environment areas of action include urban planning and the sustainability of the territory; natural resource management; social inclusion and economic development and governance.



*Dimensions of greening in Malaga*

Policy Integration — Green Talk — Physical Implementation — Health Focus — Procedural Participation

——— Málaga    ——— Europe    ·········· All

**Equal Access Standard** ✓

In 2006, Malaga's Second Strategic Plan (II PEM) was launched. In terms of sustainability and green infrastructure the II PEM included interventions on the seafront, under the name of "Malaga, open to the sea", as well as the urban integration of the Guadalmedin River. The latter has not been implemented but as one of the largest urban transformations in the history of the city it is expected that its execution will change Malaga dramatically. Aside from the construction of the Parque Norte, other new parks are hardly mentioned in the II PEM. Due to the severity of the economic crisis, however, the II PEM was revised in 2010 and the number of actions planned and the budget assigned are both reduced. The remaining interventions are defined as "new directions", and both the seafront and river bed integration are part of the plan's newly stated strategic objectives.

The early 2010s witnessed a handful of new initiatives emerge in Malaga. In 2012 the Assembly of the Social Council of Malaga was formally established after the role it played in driving the city's 2011 general urban plan. The Assembly created the A21 Forum, a working group created by citizens, public and private entities and the local administration, to handle more concrete tasks, one of which being the establishment of a participatory process to collaborate in the development of Malaga's sustainability strategy through an integrated perspective. The 2013 Urban Empathy project, an EU partnership made up of 11 Mediterranean cities, is a collaborative and knowledge transfer programme led by the city of Malaga and focuses on mobilising Mediterranean cities as sustainable urban models. Additionally, in 2015 Malaga's new Agenda21 was approved and constitutes the Urban Agenda for Integrated Sustainability for 2020-2050. The report produced for this new Urban Agenda provides a theoretical narrative on urban planning and a detailed descriptive report on the state of the city's sustainability and green infrastructure. Planned actions for each city district are enumerated. The most recent new park in Malaga, the Parque Arraijal, was also approved in 2015, and will be a 50 hectare metropolitan park with 10 hectares dedicated to a
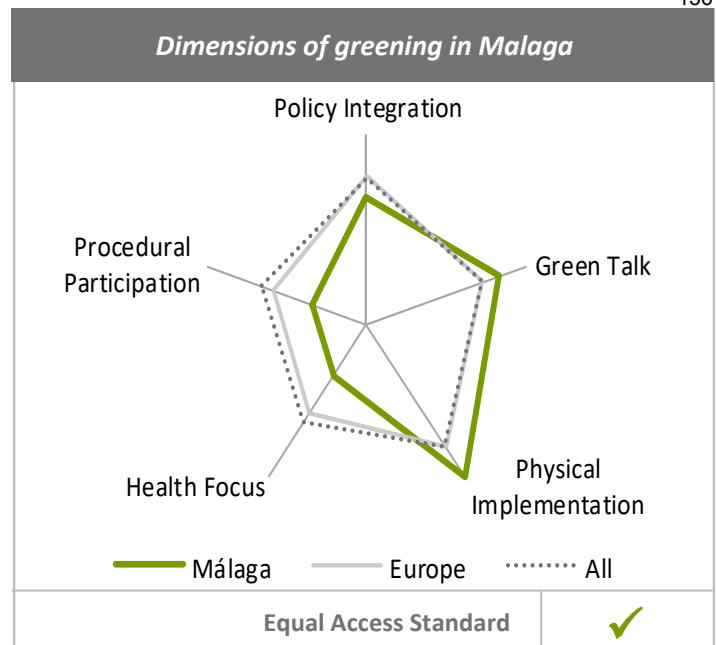
Second Strategic Plan for Malaga (II PEM) adopted
**2006**

**2003**
Parque La Virreina opened

**2011**
Municipal Planning General Plan approved

**2015**
New Agenda 21 adopted
Parque Arraijal approved

football school for the local football team. The park will occupy the only non-built area between Malaga and the neighbouring tourist hotspot city of Torremolinos.

The restoration and revitalisation of the old city has been a priority for Malaga in recent decades. These interventions are reportedly done in an integrated and sustainable fashion, deployed in such a way that avoids gentrification.[5] SOHO Malaga is an emblematic case, existing as a project to develop an "arts district" in a formerly marginalised area supported from the late 90s and particularly in the 2010s. The project is 70% EU funded and has an objective of situating Malaga as a cultural capital of EU. An opinion piece in the urban culture magazine El Observador however links SOHO Malaga to processes of gentrification and expulsion of certain types of city residents.[6]

Most of the city's sustainability initiatives today revolve around smart cities, energy efficiency and transportation. In 2018 Malaga will host the 9th GreenCities congress, titled the Forum of Urban Intelligence and Sustainability. Otherwise, as part of the previously explained European CATMED project led by Malaga, a green city block in El Duende, has recently been approved by Malaga city council (2016) and construction is slated to begin shortly, where 970 housing units are projected. Complementing this as part of Malaga's Agenda 21, the city commissioned the Malaga Urban Environment Observatory and the Barcelona Ecology Agency to create a proposal of superblock networks for Malaga in 2016, in preparation for the revision of the city's sustainable urban mobility plan. Media point out that Malaga might be a good candidate for the EU Green Capital Awards in 2020.[7]

*Author: Melissa Garcia-Lamarca*

## Notes

1) Ethnic minorities make up 7.8% of the city's total population (2015) although their residential density is three times higher in the city centre as compared to the rest of the city.

2) See Chapter 2 of I PEM: http://ciedes.es/attachments/article/237/cap2.pdf

3) The EU URBAN programme funded neighbourhood revitalisation in the EU throughout the 90s. For more information see: http://malagaglobal.malaga.eu/portal/menu/seccion_0001/secciones/subSeccion_0004

4) For more information see: http://www.omau-malaga.com/

5) Restoration and regeneration approaches aim to simultaneously address social cohesion, economic development and environmental sustainability.

6) Opinion piece from collective Malagan blog. See more at: http://www.revistaelobservador.com/2-uncategorised/4574-la-gentrificacion-malaguita

7) For more information, see http://www.laopiniondemalaga.es/opinion/2017/01/11/malaga-ciudad-sostenible/901944.html

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# Marseille

## Background/Context

With 858,120 residents (2014)[1], Marseille is France's second largest city. An historic port city on the Mediterranean coast of Southern France, it was long France's most important port for trade, as well as a major industrial and manufacturing centre. While in recent years population numbers have been climbing back toward their peak level of 1975, from the mid-1970s to the mid-1990s Marseille's loss of its major industries resulted in a loss of more than 10% of its population and 50,000 jobs. Since the early 2000s, the city population and commerce entered a re-growth phase that has steadily continued. These changes have been reflected in its built environment with the city centre and waterfront becoming dominated by shopping, dining and marina activities.

In 2000, approximately 40% of the spatial area of the City of Marseille was categorized as "green space"; however, the vast majority of this green is found along the city peripheries. Today, Marseille has 640 hectares of green space, with 54 parks larger than 1 hectare. A multi-criteria evaluation of European urban green spaces[2] ranked Marseille highest for 'green performance' among 23 northern and southern European cities. While Marseille is a green city with an abundance of green and natural spaces, it has not traditionally prioritized an equitable distribution of green resources through city planning.

## Greening Trajectory

In 1981 the City passed its first land use plan, the *plan d'occupation de sols* (POS). Its aim was to manage the city's growth, prevent segregation and real estate speculation, and to preserve natural areas. Despite financial concerns and obstacles, the development of a 10,000 hectare green belt was among its major projects, as well as the creation of 1,300 ha of green space and recreational amenities. The bulk of the green spaces budget was devoted to the regular maintenance of public gardens and major renovations in the oldest parks, such as Borély and Longchamp in the early nineties.



*Jardin de la Magalone–* Vincent Desjardins | CC-BY-2.0

A second POS followed in 1993, taking into consideration the population shifts in surrounding towns (referred to as "peri-urbanisation"), particularly regarding the professional classes, and instead of controlling growth, outlined aims to generate it. With economic development and the re-integration of Marseille's middle classes at its core, the plan opened the way for construction in the zone of the *massifs*, the cliffs which historically separated Marseille from its suburbs. The 1993 plan simultaneously promoted the protection of biodiversity and ecological areas under local environmental legislation whilst reducing the potential to develop and expand green and recreational spaces.[3] Nonetheless, in 1995, the City decided to strive to achieve 10m[2] of green space per resident. The 26th Centenary Park,
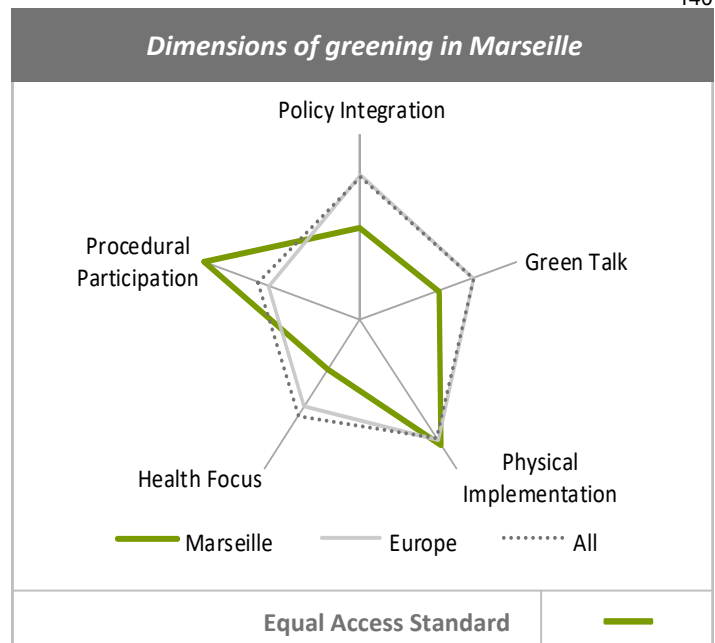
EuroMed 1 established
**1995**

**2001**
26th Centenary Park completed

*Parc du 26ème centenaire,* is a 10.5 ha green space built on the abandoned side of the former Prado train station with a contemporary design, themed gardens and water features. The park was completed in 2001 and awarded the Remarkable Gardens prize by the Ministry of Culture in 2005.

In 2000, the POS was renewed and focused on "building the city on the city". It was influenced by both national and local policies, and continued to reinforce environmental protection for 40% of the municipal area, including in the large natural areas of the cliffs, the littoral zone, wooded areas, and a buffer strip in the Calanques area. Agricultural areas, green spaces and large per-urban parks also fall into this category of protected spaces, and new risk management regulations were put into place for dealing with flooding, forest fires, and land movements. However, some of these protected spaces remained eligible for development in zoning plans.[4]



Dimensions of greening in Marseille

Policy Integration — Green Talk — Physical Implementation — Health Focus — Procedural Participation

Marseille — Europe — All

Equal Access Standard

Later plans to promote green space and an environmental agenda were influenced by two major policy and planning initiatives[5]: the national level Grenelle Environmental Roundtables (2005 and 2008) that included the promotion of green corridors, and the Euro-Mediterranean Operation of National Interest *Euroméditerranée* (first established in 1995, later developed in 2013) that prioritised green space as one of its nine focus areas. Some of the green spaces that came out of the latter include the Boulevard de Dunkerque (2010), the Kleber Market park (2010), the J4 and Darses Esplanade (2012), and the Boulevard Euroméditerranée (2013). In 2004, the Territorial Coherence Scheme *Schéma de Cohérence Territoriale* (SCOT)[6] of the metropolitan area of Marseille, the Marseille Provence Métropole (MPM), was also under development. Foreseeing the need to eventually implement the Grenelle commitments, in 2004, the city adopted a proactive stance, incorporating environmental protections and in particular, the development of a green and blue network.[7]

In addition to the Grenelle Environmental Roundtables, the development of the EuroMed 2 flagship initiative was the second mobilizing factor in Marseille's increasing greening and sustainability orientation, which began in the mid-2000s. Building on the first EuroMed program, the follow-up continued the broadly national aim to recreate Marseille's image into a highly-acclaimed regional and international French city. In the mid-2000s, efforts were increased to attract large-scale private international investments and world class architects. In 2009, the project was awarded the French "EcoCité" label for the network of parks it has created in the Valley of Aygalades, intertwining with blue features and flood mitigation techniques.[8] The proposed green space of the Stream of the Aygalades *Ruisseau des Aygalades* project is a 14 ha urban park with walkways along the water and recreational and sports facilities. It aims to be a vegetation link between adjacent former port and industrial zones and historically working class districts, whilst accommodating flooding during heavy rainfall and from mountain torrents.

In the run up to 2013, when Marseille would become European Capital of Culture (ECC), Marseille

Community gardens charter established
Kleber Market park built
**2010**

Blvd EuroMed greened
**2013**

**2009**
EuroMed 2 project awarded EcoCité status

**2012**
J4 & Darses Esplanade renovated

**2015**
Font Vert garden inaugurated

significantly pushed for architectural and public space regeneration projects, such as a cultural museum along its ancient port and the National Park of the Calanques (2012). Along with the Grenelle commitments integrated into the SCOT and the EuroMed objectives, the ECC projects would also give shape to the development of the 2013 Local Urban Plan. The 2013 urban plan *plan local d'urbanisme* (PLU) replaces the 2000 POS which was Marseille's last major urban plan and proposes a new strategic vision for the territory for the following 10-15 years. The new plan contains 5 additional types of green spaces with guidelines for their conservation and/or rehabilitation. Previously, only "wooded areas" *espaces boisés classés* (EBC) (which include parks, trees, and hedged areas) were marked for conservation or other kinds of planted areas.[9] The Project of Planning and Sustainable Development *Projet d'Aménagement et de Développement Durable* (PADD), one of several plans that drove the sustainability and greening initiatives in Marseille, was established in 2011 providing new commitments to better incorporate nature into the city, integrate green and blue networks and ecological corridors, while also calling for an intensification of housing development and for the protection of economic spaces. This approach complements the sustainable development mechanism launched in 2007, along with the municipal climate plan[10] and the Marseille Quality Charter[11] of 2006. The latter allowed the development of the *eco-quartier* eco-neighbourhood concept which grew out of these initiatives to bring sustainability principles to the built environment whilst promoting biodiversity.[12]

In addition, three city greening initiatives provide guidelines for citizens with "community-building" type requirements and reliance on volunteers. In 2010, the Marseille community gardens charter was produced, which highlighted the social, environmental and economic benefits of community gardens. In 2015, the Marseille *Végétalisation* charter was released, outlining the regulation for the expanse of informal vegetation developed by residents. Similarly, the City's *Politique de la Ville* policy (developed in the 1970s) outlines several greening projects in the prioritised low-income neighbourhoods. One of these projects is the Font Vert garden. Inaugarated in June 2015, there are 40 garden plots of 40 square metres intended to be used by local families. In total, the City of Marseille has 44 collective, family or shared gardens.[13] These projects came under urban renewal programs that aimed to target the most socio-economically underprivileged areas.

*Author: Galia Shokry*

**Notes**

1) Population data from Insee, the National Institute of Statistics and Economic Studies. In 2014, 75,859 residents were foreign born. Primary foreign born groups are of North and East African, Italian and Eastern European descent.

2) See Baycan-Levent et al, 2009.

3) See Girard & Michèle, 2001.

4) ibid.

5) See Consalés et al, 2012.

6) The SCOT was finally approved in 2012.

7) See Consalés et al, 2012.

8) ibid.

9) See PLU handbook, Retrieved from: http://logement-urbanisme.marseille.fr/sites/default/files/contenu/logement/guide_pratique_du_plu.pdf

10) Available at: http://logement-urbanisme.marseille.fr/node/114

11) Available at: http://logement-urbanisme.marseille.fr/sites/default/files/contenu/logement/charte_qualite_marseille.pdf

12) For more information, see: http:// http://logement-urbanisme.marseille.fr/développement-urbain-durable

13) For more information, see: http://www.polvillemarseille.fr/polville.htm

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# Minneapolis

## Background/Context

Minneapolis is a city of 410,939 residents[1] and is part of the Twin Cities (Minneapolis and Saint Paul) metropolitan region of over 3.8 million residents. Within the city, minority residents make up 39.7% of the population.[2] Initially developed around the power of its waters for various milling industries, the city grew dramatically in size and population starting in the 1880s with the success of its flour-milling industry, gaining the name,"Flour Milling Capital of the World". Today its economy centers on commerce, finance, transportation services, health care, and manufacturing. The metropolitan area around Minneapolis is the second largest economic center in the Midwest.

The city straddles the Mississippi River and is home to thirteen lakes, three creeks, and several wetlands and waterfalls. The Minneapolis Park and Recreation Board (MPRB) governs, maintains and develops a 6,790-acre system of 160 neighborhood parks, regional parks, playgrounds, golf courses, gardens, biking and walking paths, nature sanctuaries, lakes and a 55-mile parkway system within the boundaries of the city. The Trust for Public Land named the Minneapolis park system the number one park system in America in 2013, 2014, 2015, and 2016. Its Grand Rounds Scenic Byway winds through the city and combines over fifty miles of park areas, lakes and rivers. The byway includes the popular five-lake "Chain of Lakes" and a number of other publically-accessible lakes, the land around which was acquired by the City and turned into parkland early in its urban development.

## Greening Trajectory

The City's park system was initially created in the 1880s, with much of its current infrastructure largely built in the 1960s and 1970s. In the 1980s, as the industrial Mississippi River waterfront was redeveloped into a residential, commercial and entertainment area, the Park Board prioritised acquiring and developing parks, open space and related amenities along its shores.[3] However, funds for other parks around the city became limited by that time, a limitation



*Spoonbridge and Cherry—* Mark B. Schlemmer | CC BY 2.0

that coincided with the end of the recreation building boom of the 1970s. The 1980s and 1990s were also characterized by the proliferation of invasive species and their negative effects on trees and other local flora, with efforts to manage invasive species taking off in the 1990s.

In the 1990s, the MPRB created several new parks, open natural spaces and trails, including Cedar Lake Trail (1995), Sculpture Garden (1990s), Minnehaha Park (1995), Loring Park[4] (1998), and the Lake Calhoun wetlands. At that time, Minneapolis was also one of the early cities which combined bicycling network development with greenspace creation. For instance, in 1992, a coalition was formed to

Minnehaha Park extension and renovation
**1995**

Completion of regional park and interpretive centre Kroening
Creation of the Midtown Greenway
**2000**

**2002**

**1998**
Loring Park renovated

**1999**
Southwest Lake Calhoun
Wetland Ponds completed
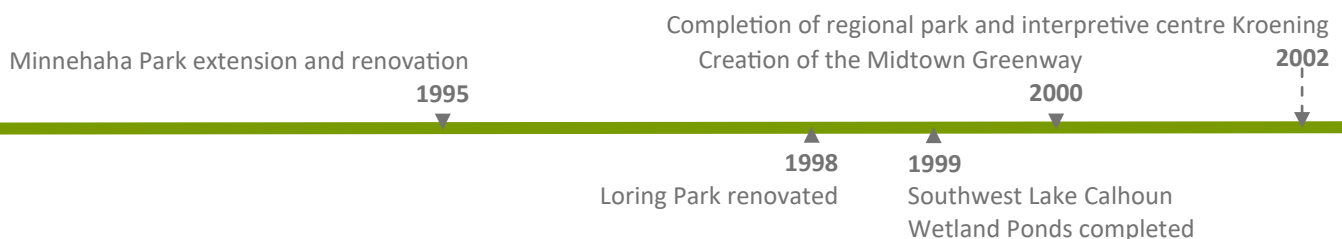
promote a bike trail project on an old industrial rail corridor along 29th street. Eight years later, in 2000, the Midtown Greenway opened up – funded by the state, built by the metropolitan regional government, and managed and maintained by the City. Running through the heart of the city, it is a popular 5.5 mile commuting and recreational trail that connects to the Mississippi River. Between 2003 and 2011, bike traffic on the Midtown Greenway has increased 261%.[5] As a result of its effort to develop a large and well-connected bicycling network, Minneapolis has been named the top bicycling city in the United States, and it is the only US city on the Copenhagenize Design Co worldwide list of bicycle friendly cities. Since the early 2000s, the city has also outlined nine TOD/Transit Improvement Areas selected as part of the 2010-2014 Business plan for the Community Planning and Economic Development Department to develop new transit-oriented mixed residential and commercial communities next to existing and planned LRT (Light Rail Transit) lines.

**Dimensions of greening in Minneapolis**

Policy Integration
Green Talk
Procedural Participation
Health Focus
Physical Implementation

—— Minneapolis ⸻ Midwest and Northeast US ⋯⋯ All

| Equal Access Standard | ✓ |
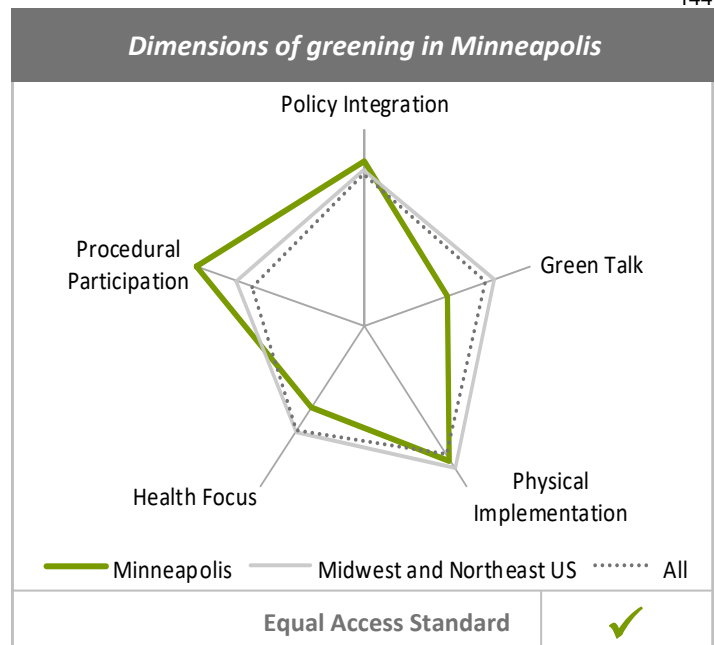
The 2000s brought in several more green spaces, new parks, and trails and other development on the upper riverfront, many of them envisioned in the 2000 Above the Falls Master plan. Much of the plan sought to connect Minneapolis neighborhoods to the waterfront, giving residents access to the river. Those new parks included the Kroening Interpretive Center[6] (2002, started in 1985), Mill Ruins Park (2000), Edward C. Solomon Park (2004), and Longfellow Gardens[7] (2000). In 2007 a partnership between the McGuire Family Foundation and the City led to the creation of Gold Medal Park (2007) on a former industrial site along the Mississippi River. That same year, the MPRB released its 2007 Comprehensive Plan,[8] as the strategy directing parks until 2020. The plan's vision focused on: Managing/protecting urban forests and natural areas, creating healthy lifestyles and communities, shaping the city via park and trail development, filling in service gaps where parks are not within walking distance, and serving new growth areas lacking in park amenities. As a guiding principle, the MPRB considers needed recreation activities (determined by demographics, stated community needs, or specific target audiences) and the presence of other service providers or existing infrastructure before planning new infrastructure. The plan poses as a challenge the fact that Minneapolis is built out and not many parcels are available for new parkland, while old industrial areas typically get converted into residential areas.

As an update to its 2007 comprehensive plan, a year later the municipality released the 2008 Minneapolis Plan for Sustainable Growth. The plan included policies to "protect and improve individual, community, and environmental health", remediate contaminated sites, build out the urban tree canopy, and develop, protect, and beautify open spaces and parks, with an additional emphasis on downtown open spaces. That same year, the Downtown Minneapolis Park Space Initiative developed an assessment of the 58 open spaces in the city core and the demographic, economic, land use and transit conditions of the downtown in order to support an argument for the development of a signature downtown park. That park, named Downtown East Commons, was inaugurated in 2016.

Downtown Minneapolis Park Space Initiative published
**2008**

**2007**
Minneapolis Park and Recreation Board comprehensive plan published

Most recently, residents and policymakers in the city have agreed that neighborhood parks are in crisis and have been critically underfunded, with over $110 million in deferred maintenance costs. After a Trust For Public Land survey demonstrated residents would support a 20-year payment plan to repair parks, the MPRB received funds from the city. As part of the 20-Year Neighborhood Park Plan (NPP20)[9] of 2016, the MPRB has developed racial/economic equity criteria for neighborhood park development and rehabilitation, in order to address historic underinvestment and ensure parks in minority and low-income neighborhoods are prioritised. The Board also has ranked its neighbourhood parks in order of highest to lowest priority based on these equity criteria and regularly publishes fact sheets on investments (renovations, land acquisitions, assets) by park service area.

*Author: Tatjana Trebic*

**Notes**

1) According to http://www.census.gov/quickfacts/table/PST045215/2743000

2) Total 2015 estimated population minus 2010 "White alone" residents (from http://www.minneapolismn.gov/census/2010/index.htm)

3) For more information, see: https://www.minneapolisparks.org/about_us/history/

4) For more information, see: https://www.minneapolisparks.org/parks__destinations/parks__lakes/loring_park/#group_3_14681

5) For more information, see: http://www.ci.minneapolis.mn.us/www/groups/public/@publicworks/documents/images/wcms1p-085486.pdf

6) For more information, see: https://www.minneapolisparks.org/parks__destinations/parks__lakes/carl_w_kroening_interpretive_center/#group_2_7571

7) For more information, see: https://www.minneapolisparks.org/parks__destinations/gardens__bird_sanctuaries/longfellow_gardens/#group_3_156929

8) Find the comprehensive plan here: https://www.minneapolisparks.org/_asset/9h52lq/comprehensive_plan.pdf

9) See https://www.minneapolisparks.org/about_us/budget__financial/20-year_neighborhood_park_plan/#group_1_1012946

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# Mississauga

### Background/Context

Mississauga is a city of 713,443 people that formed as a suburb of Toronto on land previously occupied by the Mississaugas. It is now the third-most populous city on the Great Lakes. The City was incorporated in 1974, and saw a significant population expansion in the 1980s and 1990s, with the entrance of a large immigrant population. During this time, key city infrastructure was constructed and the city became a net importer of jobs. Mississauga had the same, popular mayor from 1978 to 2014 who famously kept the city debt-free for over thirty years, until 2012. The city's minority population makes up 53.7% of its residents, with the largest group of people identifying as South Asian. Mississauga is home to dozens of Fortune 500 company Canadian headquarters and the Toronto Pearson International Airport, the busiest in Canada.

Embedded in a natural system of valleys, tablelands and wetlands, Mississauga has been built around parks, schools and green spaces. The city has 2,747 hectares in its natural areas system, or 9.4% of its total land area, including over 130 woodland areas.

### Greening Trajectory

The City's recent approach to parks and green space has been to connect, create, restore, and enhance natural and community spaces in order to promote healthy living, social interaction and contact, and to infuse culture into public space, all the while building the city's profile.

Struggling in the late 1980s and early 1990s to revitalize its city centre, City leadership began to articulate the need for pedestrian-oriented streets and "great people places" in the downtown. A 1994 City Centre Vision was formed, followed by the 2005-06 Project for Public Spaces, which in turn led to the creation



*Erindale Park—* [Public Domain](#)

of a new city department[1] and a 2007 vision plan for downtown public spaces. Through a place-making approach, two city squares and a new park were planned for the downtown area. Between 1990 and 2010 the downtown received several green amenities, including Kariya Park[2] in 1992, the Zonta Accessible Playground in 2001,[3] and Community Common Park in 2010.[4] The 2010 Downtown21 Master Plan is the most recent comprehensive plan for the city centre; it updated urban design guidelines and announced several new parks, green streets, and green connections. After this plan, the Scholars' Green downtown park at Sheridan College was constructed as an "outdoor living room"[5] serving as both the centre of a new campus and as a community park, with construction costs split between the college and the City. As a result of these efforts the City feels that it has achieved "an admirable, innovatively designed grouping of parks in the City Centre area….which form an emerald necklace in the downtown."

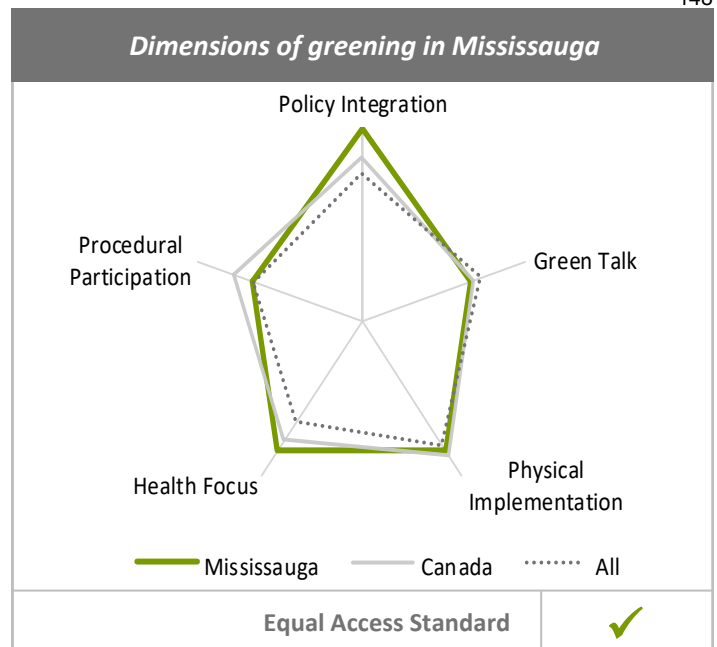Construction of Kariya Park
**1992**

First annual Natural Areas Survey conducted
**1995**

**1994**
City Centre Vision adopted

Parks and green space planning occurred in areas outside the downtown as well. In 1995, the City commissioned a Natural Areas Survey that found the city's 144 best remaining natural features.[6] Annual survey updates have allowed the City to keep track of its conservation efforts. By the early-to-mid 2000s, City strategy[7] was aiming for fuller integration of green space provision and environmental sustainability, looking to develop a "safe, functional and people-oriented" city with connected parks, open spaces, pedestrian/bicycle networks[8] and transportation facilities, where walkability and livability were key attributes. By 2009, ideas of affordability, "complete neighbourhoods", "living green", and "transit-oriented development" entered the conversation in strategic plans, as did the large-scale engagement of residents[9] in the visioning process.

**Dimensions of greening in Mississauga**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

Mississauga — Canada — All

**Equal Access Standard** ✓

With the 2009 "Sustainable Living: A Growth Management Strategy for Mississauga", the City began a turning point in its development approach by acknowledging that the past 25 years of Mississauga's growth had been as a greenfield community and the future would require a focus on intensification and redevelopment. This reasoning carried over to the Master Plan for Parks and Natural Areas of the same year, in which the City addressed its evolving ideas of parks and of sustainability, suggesting that a combination of increased demand for public space provision and a limited capacity to create traditional parks within a built-out urban fabric would necessitate the creation of infill community spaces –green and non-green places such as plazas, urban squares, linear green spaces and streetscapes. Similarly the dedication or rededication of redevelopment parcels and underutilized community facilities toward active community *places* would need to occur. Infill greening would thus help create a network of "enjoyable and attractive places that build the City's profile, enhance neighborhoods, encourage active lifestyles, and stimulate community interaction."[10] For new developments, the 2009 Green Development Strategy called for a combination of development greening incentives and mandatory requirements for green space provision and green buildings.

In terms of green space access, in 2009 the City classified open space[11] and created parkland access standards for new developments. These standards[12] are projected to be met until 2031 in all but one of the city's six service areas. For the service area with the lowest proportion of parkland – the city centre and downtown growth area - the 2009 Master Plan for Parks and Natural Areas suggested 50 hectares of new parks to accommodate population growth[13]. Most recently the City's 2014 Downtown Growth Area Park Provision Strategy significantly expanded green space requirements and set ambitious new park acquisition targets to dramatically improve both the amount of green space and the degree of public ownership and public access to green amenities in the urban core.[14]

Connections between green spaces and between the city and its waterfront have been the talk of recent years. Following the 2007 demolition and clean-up of a lakefront coal plant, the

| 2006 New "Building a City for the 21st Century" department and vision for downtown public spaces | 2009 Sustainable Living and Master Plan for Parks and Natural Areas with park provision standards | 2010 Community Common Park created | 2011 Scholars' Green park built | 2013 Credit River Parks Strategy and stakeholder engagement | 2014 Downtown Growth Area Park Provision Strategy published |

2008 Waterfront Parks Strategy proposed connecting waterfront parks to one another, to the rest of the city and to the surrounding natural system. The creation, redesign, and enhancement of five lakefront parks was suggested to repurpose paved and underutilized surfaces into green public spaces and demonstration grounds for green technologies. The "Lakeview Waterfront Connection" partnership formed between the Region of Peel, Credit Valley Conservation, Toronto and Region Conservation and the City of Mississauga in 2012 and has more recently resulted in a plan to transform the area into a sustainable community, with participation from all three levels of government.[15] Further connecting the city to waterfronts, the historical Streetsville Neighborhood received a new public square that reduced parking and traffic while bringing in more greenery, seating, a pedestrian-only space, and providing a link to surrounding green spaces and the Credit River.[16]

Most recently the City has begun to use the language of "green infrastructure", "ecosystem services" and even cultural services in reference to its urban forest and natural heritage system assets. With the 2013 Credit River Parks Strategy, over 35,000 stakeholders helped devise a plan for the "conservation, management and growth of 37 natural areas and parks" along the river, connecting and enhancing key green infrastructure in the area.

*Author: Tatjana Trebic*

**Notes**

1) The "Building a City for the 21st Century" department sought to connect civic institutions and create a downtown of lively gathering places.

2) Kariya Park is a downtown Japanese garden park built in honour of sister-city Kariya, Japan.

3) The playground, built in Zonta Meadows Park, was constructed as a place where children with physical disabilities could play alongside other kids. (See: http://www.mississauga.com/community-story/3849496-kids-with-special-needs-enjoy-day-at-customized-park/)

4) A signature downtown park and gathering space hosting both passive and programmed activities for residents as well as providing an attraction for visitors. See City, designer, and community responses to the park:
http://www.mississauga.ca/portal/residents/parksusefullinks?paf_gear_id=10200022&itemId=105401327n&returnUrl=/portal/residents/parksusefullinks;
http://jrstudio.ca/content/community-common;
http://urbantoronto.ca/forum/threads/mississauga-community-common-park.8545/

5) The Square includes teaching amphitheatres, outdoor café areas with electrical outlets, art installation hooks, wi-fi, and a blending of sustainability and art. See: http://www.azuremagazine.com/article/gh3s-maze-of-a-park-opens-in-mississauga/

6) The original count consisted of natural areas (valley lands, tablelands, wetlands) and green spaces as well as woodlands. The number of sites and total hectares of natural area have fluctuated since 1996 (fluctuations include merging, addition or removal of sites). (See: http://www5.mississauga.ca/research_catalogue/J_1_NAS_2011_Update.pdf)

7) The 2001 Strategic Plan for the New Millennium also included, as one of its ten main goals, responsibility to the environment as a community.  See: http://www7.mississauga.ca/ofm/OurFutureMississauga_StategicPlan.pdf

8) Mississauga has continued to set ambitious goals for bicycle infrastructure; the 2010 Cycling Plan called for a 243% increase in kilometers of primary cycling routes.

9) The City's 2009 Strategic Plan for the next 40 years was the result of a visioning process, "Our Future Mississauga" involving over 100,000 people.

10) City of Mississauga, 2009. "Master Plan for Parks and Natural Areas." Retrieved from: http://www5.mississauga.ca/rec&parks/websites/future_directions/master_plan_pna.pdf

11) Categorized into destination parks, community parks, greenbelts, cemeteries, and private open space. (See: 2009 Master Plan for Parks and Natural Areas)

12) The standards were set at 1.2 ha per 1000 residents and a maximum 800 meter distance to parkland from each home.

13) The City has a parkland dedication/cash-in-lieu policy where fore residential developments, the greater of 5% of the land area or 1 hectare for every 300 dwelling units is dedicated to parkland, and for office, commercial, or industrial land 2% of the developable land area is dedicated. The rules on when parkland provision is chosen versus cash-in-lieu are not set. (See: 2009 Master Plan for Parks and Natural Areas)

14) The City looks to acquire 51.5 hectares (and a minimum of 13.7 hectares) of space for new urban parks, squares, and pocket parks by 2041 such that the downtown Growth Area achieves 5.5% to 12.3% parkland coverage. Distance-to-park provision goals now require that every resident be a maximum of 400 metres (a 5 minute walk) from a park.

15) The master plan for the new community was funded by the federal Green Municipal Fund.

16) The project was funded in part by the federal Community Infrastructure Improvement Fund (CIIF). CIIF funds were given to projects that "enhance local facilities, improve energy efficiency and accessibility, and contribute to the health and quality of life in communities across Ontario." See: http://www.mississauga.ca/portal/cityhall/fundingprograms

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# Montréal

## Background/Context

Montréal, population 1,649,519 (2011), is the largest city in Quebec and the second largest in Canada.[1] Historically the commercial capital of Canada, it is located on an island at the confluence of the Saint Lawrence and Ottawa Rivers and is named after the hill located in the heart of the city. Montréal lost its economic leadership to Toronto in the late twentieth century – due to historical trends in the Canadian economy and factors related to Quebec politics – but is now an important centre of commerce, aerospace, pharmaceuticals, technology, design, education, culture, tourism, gaming and film within Canada.

There are currently 19 large parks in Montréal, with a combined area of 2,747 hectares that equates to approximately 5.5% of the city's land area.[2] An equivalent amount of 1,600 hectares of unprotected woodlands existed on the island in the 1990s but these shrunk in the face of expanding development, although local residents organised and were able to obtain protected status for some of these areas.[3] In recent years the city has placed a certain emphasis on building green infrastructure and green spaces to counter the heat island effect, within the context of the city's sustainable development plans.

## Greening Trajectory

The 1980s and 1990s marked the start of formally integrating Montréal's greenspace planning and policy into broader planning frameworks in a comprehensive fashion. During this period, a network of regional parks was constituted (*parcs-nature*) and in 1983 l'Île-de-la-Visitation was established as Montréal's first regional park. In 1996, an ecosystem management programme within large parks was implemented, whereas the policy to protect and enhance natural areas and integrate ecoterritories into the city's master plan was adopted in 2004. The latter policy set a target of protecting 6% of Montréal's territory, where reconciling conflicts between development and conservation represents a major issue.



*Parc La Fontaine –* GDFL|CC-BY-SA-2.5,2.0,1.0|CC-BY-SA-3.0-migrated

In the context of Montréal's First Strategic Plan for Sustainable Development (2005), the city initiated the *Quartiers 21* programme, based on the UN Agenda 21, to implement sustainable development plans at the local level. A diverse set of projects were carried out, including awareness raising, green space creation and sustainable transport activities. Two more sustainable development plans have since been elaborated, with Sustainable Montréal 2016-2020 being the city's third plan, developed through consulting over 230 partner organisations alongside municipal service and administration

Creation of Écocentre Sant Michel
**2000**

**1996**
Large park ecosystem management implemented

representatives. In this most recent plan, the city states the three main sustainable development challenges it seeks to meet: reducing greenhouse gas emissions (80% by 2050); improving access to services and infrastructure; and adopting exemplary sustainable development practices. Within this framework, the four main priority intervention areas are to reduce greenhouse gas emissions and fossil fuel dependence; to green the city and increase biodiversity; to ensure access to human scale, healthy sustainable neighbourhoods; and to transition to a green economy.[4] The 2011-2015 plan articulated similar goals, with the most relevant physical greening actions being to make the most of green infrastructure and their ecological services in Montréal's urban realm.



Dimensions of greening in Montréal
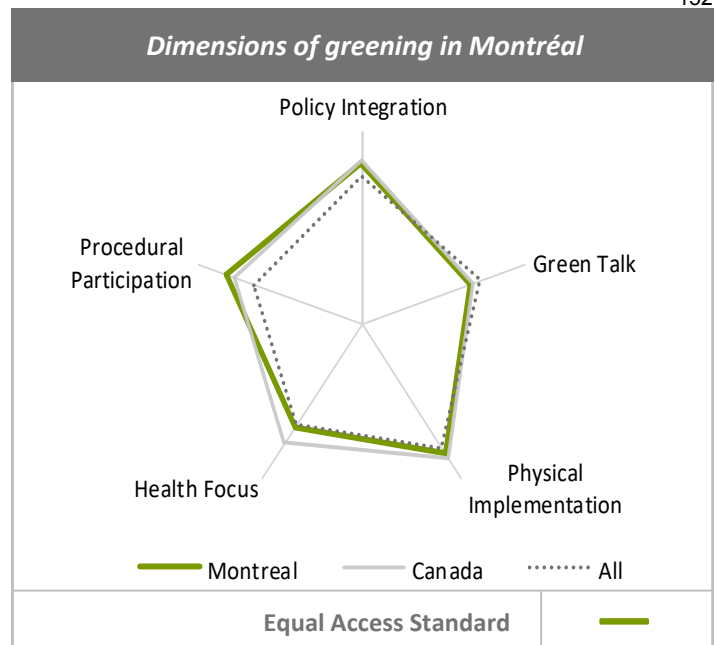
Towards meeting these objectives and priority intervention areas the city created a biodiversity strategy in 2013, with support from the ICLEI-IUCN Local Action for Biodiversity programme, and has begun building green urban walkways to traverse densely populated urban areas. The first of these green urban walkways to be completed is the Promenade Fleuve Montagne, a $42 million investment by City of Montréal to re-plan a 3.8km urban walkway from the river to the mountain. There have furthermore been significant efforts in tree planting, with a Tree Policy adopted in 2005 and targets in the city's sustainable development plan to plant 300,000 trees by 2025. Montréal has adopted a strategy to use money from infrastructure programmes to plant trees in order to better manage water surface runoff. Furthermore, many local administrations within the city of Montréal have also created their own sustainable development plans to outline specific interventions at the borough level. The latter is especially worth noting because boroughs have the jurisdiction to adopt specific greening regulations.

The Éco-quartier programme, founded by the city of Montréal in 1995 and since 2002 managed and financed at the borough level, is based on local environmental education and action. Focus is placed on recycling, beautifying and nature in the city, the latter including biodiversity, greening vacant lots and urban agriculture, among others. Most Montréal boroughs have at least one Éco-quartier service point that coordinates activities in each of the city's 18 boroughs, with a network of 20 service points across the island. Alleyway greening – known as *ruelles vertes* – is one of the most widespread and best cared for physical greening projects promoted by the Éco-quartier network since 2012. Éco-quartiers were involved in 339 alley greening projects totalling over 60km in 2016, where 11 of the 18 Montréal boroughs have at least one green alley developed by mobilised citizens and Éco-quartiers.

Montréal has a strong urban gardening programme that has been underway since 1974, with 97 sites across the city, although many new urban gardening initiatives in recent years have been taken by groups of citizens outside the municipally-run structure. Since municipal reorganisation in 2002, the community gardens programme is managed at the borough level. Otherwise, within the Montréal Development Plan (2013) there are several significant strategic interventions in the city that include green space development. Perhaps one of the most important interventions underway is the redevelopment of the

First Strategic Plan for Sustainable Development adopted
**2005**

Second Sustainable Development Plan launched
**2010**

**2009**
Les Champs des Possibles community park created

**2013**
Biodiversity Report released

Bonaventure Expressway, converting this major artery into an urban boulevard.[5] Albeit still quite car-oriented, the boulevard will include greenspace, cycling paths and major public art pieces. Additionally, counteracting the urban heat island effect is an important part of the Montréal's environmental agenda, and green infrastructure is cited as a key way to do this – as well as to improve biodiversity and address climate change.[6] Mitigating heat island effects is also supported and promoted by the Quebec government.

One of Montréal's first large-scale greening projects in the 1990s that has had a significant impact on the city has been the decontamination of the 13-kilometre long Lachine Canal. Built in the 19th century, decontamination took place over close to a decade with over $100 million in public investment, whereby the paths along the canal were rehabilitated into cycling and walking paths plus green amenity spaces. A few other significant and more recent greenspace developments deserve more detailed descriptions due to their size and impact in the city. Originally a limestone quarry, the Écocentre Saint Michel was bought by the city of Montréal in the late 1980s and subsequently used as a landfill until 2000. After significant local protests the city decided to turn it into an environmental and cultural centre, and by 2020 the site will include the largest urban park in Montréal (192 hectares). Other large-scale urban development projects are making explicit efforts to integrate physical green space and/or parks, such as for example in the 40 hectare redevelopment site currently underway named Le Triangle which will include three parks alongside both private and social housing development.[7] At the same time community groups in Le Triangle are questioning housing affordability and note that green spaces do not meet residents' needs.[8] Finally, in recent years many large scale public buildings have installed green roofs (e.g. Palais des Congrès) or large scale rooftop agriculture projects (Lufa Farms). There are, however, still several obstacles in municipal planning codes to turn non-green roofs into green roofs, particularly related to building structure and security norms.

Finally, the city has purchased land to convert it into park space (e.g. *Jardin des Possibles*) and in March 2017 decided to expropriate a land owner in order to turn idle (waste) land into park space, to be named *Parc des Gorilles*. Actions like the latter may occur in cases where there is a strong request from citizens under the city's Urban, Economic and Social Development Plan. However, there are also documented situations where the city has forced the dismantling of citizen-created green spaces (e.g. *Parc Oxygène*).

*Author: Melissa García-Lamarca*

**Notes**

1) Montréal's total visible minority population was 31.7% in the 2011 census.

2) See Montréal Biodiversity Report, page 36.

3) For example, Angell Woods. See Oljemark, 2002.

4) For more information on Sustainable Montréal, see: http://ville.Montréal.qc.ca/portal/page?_pageid=7017,70777573&_dad=portal&_schema=PORTAL

5) For more information, see: http://projetbonaventure.ca/

6) The Montréal Community Sustainable Development Plan outlines its objectives to improve green infrastructure in the city. For more information, see: http://ville.Montréal.qc.ca/portal/page?_pageid=7137,79233654&_dad=portal&_schema=PORTAL

7) See plans at: http://ville.montreal.qc.ca/portal/page?_pageid=9517,123331576&_dad=portal&_schema=PORTAL

8) See page 32 of the report *Left out of the Triangle* written by the Namur—Jean-Talon Committee of the CDC Côte-des-Neiges Social Housing Table at: http://genese.qc.ca/wp-content/uploads/2017/10/Left-out-of-the-Triangle.pdf

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# Munich

## Background/Context

Munich, the capital of Bavaria, is Germany's third largest and most densely populated city with a population of 1,545,000 inhabitants (2017).[1] It is among the country's wealthiest cities and is currently ranked the most expensive place to live (with also an estimated 17% of residents living in poor households)[2]. Historically an industrial centre for the electrical, automobile, high-tech sectors, today Munich hosts a number of international financial institutions, biotechnology companies, universities, museums, fairs and congresses, all of which attract a considerable amount of visitors and tourists every year.

Since 1975, Munich has engaged in a robust greening agenda articulated around a healthy city, liveability, and sustainability objectives. This agenda has been embodied in the renewal, restoration, and conversion of major areas of the city. Even though 16% of Munich's land was already considered green space in 2001- Munich hosts one of the world's largest urban parks, the historic 370ha Englischer Garten - this share has increased over the past two decades thanks to the construction of greenways and parks and the conversion of unused and industrial infrastructure into green spaces

## Greening Trajectory

In 1975, Munich experienced a development shift from post-war trends of inner city redevelopment (involving mass construction, the destruction of open spaces, and the relocation of residents into peripheral neighbourhoods) to an agenda prioritising urban life and emphasising the importance of green and open spaces for the quality of life in urban areas. This shift coincided with the privatisation of the railway and postal service, the closure of most military barracks, and the conversion of land formally used by private and public institutions. This transition brought urban planners to prioritise the inner development of the city, more specifically the reconversion of prior industrial sites, infrastructures, and barracks.

*Riemer Park/Eigenes Werk—*

Guided by both Munich's first city centre concept 'City Studie', developed in 1989, and by the 1998 urban development plan 'Perspektive München'[3] (Perspective Munich), Munich's development in the 1990s and 2000s focused on three principles which remain at the core of all current urban projects: compact, urban, and green. Perspektive München is built around the broader objectives of long-term and cooperative governance, an open and attractive appearance of the city, solidary and committed urban society, citizenship, and quality and distinguished urban spaces in the context of managed urban

Perspektive München Plan published
**1998**

Panzerwiese park built
**2002**

**1997**
Theresienhöhe reconstruction

**2000**
Parkstadt Schwabing plans formalised; Quartiersplatz Parks built
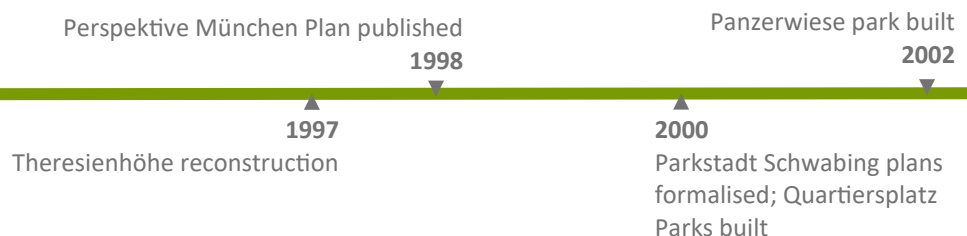
growth. One of the central tenets of the plan is the emphasis of health "all around" and the improvement of residents' quality of life. This is ensured through enhancing access to open spaces, parks, recreation and sports facilities, and creating or restoring green spaces. Perspektive München also mentions the value of protecting natural resources, providing vegetable gardens, and building a green belt around the city.

Since the 1990s, urban greening interventions have been characterized by two main trends. Firstly, interventions that focus on restoring post-industrial infrastructure or land previously used by public institutions (e.g. airports, postal offices, train stations and rails, exhibition centres, or military land), and secondly, those that aim to regenerate and strengthen entire districts as whole socio-territorial units. The first trend is illustrated by the restoration of the old factory and industrial area of Schwabing initiated in 1989 (formalised in 2000). Today, Parkstadt Schwabing (Parkcity Schwabing) includes 1,200 new housing units and 6 ha of open and green space. Marketed as a new technology and design square with the inauguration of Microsoft offices in 2017, this district is geared to attract the creative class. In another district, starting in 1997, the City restructured the old fair and exhibition centre of Theresienhöhe. This included the widening and greening of adjacent avenues such as Green Esplanade at the Ganghoferstrasse (2003), the construction of parks on the top of old railway infrastructure at Quartiersplatz (2000), and the restoration of the old Verkehrsmuseum and creation of a nearby park (2006). Another project using existing infrastructure is the restoration of the old Munich rail warehouse and surrounding area from 2005-2013. The project involved the creation of Freiham, the ecology and sustainability sensitive neighbourhood. In the second trend, Munich has worked to improve residents' security, liveability, and housing conditions, and has sought to improve and enhance access to green spaces of older degraded areas through a number of projects around Munich. Since 2005, the railway areas around the central station have benefited from restoration work, which includes the construction of sport facilities, bike lanes within the Ackermannbogen neighborhood, and the Arnulf and Hurschgarden-Pianerparks (both established in 2005). Since 2001, the city has also invested in the Giesing district by constructing new housing that incorporates open spaces and two new parks, including the Agfa Park in the former Agfa industrial site (an imaging products and systems corporation factory). Another example of the regeneration process is the 2009 restoration of the 1972 Olympic Park and surrounding area *Olympiapark*. The projects currently remain unfinished and in significant financial debt.[4]

Over the last 25 years, the City of Munich has created a wealth of large parks. These include Panzerwiese (2002), a 200 ha site on former military land that forms part of the Munich greenbelt with protected Habitats Directive status, Fröttmanninge Heide (2005), another former military site spanning 347 ha, and Riemer Park, a 210 ha park on the site of the former airport (2005) incorporating a 10 ha artificial lake and various hills designated for winter sports use. The former two parks have received the status of nature reserves. However, Munich's parks are not the only green spaces in the city. To improve air quality, urban



Dimensions of greening in Munich

| Equal Access Standard | ✓ |

Legend: Munich — Europe — All

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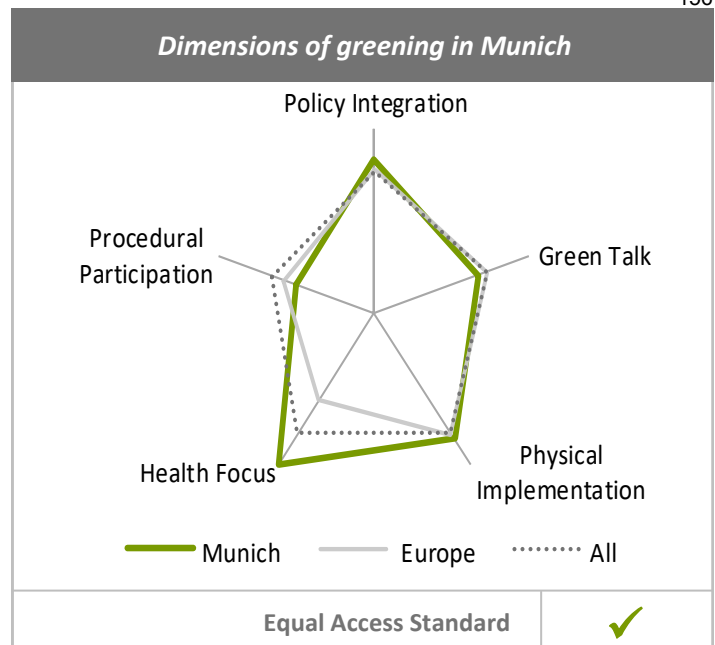
Arnulf, Hurschgarden-Pianerparks, Riemer and Fröttmanninge Heide Parks built

**2005**

**2003**
Ganghoferstrasse esplanade created

**2006**
Vekehrsmuseum and park restored

**2009**
Olympiapark restored

**2011**
Isar river restoration completion

growth control, and the restoration and protection of natural and productive lands, Munich boasts a 33.5km$^2$ greenbelt, the *Münchner Grüngürtel*, which also hosts 100 farms[5]. Part of the project has developed into the restoration of the Isar river, a €35 million project between 2000-2011. Established to improve flood control, plant, fish and animal habitats, and to increase opportunities for recreation, the project included restoration of river banks and flood defences, the creation of public beaches, the planting of trees, and the improvement of access areas.

While much of the greening work in Munich is undertaken with State funding from the Bavarian government, green space development is often developed through partnerships between the City of Munich, regional offices for environmental management, private companies such as MGS (Münchner Gesellschaft für Stafterneurung), and several civil society organisations. One of the most active of these is Greencity, an association promoting community projects across Munich which at times conducts projects commissioned by the City. One of its projects, 'Grünspitz Giesing,' is a centre for cultural and ecological activities built on a former garage area. Greencity has also several urban gardening projects including allotments, green paths, facades and rooftop gardens.

*Author: Carmen Pérez del Pulgar*

**Notes**

1) In 2016, an estimated 28% of Munich's population was foreign, with most residents coming from Turkey, Albania, Croatia, and Serbia, making Munich Germany's third most diverse city.

2) Green infrastructure data can be found at: http://www.greenstructureplanning.eu/COSTC11/sb-mun.htm

3) For more information, see: https://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Stadtplanung-und-Bauordnung/Stadtentwicklung/Perspektive-Muenchen/Konzept.html

4) See Viehoff and Kretschmer (2014)

5) For more information, see: https://www.muenchen.de/rathaus/dam/jcr:a59f4e44-17f1-46a4-b38d-21a50459ae46/Gruenguertel_Direktvermarkter_20160727.pdf

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# Nantes

## Background/Context

Nantes, a city of 298, 029 inhabitants[1], is located in Western France on the Loire River. With the closure of its shipyards in 1987, Nantes reoriented its development strategy in the 1990s by converting former industrial lands into cultural centres and creating new cultural projects. During this period the City began promoting high-tech industries, research, and its creative and business districts, and began to build its strategy for sustainable development, social cohesion, solidarity and liveability.

This strategy culminated with the 2013 European Green Capital award. In the selection process, the European Commission noted the city's efforts to reduce air pollution and cut $CO_2$ emissions by 30% between 2003 and 2020, its high-quality public transport system, and its efforts to preserve biodiversity. From 1984-2015, green space in Nantes doubled to over 1,000ha. In Nantes, all inhabitants live within 300m of a green area, with the city offering 57m2 of green space per capita and a total of 100 municipal parks. Today, 60% of the metropolitan land area[2] is demarcated as agricultural, natural or urban green space, which includes 4 Natura 2000 sites and 33 areas of floral, faunal or ecological interest.

## Greening Trajectory

Starting in 1994, Nantes initiated one of the largest urban brownfield site redevelopment projects in Europe, transforming the former industrial shipyard district in the centre of the city, the Île de Nantes, into a multi-purpose, culturally diversified and environmentally-centred neighbourhood. This project marked the beginning of Nantes' transformation from an industrial centre to a liveable, healthy, and socially-grounded eco-city.

After several years of planning and design, the "Île de Nantes" project broke ground in 2004. Overall, the intervention has created new high-tech and creative industry centres, social housing, universities, and green spaces, all following urban

*Atelier des machines– île de Nantes—* Jean-Pierre Dalbéra|CC-BY-2.0

ecology guidelines. In the initial stages, SAMOA, the corporation in charge of the project, converted the Loire piers and banks into green areas with bike lanes, spaces for walking, and picnic areas. Those areas included the Quai Francois Mitterrand (completed in 2004)[3], the Quai des Antilles (completed in 2008), and the Berges and de la Bollardière urban park (completed in 2014). The project also built 7km of longitudinal green spaces in 2015 along the Berges du Faubourg[4], hosting environmental education workshops, inter-generational social games, gardening activities, and nature trails. The Île de Nantes project includes two new large parks- the Parc des Chantiers redevelopment of the former shipyards (13.3 ha, completed in 2009) and the Jardin des Fonderies public garden (2.6 ha, completed in 2009).

Île de Nantes planning process begins
**1994**

The project also boasts the Prairie-au-Duc eco-district inaugurated in 2009. This project aims to enhance the environmental quality of the area whilst offering a high quality yet affordable[5] way of living. The Île de Nantes intervention is expected to be completed by 2030 with the overall goal of creating or restoring 150 ha of green public space.

Beyond this landmark project, the municipality of Nantes has articulated its sustainability and greening strategy around the creation of a healthy, welcoming, socially equitable, and protective eco-city. Much of this strategy is inscribed in the 2007 SCOT urban planning framework (Schéma de Cohérence Territoriale), which presents development objectives alongside aims to protect agricultural and nature spaces from urban sprawl.



**Dimensions of greening in Nantes**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

Nantes — Europe — All — Equal Access Standard

Some of it has materialized into the creation of "éco-quartiers" (eco-districts). The eco quartier is a global durable approach adopted by Nantes for any large urban project combining open/green space creation, affordable housing, and population density management.[6] It brings together five main aspects: 1) energy efficient construction, particularly of social housing; 2) transportation with the promotion of walking, cycling, and public transport; 3) waste reduction and recycling; 4) water quality improvement and collection of rainwater; and 5) improvement of green space for climate action. In 2012, Nantes adopted the Local Action Plan for Environmental Health as a further commitment to bring together urban redevelopment, environmental protection, and health.

Two notable eco-district projects, both initiated in the 2000s, include the regeneration of the *Malakoff-Pré Gauchet* working-class neighbourhood and the *Bottière-Chénaie* project. From 2004 to 2008, a total of 397 social housing dwellings were demolished in the *Malakoff-Pré Gauchet* (164 ha) area. Replacing them were two primary schools, recreational facilities, small green areas and amenities, and the improvement of connectivity with nearby neighbourhoods. The second phase (2008-2012) involved a new shopping area and other public facilities. The neighborhood is located next to the *Petite Amazonie* (Little Amazon), a remnant of the old meadow of *Mauves* sheltering diverse fauna and flora. Its 17 ha consist of dry prairie, a wet meadow, and a swamp area which became a Natura 2000 site in 2004. In the other eco-district, *Bottière-Chénaie*, the municipality aimed to address urban sprawl and provide affordable housing through a special ZAC *Zone d'Amenagement Concerté* (Concerted Development Area) status established in 2003. The project itself consists of 24 blocks of 2,400 diversified and accessible housing (30% social housing; 25% "affordable" housing; 40% market rate) as well as public facilities, green spaces and a linear park of 5 ha running alongside a small stream. 5,000 inhabitants are expected to be living in the neighbourhood by 2020 (to date 3,000 residents have moved into the new housing).

Other urban projects, although not under the eco-district label, have incorporated green space development and creation into their plans. For example, the *Bas-Chantenay* project has contributed to the creation of the Oblates Park (3 ha) in 2013 as part of the regeneration of the former industrial neighbourhood. The Oblates Park is the 100th urban park in Nantes. The *Grand Bellevue* project, centred
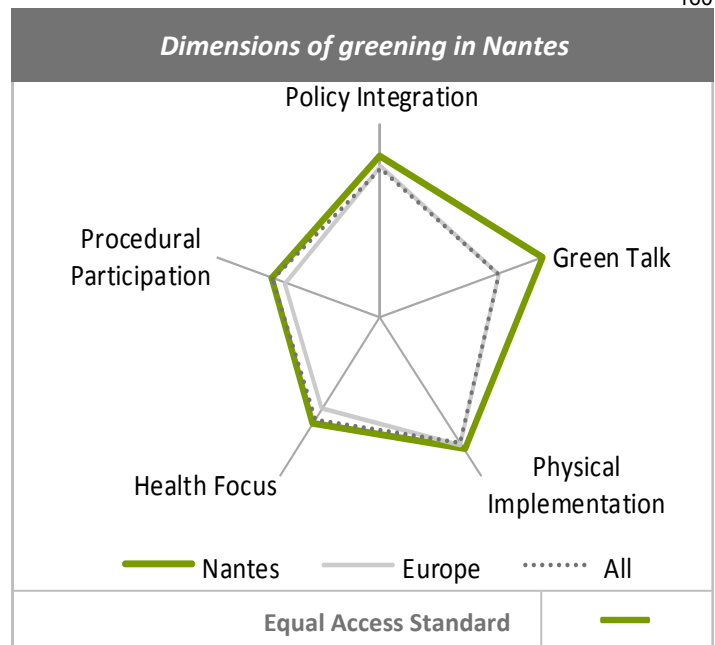
Work begins on Île de Nantes
Quai Francois Mitterrand completed
**2004**

Quai des Antilles completed
**2008**

Opening of Nantes'100th
park, Les Oblates
**2013**

**2005**
Vallon des Dervallières project initiated

**2009**
Parc des Chantiers and
Jardin des Fondires parks opened

**2014**
Berges and de la
Bollardière parks opened

on the territorial transformation and economic dynamisation of a 20,000 inhabitant working-class neighbourhood, boasts the connection of existing green spaces through community gardens, promenades and playgrounds. The first strip of community gardens (7,500 m$^2$) was opened in 2013. Additionally, the *Vallon des Dervallières* is an urban development project initiated in 2005 in the *Dervallières-Zola* neighbourhood in the Western part of the city. Built in the early 1960s, *Dervallières* is one of the oldest social housing estates in the city. While the neighbourhood benefits from a solid share of green space (the 8 ha *Dervallières Park* and the 23 ha *Procé* Park), the urban project has added the creation of small parks and gardens surrounding or within new small-scale housing developments (2005-2016).

For over 30 years, the municipality of Nantes has supported the development of collective and community gardens. The city currently hosts 40 sites of community gardens over 24 ha managed by 35 civic associations on a day-to-day basis with the support of the municipal Green Space and Environment Service (SEVE). In 2013, as part of the city's Green Capital agenda, several initiatives led by citizens developed new garden sharing projects in the city, among them the *Amicale Laique* in the gardens *de Couëron*. Some community gardens are small projects within larger urban programs in working class neighbourhoods, such as the *Jardins du Square Vertais* built in the early 2000s on the *Ile de Nantes*. Others are large gardens, such as the *Fourmilière*, with over 100 green areas spanning over 4 ha in the Zola neighborhood. The gardens have all signed the Nantes Charter for the practice of organic agriculture.

More recently, Nantes Métropole is elaborating the 2017 PLUm, the future Local Plan of Metropolitan Urban Planning for the 24 municipalities of the Nantes region. The PLUm will include several documents, including regulations describing urban planning rules applied to the whole territory by zones: urban areas, zones to be urbanized, agricultural zones, and natural and forest areas.

*Author: Francesc Baró*

**Notes**

1) City population as of 2014, according to the National Institute of Statistics and Economic Studies. In 2013, the proportion of foreign-born residents in Nantes was 8.5%, with the largest groups being from Algeria (13.9%), Morocco (11.4%) and Tunisia (5.8%), and another 24.9% from other African countries. Nantes' foreign population has remained relatively stable since 1990.

2) Nantes is geographically and politically integrated into a metropolitan area of 620,000 residents called *Nantes Métropole*.

3) This neighbourhood is the cornerstone to the Ile de Nantes project

4) This project involved community participation in the design of the new riverfront through meetings and workshops.

5) House prices are claimed to be 20-25% lower than the average house price in Nantes. Some researchers are pointing to the project's links to gentrification processes (see http://www.geographie.ens.fr/Quel-avenir-pour-Nantes-metropole.html?lang=fr)

6) For more information, see: http://www.nantesmetropole.fr/deliberations/co_20121214/annexeco_14_12_2012_27_annexe_delib_rapport_DD_23112012.pdf

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# Naples

## Background/Context

Naples is the third largest Italian city with a population of 974,074.[1] The city is the capital of the Metropolitan City of Naples, consisting of 92 municipalities. A major Mediterranean port with the largest historic city centre in Europe,[2] Naples lies in a volcanic region bordered by the Phlegraean Fields and Mount Vesuvius on the western coast of Italy.

34.2% of Naples is made up of green space.[3] Since the 2000s, city plans have increasingly recognised green space as part of the city's heritage. Widespread illegal construction in the fifties and sixties, known as the "sacco edilizio" literally meaning "building raid", saw over 470,000 dwellings built across the municipality without any regard for the morphology, urban services or facilities including green spaces.[4] Furthermore, industrial decline in the 1980s resulted in a sharp population decline and a rise in the prevalence of contaminated brownfields and degraded housing. Subsequent urban plans focused on the protection of the historic city centre[5], with revisions in the early 2000s including green areas.

## Greening Trajectory

In the 1990s and early 2000s , urban plans from the previous decade were implemented by the municipal administration led by Mayor Bassolino, who installed several new parks. Among them were *Parco Viviani*, *Parco Troisi*, *Parco Ventaglieri*, and *Parco del Poggio*.  In 2000, work began to convert the former military hospital garden into the *Parco dei Quartieri Spagnoli,* an area of 16,000m$^2$ with play areas, spaces for outdoor shows, gardens, and sports pitches. One of Naples' most popular parks, Parco Virgiliano a Posillipo, also underwent restoration work starting in 1997, and re-opened in 2002. The park stretches over 92,000 square meters, and is home to a range of flora, as well as playgrounds, a small amphitheatre, fountains, sports and athletics tracks, and the Posillipo Market. Also in the 1990s and 2000s, several private green spaces belonging to nearby villas or historic monuments were restored and made open to the public.



*Parco di Capodimonte* Ⓢ Zio Nico | Public Domain

The Urban Renewal program, a series of three projects, was developed by the city between 1994 and 2008, and contains a significant number of greening components. Urban renewal programs are defined in the Naples context as a tool to transform declining urban areas; their projects aim to provide a more balanced distribution of environmental spaces and services. Two of these projected projects have significant, if not defining, greening components. Firstly, the Soccavo – Traiano District project, first conceived in 1994, is characterized by a park with native tree species around which private residences,

Soccavo-Triano district project first conceived
**1994**

Real Bosco di Capodimonte reopened;
Work started on Parco dei Quartieri Spagnoli
**2000**

**1996**
First opening of Città della Scienza

**2002**
Parco Virgiliano a Posillipo re-opened after restoration

public facilities, commercial activities and other services will be developed. Secondly, the Ponticelli project that consisted of designating new green spaces near farmlands, was approved in 2008. The new green zones (approximately 20 hectares) are intended to generate continuity with existing nearby green open spaces, paying particular attention to vulnerable users.

Other greening strategies in Naples seek to improve environmental quality and educational opportunities related to green spaces. In the 2000s, some areas within municipal boundaries but outside the historic, protected centre, were designated as conservation zones. During this period, green spaces were safeguarded in order to protect the city's green heritage. As a result, two



Dimensions of greening in Naples

natural reserves formed an unofficial greenbelt in this area: the *Parco Metropolitano delle Colline di Napoli* (established in 2004) covers a 2.215-hectare zone, while the Astroni Crater is much larger, protecting wildlife over an expanse of 296 hectares. The Astroni Crater is popular with bird and wildlife observers, and is home to an environment education centre offering tours, courses and environmental information to the public. One key project is the *Giovani Esploratori del Bosco*, a program that opened in 2000 seeking to enhance children's relations with nature. Also in this greenbelt zone, the *Bosco di Capodimonte* forest stretches across over one hundred and twenty-five hectares. The park and former royal grounds underwent major restoration work between 1990 and 2000.

Naples has also employed a range of other projects outside of the historic centre that complement the city's urban greening plans. In the 20th century, the 5-lane road *via Caracciolo* was built along the coast which then separated the Villa Comunale park from the sea and the Lungomare boardwalk. After a period of temporary pedestrianisation, the *via Caracciolo* was permanently and fully pedestrianized in 2013. Although it remains mostly concrete and asphalt, the road now serves as an expansion of the Lungomare boardwalk, a blue recreational feature of the city.

Engagement with the private sector plays a role in the city's greening agenda. In the mid-2000s, construction began on the Bagnoli project, managed by BagnoliFutura S.pa and commissioned by the City . The project aimed to convert a former steel industry brownfield site, bordering a historically working-class neighbourhood, into a new waterfront park with beach, convention centre, offices, residences, and a science and environmental technology park, among other facilities. Most of the environmental remediation on the site had already occurred in the nineties and early 2000s. Some of the project's original targets were achieved, such as the opening of the science museum *Città della Scienza* in 1996, and others reached near completion; however, between 2013-2014 the project faced a series of environmental and economic problems, and was shut down.

Beyond private partnerships, the city has developed a recent orientation towards involving residents in green space management. In 2011, the City Council created the Award for Public Green Areas, in
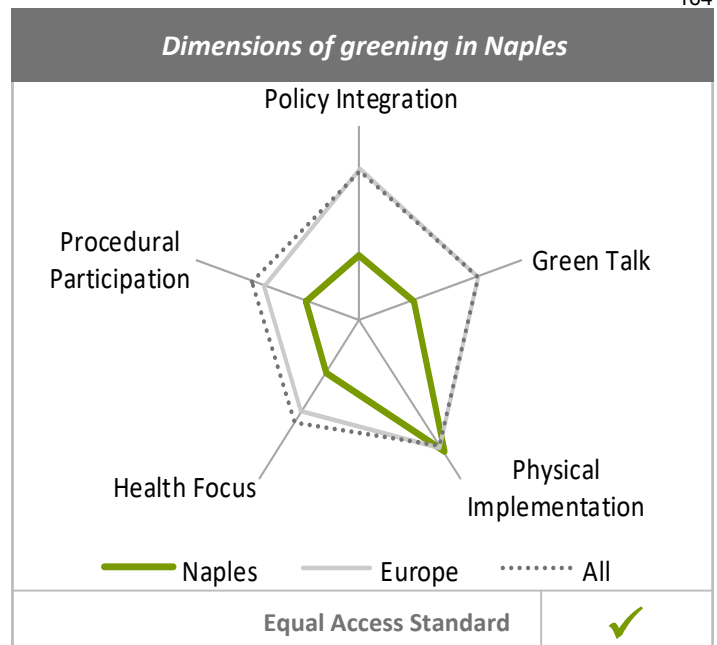
Parco Metropolitano delle Colline di Napoli established
**2004**

**2008**
Ponticelli Urban Renewal Program approved

*Award for Public Green Areas* created
New Port Plan established
**2011**

which both organizations and private citizens can adopt green spaces in the city. The award is promoted by the municipality as a means of direct participation and as an opportunity for third parties to engage in the maintenance of urban green spaces. Between 2011-2016, approximately 400 green spaces were adopted by citizens alone.[6] These public stewardship efforts have coincided with a period of reduced urban green space expansions on the part of the municipality.

Naples' apparent deceleration in implementing urban greening projects during the late 2000s may partly be explained by the city's waste management crisis, which reached its peak in the summer of 2008. Just as illegal dumping and importation of toxic waste brought the city's landfills to full capacity,[7] municipal workers stopped their routinely waste collections, leaving refuse to pile up in the city's streets and public spaces, and consequently introducing new health risks. Following the 2011 election of the current mayor Luigi de Magistris, the waste crisis was resolved to some extent; nonetheless, reports show an alarming rise in cancer rates.[8] More recently, city plans have focused on the city's heritage at the waterfront. In 2011, the New Port Plan was produced which aims to maintain a continuity between the historic fabric of the centre and the port area through a sustainable development narrative. The Historic Urban Landscape plan related to the project does specifically incorporate green spaces but highlights the conservation and ecological values attributed to its blue space.[9]

*Author: Galia Shokry*

**Notes**

1) Population as of December 31st, 2015, according to Comuni Italiani's "Foreign Citizens" data. In 2015, 5.4% of the city's population was counted as foreign born.

2) The historic centre of Naples was declared a UNESCO World Heritage site in 1995 and has obelisks, monasteries, cloisters, museums and over 300 churches, according to "The historic city centre of Naples" Viccolo Storto blog.

3) As of 2013, according to Istat, the Italian National Institute of Statistics. Total green areas density includes protected natural areas and urban green areas.

4) Figure from De Lucia and Jannello (1976).

5) The 1972 General Town Plan (Ministerial Decree No 1829, 31 March 1972) aimed to provide planning regulations for the city. In the 1990s a new planning phase was launched in an attempt to control urban expansion.

6) According to De Magistris' mayoral webpage.

7) Much of the illegal importation and dumping of toxic waste has relations with the Camorra crime syndicate, who allegedly benefit from the multimillion-dollar business.

8) See: http://www.independent.co.uk/news/world/europe/mafia-toxic-waste-dumping-causes-higher-cancer-and-death-rates-in-naples-a6794236.html

9) The port and waterfront areas are considered to be key components of the urban landscape.

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# Nashville

## Background/Context

Nashville, the capital city of Tennessee, is home to 626,681 residents.[1] From the mid-nineteenth century, Nashville was viewed as a strategic port, due to its position on important river and railroad routes.[2] A prominent centre of music, printing, and publishing for over a hundred years, Nashville is often referred to as "Music City USA". The post-war mid-twentieth century saw white suburban flight in combination with the displacement of African-American residents during urban renewal projects.[3] Rapid suburbanization severely depleted the municipal tax base, while the county could not provide the services demanded of its growing population. Thus, since 1963, Nashville has been governed by a city-county metropolitan government created after a 1962 referendum on the consolidation of Nashville and Davidson County governments.

The Metro Parks and Recreation Department operates 150 parks and 200 miles of greenways,[4] making up nearly 16,000 acres of open space. The city borders three lakes and boasts a recently attained 147 miles of bike paths. Nashville has invested significantly in its park system in recent years and showed relative stability during and after the Great Recession due to its moderate pre-crisis growth.[5]

## Greening Trajectory

While many parks in Nashville were created prior to the 1990s, greening in that decade took off with a focus on natural land preservation and eventually shifted to large investments in park maintenance and construction, as well as green space connectedness and overall liveability. Between 1990 and 2015, the Metro City government added 46 new parks and green spaces of sizes between 0.12 acres and 2168.79 acres. These investments have earned the city a reputation as a place with great natural amenities and affordable living, leading to an influx of new residents in recent years.

*Cumberland River Greenway—* [Jason Coleman](#)|[CC0-1.0](#)

In the early 1990s, a new mayor with conservationist interests made large land acquisitions for the city, including the plots where Beaman Park and Shelby Bottoms were built. Developed in 1996, Beaman Park was a unique addition to the park system as a rugged sanctuary of forests, unique plants and species, streams and waterfalls, and a varied landscape intended to reunite residents with nature. A greenspace committee of citizens, summoned by the mayor, informed this and other acquisitions of lands to be preserved as open space and parks. Shelby Bottoms, developed on fertile floodplain agricultural land, was recommended for purchase in 1994, after which the Metro Government bought up the site in several large tracts. This space, now rich in animal and plant species, was similarly meant to "provide preservation, education, enhancement, and

Mayor's Greenways Commission established
**1992**

Beaman Park developed
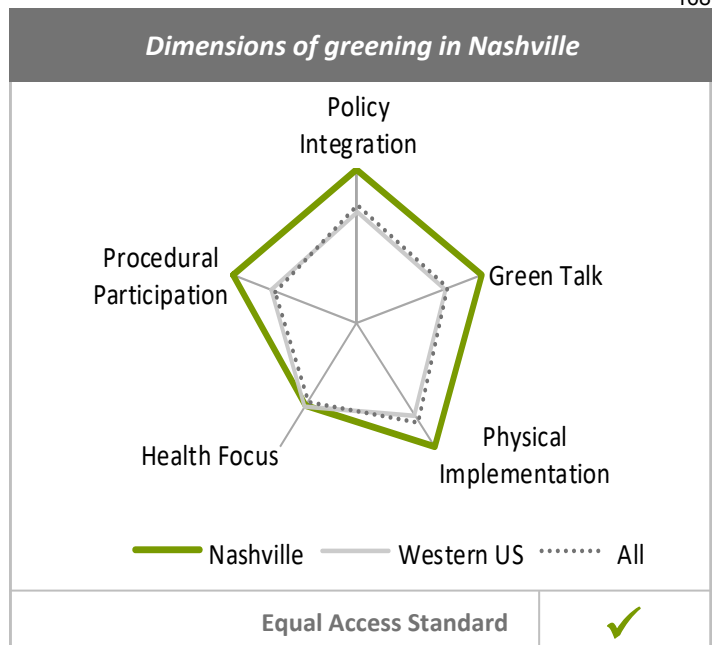**1996**

**1994**
Land for Shelby Bottoms acquired

**2002**
First county-wide Parks & Greenways Master Plan adopted

interpretation" of a unique environment of wetlands, meadows, and forests and "to provide passive recreational opportunities for the public while maintaining a high level of environmental sensitivity."[6] Most recently, the City acquired a 181-acre country club and golf course which was converted into Ravenwood Park and opened in 2015.

In 1992, the same mayor established a Greenways Commission composed of citizens, council members, and city department representatives, and charged the group with the planning and development of the city's greenways system.[7] Since the 1990s, greenways have been developed on 2,700 acres of floodplain lands along seven county water corridors. These include: Cumberland River Greenway, Harpeth River Greenway, Seven Mile Creek Greenway, Mill Creek Greenway, Stones River Greenway, Whites Creek Greenway, Richland Creek Greenway, and Browns Creek Greenway.[8]

**Dimensions of greening in Nashville**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

— Nashville  — Western US  ···· All

Equal Access Standard ✓

By executive order, a Mayor's Green Ribbon Committee on Environmental Sustainability was formed in 2008 and charged with producing a 2009 plan of 16 goals and 71 recommendations "for making Nashville one of the greenest cities in America" and the "greenest and most livable city in the Southeast".[9] Preparation of the plan involved citizen engagement, where increased green space surfaced among the top five environmental priorities for residents. Through this plan, the mayor and the committee established ambitious targets for open space preservation and parkland expansion, while also recommending strong disincentives for greenfield development, but increased infill and brownfield redevelopment.[10] The plan also called for the development of an urban forestry program and increasing local food production on - and support for - the farmlands of Davidson County. In terms of citizen involvement and rhetoric, the plan asked for a "Green Neighborhood Program" of inter-neighbourhood competition and a "green tourism" program to help embed sustainability into the city's image.[11]

In addition to mayoral initiatives, the parks board has played a vital role in the success of Nashville greenspace. In its 2002 Parks and Greenways Master Plan, the Metropolitan Board of Parks and Recreation (MBPR) laid out a $260 million plan to eliminate the deferred maintenance amount for existing parks and to develop new parkland and recreational facilities.[12] The MBPR undertook its first complete evaluation of the parks system and spent a year gathering input from residents before finalizing this plan; a 2008 update to the plan was created after another round of community input.[13] Most recent plans refer to parks and greenways as infrastructure, in the sense that they are seen as essential services with a great return on investment. In the 2017 Parks and Greenways Master Plan, these spaces are seen as civic investments with the greatest capacity to deliver on the city's guiding principles for development over the next 35 years. Recent greenspace planning refers to "extraordinary changes witnessed over the last several years", in reference to demographic shifts, population growth, transportation challenges and densification of the urban core; a race and ethnicity lens is included in the 2017 plan in order to ensure appropriate and equitable access to parks for all residents.[14]

Public Square Park opens
**2003**

"Together Making Nashville Green" report published
**2009**

Shelby Bottoms Greenway expansion
**2011**

Cumberland Park opens on riverfront
**2012**

**2007**
Nashville Riverfront Concept Plan delivered

**2009**
E.N. Peeler Park expansion

**2011**
Nashville Open Space Plan published

**2015**
Riverfront Park and Ravenwood Park open

The 2011 Nashville Open Space Plan was written in collaboration with metropolitan, state-level and private foundation actors and is seen, by Tennessee sustainability leaders, to be the most progressive open space plan in the Southeast. One of its main goals is the preservation of 22,000 acres of open space by 2035.[15] This plan led to the acquisition of more than 130 acres of former airpark land for the expansion of the Shelby Bottoms Greenway in 2011 .

City initiatives on street design and waterfront redevelopment have also contributed to Nashville's greening in the past decade. A Complete Streets Executive Order in 2010 led to the opening of three "complete streets" in Nashville, while a metropolitan government ordinance demanded increased downtown green infrastructure for stormwater infiltration. Planning efforts dating back to 2006 addressed the redevelopment of Nashville's industrial riverfront. A 2007 concept plan for the two banks of the Cumberland River outlined a path for bringing the city's waterfront into the 21st century.[16] Between 2010 and 2012, construction took off on both sides of the river, bringing amenities such as greenspaces, an urban forest, a boat landing, a renewed entertainment venue, and riverside terraces to the shores. A historic flood in 2010 gave additional impetus to the development of flood-resilient spaces along the riverfront; in 2015, Riverfront Park opened with a number of green infrastructure measures for flood control.

*Author: Tatjana Trebic*

## Notes

1) Population as of the 2010 United States Census. In 2010 Nashville residents identified their ethnicity or race as follows: 57.4% White alone, not Hispanic or Latino; 27.7% Black or African American  alone; 9.8% Hispanic or Latino; 3.5% Asian alone; 0.3% American Indian and Alaska Native alone; and 0.1% Native Hawaiian and Other Pacific Islander alone  (https://www.census.gov/quickfacts/table/PST045215/47037)

2) Its position allowed the city to develop a strong and flexible manufacturing sector for agricultural, domestic, and wartime machinery. Today, however, its largest industry is healthcare, with over 300 companies operating in the area. (See: http://www.businessclimate.com/nashvilles-health-care-industry-has-great-prognosis/)

3) During the American Civil War, the Civil Rights Movement, and in the decades since, Nashville has been the site of key battles, contestations, and breakthroughs. Today the city is home to several historically black colleges and universities.

4) For more than 90% of residents, the greenway system is within 2 miles. For information on a variety of Nashville sustainability initiatives, see: https://www.nashville.gov/Mayors-Office/Infrastructure-and-Sustainability/Programs-and-Initiatives.aspx

5) A construction boom is currently underway in response to favourable city incentives and due to its increasing reputation as an "it" city. A January, 2013 New York Times article praising Nashville's cultural and economic strengths is often referred to as a turning point in Nashville's popularity. For more information, see: https://www.nytimes.com/2015/10/14/realestate/commercial/nashvilles-skyline-being-rebuilt-by-building-boom.html and http://www.nytimes.com/2013/01/09/us/nashville-takes-its-turn-in-the-spotlight.html

6) See the Metro government webpage on Nature Centers at: http://www.nashville.gov/Parks-and-Recreation/Nature-Centers-and-Natural-Areas/Shelby-Bottoms-Nature-Center/Shelby-Bottoms-Park.aspx

7) Greenways in the city have been financially supported by a non-profit group, Greenways for Nashville, which raises private support and awareness of the greenway system. (See: http://greenwaysfornashville.org/)

8) See Plan to Play: The Nashville Parks & Greenways Master Plan (2017).

9) See 2009 Green Ribbon Committee report, "Together Making Nashville Green."

10) For example, one in every four development-ready acres outside of the urban core were to be permanently protected from development and set aside as natural area.

11) A 2015 Green Ribbon Committee Report Update indicates Nashville has implemented or is currently implementing all of its goals and nearly all of its recommendations from the 2009 report/plan. Progress since 2009 includes: 4,534 acres of open space preserved; a 25% increase in parkland and 50% increase in greenways; 45 miles of streams lifted from the U.S. Environ-

mental Protection Agency's list of impaired and threatened waters; and over 200 miles of sidewalk and 97 miles of bikeways added. For the complete list, see: http://www.nashville.gov/News-Media/News-Article/ID/4412/Mayor-Releases-Update-to-Green-Ribbon-Committee-Report

12) The recommendations of the 2002 plan have largely been funded and implemented – in terms of deferred maintenance elimination and new facility development. Creative revenue tools have been part of the Board's approach to minimizing reliance on irregular public funding. For example, user fees for golf course, marina, wave pool, and skate park facilities have provided a significant portion of the organization's income. (See the 2002 county-wide Parks & Greenways Master Plan)

13) The 1995-1999 Tennessee State Recreation Plan was a document that helped inform some of Nashville's parks planning, while at the same time Metro Parks recognized the discrepancy between issues prioritized by the state and city versus the priorities that surfaced from public input meetings on park development. The state prioritized facilities for persons with disabilities, whereas this segment of the population was not well represented at public meetings. (See the 2002 county-wide Parks & Greenways Master Plan)

14) See Plan to Play: The Nashville Parks & Greenways Master Plan (2017)

15) The city has already surpassed the plan's goal of 3,000 acres of open space preserved by 2021.

16) See the 2007 Nashville Riverfront Concept Plan.

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# New Orleans

## Background/Context

With a 2015 population approaching 400,000 residents, New Orleans is associated with a vibrant cultural and music scene, distinctive architecture and cuisine, a multilingual heritage and a long history as center of both the slave trade and the Civil Rights Movement. Large disparities in household income, access to quality education, neighbourhood investments, unemployment, and neighbourhood crime levels have persisted since its founding especially between the city's White and African-American residents, who comprise roughly 30% of the population. While New Orleans is one of the world's largest ports and an important maritime industrial centre, the city's economy has increasingly relied on cultural tourism since the late 1980s.

New Orleans has a contrasted environmental history. Located in the Mississippi River Delta, between several lakes that spill into the Gulf of Mexico, the city is surrounded by marshlands and water. Its geographic location and low elevation make New Orleans particularly vulnerable[1] to hurricanes. Hurricane Katrina, which hit the city on August 29, 2005, was one of the deadliest and costliest disasters in United States history. The city has a large amount of green space (810 ha),[2] including two large parks and 200 smaller parks and squares. Through New Orleans, large boulevards and parks lined with oak trees make up some of the largest and oldest stands of oak trees in the world. In contrast, oil refining and petrochemical production remain important industries in the city and contribute to major air pollution and environmental degradation.



*Audubon Park–* Mr. Littlehand | CC-BY-2.0

## Greening Trajectory

In the early 1980s budget cuts to the New Orleans Department of Parks and Parkways led to the formation of citizen action groups and non-profits, such as Parkway Partners, which initiated programs for residents to adopt neutral grounds on boulevards for care and maintenance. Since then, these groups have taken on a number of greening efforts, such as schoolyard gardens, community gardens, tree canopy expansion and educational programming, as well as the development and restoration of several parks. Although the level of park service in the city is quite good at 3.1 has per 1000 residents, many of its parks have been chronically underfunded.

In 1990, the New Century/New Orleans master plan was developed by the City Planning Commission to guide 21st century growth. A Citizen Advisory Committee was consulted on long-term planning issues and bolstered the Commission's argument for citizens' participation in the planning process. One of the 14 approved (7 of them completed before Hurricane Katrina in 2015) elements of the plan was the 2002

Parks, Recreation and Open Space Plan published
**2002**

Parks, Recreation, and Open Space plan. This plan proposed a list of park projects articulated around 7 core needs for the park system, including funding and management of park resources, access to neighbourhood parks and to the waterfront, and citizen participation in parks planning.

Kicking off an era of riverfront redevelopment combined with green space creation, the 1984 Louisiana World Exposition took place in New Orleans. Themed, "The World of Rivers — Fresh Water as a Source of Life"[3] and located on a redeveloped 84-acre railyard and old warehouse site along the Mississippi River, investments for the event helped "revitalize" the warehouse district to an extent and provided a Riverwalk festival marketplace that remains active today. It also led to the construction of the Woldenberg Park starting in 1988. Since then, further development and speculation in the riverfront was largely led by private developers through public-private partnerships approved by the City. After Hurricane Katrina, a 2008 plan for Reinventing the Crescent[4] proposed the installation of 70 parks and gathering spaces along the city waterfront alongside installation of performance venues, educational institution buildings, and cruise ship terminals. One of them, the Crescent City Park is a new 2.25 km lineal park built along the river (2008-2015) which includes native landscaping, bike paths, and multi-purpose recreational areas, but which has also received criticism for its difficult access and for being relatively cut off from other areas of the city.

In the aftermath of Hurricane Katrina, the City and various governmental and institutional planners scrambled to propose a plan for rebuilding New Orleans in a sustainable batter. Six months after the disaster, in January 2006, the City released an "Action Plan for New Orleans: The New American City," outlining principles for rebuilding New Orleans, including an infamous "Green Dot" map[5] which designated neighbourhoods as potential green space to reduce the rebuilt city's footprint. Sparking strong controversy among residents and concerns about the erasure of historically Black neighbourhoods (i.e., Lower Ninth Ward) and the preservation of low-ground white middle-income neighborhoods (i.e. Lakeview), the plan was eventually abandoned, but its release sparked the mobilization of community organization in favor of community-led plans. In 2008, the city published a Louisiana-funded GreeNOLA Plan as a blueprint for how sustainability would be incorporated into rebuilding the city, by proposing the reorganisation of government structures and departments, setting environmental goals, and reviving past environmental programs.

Thanks to a voter-approved City Charter amendment in 2008 which mandated neighbourhood participation in decision-making for land use and development, the city adopted in 2009 the *2009-2030 Plan for the 21st Century*, considered as the city's master plan, created through community consultation, despite significant "planning fatigue" among the community post-Katrina. It is organized around the themes of livability, opportunity and sustainability/resilience, calling – in terms of greening projects – for



Dimensions of greening in New Orleans

Policy Integration
Green Talk
Physical Implementation
Health Focus
Procedural Participation

New Orleans — Southern US — All

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Crescent City Park constructed upon adoption of Reinventing the Crescent Plan
**2008**

Construction began on Lafitte Greenway
**2014**

**2006**
New American City action plan published

**2009**
21st Century Master Plan adopted

**2015**
Resilient New Orleans Strategy adopted

more storm resilient housing, stormwater management, improved transportation and walkability/ bikeability, green innovation and green buildings, and renewable energy adoption. By 2030, the Plan sees New Orleans as "one of the most livable cities in America as neighbourhoods are knitted together by convenient and walkable mixed-use neighbourhood hubs […] and by transforming barriers like the I-10 Claiborne expressway into tree-lined boulevards."[6] The "Green Infrastructure: Parks, Open Space and Recreation" chapter stresses the connection between green space and quality of life, and in turn between quality of life and the city's economic success. Part of the plan, including the removal of the I-10 expressway, has sparked fears of green gentrification and displacement among the city's Black residents (Brand, 2015).

In an orientation toward resilience planning and green infrastructure that has dominated local and state planning discourse since Hurricane Katrina, the 2009-2030 master plan calls for parks, playgrounds, and neutral grounds to be converted into storm water retention and groundwater filtration infrastructure through the replacement of lawn surfaces with shrubs and rain gardens. Praising New Orleans as a leader in sustainable urbanism, it proposes the use of pervious materials, green roofs, and natural drainage systems to increase the permeability of the urban landscape to water. Some of these goals have already been implemented through interventions such as the Front Yard Initiative led by the Urban Conservancy. Two other examples are the pervious pavements used for the parking lot of Parkway Bakery in mid city and the pavement for the Lafitte Greenway. The Greenway is a $9.1 million, 4.2km bicycle and pedestrian trail and green corridor/ linear park built on a historic transportation corridor, which also includes new recreation fields and landscaping improvements (including 500 shade trees, native plant meadows, bioswales and stormwater retention features). Similarly to the removal of the envisioned transformation of the I-10 expressway, however, the greenway is fueling residents' concerns over cost of living in the neighborhood.

Most recently, the New Orleans has released its Resilient New Orleans Strategy (2015), focusing on equity in the economy, access to opportunity, adaptability to water (wetlands restoration, green infrastructure), energy efficiency and redundancy (microgrids), renewable energy, and establishing the Mayor's Office of Resilience and Sustainability. Looking to work with nature, it argues: "Rather than resist water, we must embrace it, building on the confluence of Louisiana's culture, history, and natural systems… Our parks and schoolyards will be designed with native plants and trees to soak up water; our canals and streets will provide greenways for recreation and water management."[7] Some of these goals were also integrated in the 2013 Greater New Orleans Urban Water Plan, a $2.5 million plan to articulate innovative – many of them based on green infrastructure – strategies to address flooding produced by excess runoff and subsidence. One of the projects following the plan is the Mirabeau Water Garden project in the Gentilly neighborhood, an area being converted into a resilience district.[8] Starting in 2018, the project will convert a 10 ha empty site into a recreational and educational amenity using innovative stormwater management features. The plan has however received much criticism for its inattention to questions of equitable access to resilient infrastructure, racial equity issues, and for its underlying emphasis on increasing property values to the detriment of affordable housing needs (Anguelovski, Connolly, et al. Forthcoming).

Last, as part of the recovery efforts and in response to the loss of over 100,000 trees to Hurricane Katrina, the New Orleans Department of Parks and Parkways has led a re-greening effort in partnership with non-profits and their volunteers to replant trees in neighborhoods and public spaces. Residents have been invited to "adopt a neutral ground" and partake in tree planting efforts that have added over 60,000 trees to the urban canopy with the help of more than 85,000 volunteers. Some of the city's other landmark parks have also benefited from the donation of money and volunteer hours toward recovery in the wake of Katrina.

*Author: Tatjana Trebic*

**Notes**

1) The 20th century draining of marshlands to make way for the city's expansion into low-lying areas has been partially responsible for the land subsidence and marshland erosion, which now makes the city particularly vulnerable to flooding from storm water surge.

2) For a full map of green spaces in New Orleans: http://www.nola.gov/parks-and parkways/images/maps/no_parks_greenspace_jurisdiction_download/

3) For more information, see: http://www.bestofneworleans.com/gambit/is-there-anything-remaining-of-the-1984-worlds-fair/Content?oid=2399335

4) The crescent refers to the shape of the Lower Mississippi river around and through the city.

5) For more information, see: http://wwno.org/post/katrina-debris-green-dot

6) For more information, see: http://www.nola.gov/getattachment/4dcf72fd-b189-4937-bd69-dba2958a483e/Vol-1-Executive-Summary/

7) For more information, see: http://resilientnola.org/wp-content/uploads/2015/08/Resilient_New_Orleans_Strategy.pdf

8) For more information, see: https://nola.gov/resilience/resilience-projects/gentilly-resilience-district/

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# Palermo

## Background/Context

With a population of 678,492,[1] the Sicilian capital of Palermo is both an important port and a city with a UNESCO-recognized historic centre, surrounded by attractive beaches.[2] Until the mid-1980s, speculative development controlled by mafia-linked construction companies and a corrupt Department of Public Works led to erratic suburban sprawl characterized by new neighbourhoods lacking basic services and infrastructure, ample destruction of architectural heritage, decay of the historic city centre, impermeable paving of coastal areas, and the loss of large swaths of Palermo's green spaces.[3] With a 1985 change in leadership, Palermo started a remarkable transformation to become a trendy city akin to Europe's Central or Northern urban centres.[4]

Over the past 25 years, Palermo has regenerated its city centre, revitalized degraded areas and green spaces, and re-appropriated the city's heritage, creating a new identity[5] - all as a way to heal the city from a turbulent era and provide public space amenities, especially for its most vulnerable residents. While architectural renovation and greening have boosted tourism, they have also contributed to gentrification. In this climate of renewal, however, citizens have been able to seize opportunities to create new public green spaces using minimal funds and in cooperation with the municipality.

## Greening Trajectory

As of 1968, Italian legislation had entitled every citizen to 18m$^2$ of public space, including schools, parks and facilities for religious, cultural and social activity. Yet, in the 1980s, Palermo provided only 2m$^2$ of such space per resident on average.[6] It is only at the start of Leoluca Orlando's second mandate (1993-2000) as mayor that a first regulatory plan ordered the planning of city centre regeneration, the development of a waterfront park, and the creation and rehabilitation of public spaces.[7]



*Waterfront* ⓢ Nat Aggiato|Public domain

By harnessing European Union support through the URBAN Community Initiative program, attracting private investment, and learning from planning experiences throughout Europe, Palermo engaged in a large intervention during the 1990s to regenerate its historic centre.[8] The intention in this early period was to rehabilitate degraded buildings for administrative or social housing purposes, and to protect the tenure of existing residents, many of whom were of low-income and of foreign origin.[9] For example, in 1995, the *Piazza Magione* - a large site in the historic centre that for some decades had become a parking lot among construction debris – began its conversion into a vast and open green space now used by locals and visitors for everyday recreational purposes, as well as for concerts, fairs, and road races. Local associations are still working today to ensure that the piazza remains a social space

New regulatory plan established
**1993**

City Waterfront Plan adopted
**1999**

**1995**
Piazza Magione conversion begins

for local residents and have advocated successfully for the creation of a soccer field on the site (inaugurated in 2017).[10]
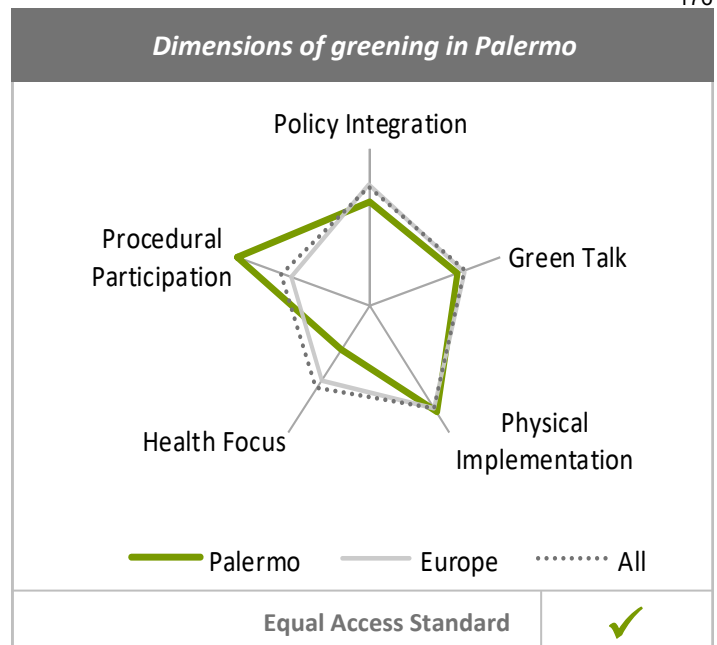
To address long-time contamination and dumping at Palermo's waterfront and to integrate the area into the city's architectural and social fabric, the City adopted a waterfront plan in 1999 to create a 33-hectare public park featuring walking and cycling paths. Since its completion in 2005, the park has quickly changed local cultural practices and transformed the waterfront into a lively space for jogging, relaxation and picnicking. The park is also "a place where members of the Sri Lankan and Bangladeshi communities, living nearby in the historic centre, come together.[11] Projects like this have formed part of the Orlando government's 'heritage politics,' symbolizing how the city was reclaimed from Mafia hands.[12] Many city documents refer to the greening of Palermo as cultural change. However the subsequent (2008) waterfront redevelopment plan has been criticized for its focus on cruise and freight ships and luxury hotels. Researchers and activists alike have raised concerns about the loss of affordable housing, the City's inadequate subsidizing of social and public housing, and the possible displacement of ethnic minority and low-income communities.[13]

Throughout the 1990s and 2000s, a great many of Palermo's historic piazzas, villas, and parks, which were abandoned, neglected, and occupied by criminal activities have been returned to public use. While many of them have become privately managed heritage, they offer some degree of public access. For instance, in 2015, Palermo's first public park, *Villa Giulia*, was released and returned to the municipality.[14] Some of these interventions have been framed under the local Agenda 21 sustainability document, adopted in 2004, which emphasized the creation of urban greenspace. Both the municipality and local associations have played important roles in this process, with associations advocating particularly for more social spaces for residents. Starting in 2010, a once underground military fuel storage area and later a 9-hectare forgotten and crime-ridden cactus garden, *Fondo Uditore* was rediscovered and reclaimed by *"U'Parco,"* a group of citizens and volunteers as a low cost, low maintenance urban park.[15] Started entirely by volunteers and completed in October 2012, Uditore Park is now one of the largest public parks in Palermo, and has helped the city attain 4th place nationally for usable greenspace.[16] In 2015, the City passed a resolution in support of such initiatives, allowing citizens and third parties to officially sponsor green areas as custodians through an application system.[17]

In the mid-2000s, the City, encouraged in large part by local citizens' groups, began developing sustainable mobility interventions. For instance, the citizen association, "Fiab Biking Palermo" was formally established in 2005 to encourage cycling in Palermo. Pressured by this group, the City has set up an official Bike Office to expand the bike lane network.[18]

Since 2015, the City has inaugurated multiple green spaces per year - sometimes per month - and has initiated a robust program of public-private partnership to manage, sponsor and maintain its new green



**Dimensions of greening in Palermo**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

Palermo — Europe — All

| Equal Access Standard | ✓ |

Waterfront park completed
**2005**

Uditore Park completed
**2012**

**2005**
Fiab biking Palermo citizen association established

**2015**
Office of Green Areas and Urban Liveability created;
Villa Giulia Park returns to public use;
Eight new children's playgrounds are inaugurated

spaces. In 2015, the City also created a new office of *Green Areas and Urban Liveability*. Liveability has become an important signifier for the city's actions to renew green spaces, as evidenced by the dozens of new playgrounds and educational gardens recently created; the inauguration of eight new children's playgrounds (2015)1[9] and the opening of new parks such as the *Parco della Salute* (2016)[20] and *Spazio Verdinois* (2017)[21] have served as municipal actions that extend the benefits of liveability and health to various resident groups.

Most recently, tree planting and urban agriculture have been adopted citywide as beautification measures, to mitigate the effects of heat and pollution, and to restore former local agricultural spaces. Following a devastating fire in 2016, the city has reinstated Palermo's famous Monte Pellegrino forest through efforts such as its Go Green collective tree-planting initiative.[22] Furthermore, the municipality has made urban agriculture a priority during the re-appropriation of former farmlands lost to illicit construction activities in decades prior. These and other initiatives form an integral part of the municipality's ambition to formulate a new image for Palermo and become a city with a "green" culture.

Most recently, in 2017, the municipality launched a new plan for the urban renewal of all jurisdictions and neighbourhoods and called upon citizens and other private entities to be active in "returning decorum and cleanliness to the many public spaces that are our common good". So far, the municipal office of Green Areas and Urban Liveability has been working closely with municipal police and private providers tasked with maintenance and repairs.[23] The potential social impacts of those projects on future housing costs and displacement are unclear.

*Author: Galia Shokry*

**Notes**

1) 2015 Instituto Nazionale di Statistica. (http://demo.istat.it/)

2) Between 2001 and 2010, the population of Palermo declined by 4.5%, due to suburbanization and local migration to Northern Italy. As of 2015, only 3.8% of the city population was of non-Italian descent. (Cittadini Stranieri, Anno 2015; Popolazione Residente, http://demo.istat.it/)

3) During this construction boom, "only one fifth of the urban surface area was rezoned into public green space, while the remainder, some 70,000 m², went to building development and streets." See Maccaglia (2009).

4) See Guggenheim & Söderström (2010).

5) For more information on Palermo's efforts to carve out a new identity, see Maccaglia (2009).

6) See Bacon & Majeed, (2012).

7) See Maccaglia (2009).

8) See Guggenheim & Söderström (2010).

9) See: http://books.openedition.org/enseditions/1495#ftn11

10) See the social media activity surrounding the space and its opening: https://www.facebook.com/pg/associazionehandala/about/

11) A highway separates the waterfront from communities in the historic centre. For more information on the project, see Guggenheim & Söderström (2010).

12) See Bacon & Majeed, (2012).

13) For activist work on this topic, see: http://www.mediterraneoantirazzista.org/cera-una-volta-palermo; For an academic perspective, see Lo Piccolo (2009).

14) City press release on the subject: https://www.comune.palermo.it/noticext.php?id=7206&sel=

15) See: https://www.comune.palermo.it/verde.php?sel=98&id=278

16) See local press coverage on the park's significance: http://palermo.repubblica.it/cronaca/2012/10/24/news/
il_comune_studia_il_nuovo_piano_regolatore_citt_ridisegnata_entro_il_2050-45233074/?ref=search&refresh_ce

17) See: https://www.comune.palermo.it/noticext.php?cat=4&id=6551

18) Despite recent increases in the modal share of biking in the city, Fiab Biking Palermo continues to petition for the expansion of bike lanes. Their mission also includes combatting urban pollution as well as protecting the *Parco della Favorita*, the city's largest park. See: http://www.fiabpalermociclabile.it/chi-siamo/

19) See: https://www.comune.palermo.it/noticext.php?id=8683&sel=

20) Palermo's "Health Park" is intended as an inclusive space for health promotion. See: http://palermo.it.eventsdroid.com/il-parco-della-salute-apre.html

21) Intended for the youth of the Medaglie d'Oro neighbourhood, *Spazio Verdinois* was built on a former open dumping ground and converted to a new educational and athletic green space. See: https://www.comune.palermo.it/noticext.php?id=13089&sel=

22) See: https://www.comune.palermo.it/noticext.php?id=11697&sel=

23) For a presentation on the plan, see: https://www.comune.palermo.it/js/server/uploads/_20012017123350.pdf

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# Philadelphia

## Background

Typical of most east coast American cities, Philadelphia experienced roughly five decades of population decline as a result of deindustrialization and suburbanization that began in the 1950s but has since 2010 seen continued growth especially in the young population. In 2016, Philadelphia had a population of roughly 1.5 million people (1,567,442), which represents an increase of just over 75,000 people over ten years prior. The city is relatively young, with 52% of the population below the age of 35 in 2016. The city is also relatively diverse, with 63% of the population identifying as non-white in 2016 (41% Black, 14% Hispanic or Latino/a, 7% Asian). According to the Pew Charitable Trust, one of the greatest challenges facing Philadelphia is the relatively low educational attainment of its population, as well as poverty and unemployment. Despite being home to a number of well-regarded institutions of higher education, only roughly 25% of the population has a college degree or higher.[1] It also ranked as the 7th most income segregated metropolitan area in the country.[2]

## Greening Trajectory

In the early 1990s, Philadelphia was in its fifth decade of continuous population decline, which left a large amount of vacant land and housing in some parts of the city. As was the case in a number of industrial era cities in the United States, this led to numerous community-driven greening initiatives as part of local resident efforts to revitalize neighbourhoods. Most visibly, these efforts during the 1970s and 1980s resulted in hundreds of formal and informal community gardens that were actively maintained within the city by 1990. One of the key organizations driving community led greening at this time was Philadelphia Green, the community greening program for the Pennsylvania Horticulture Society (PHS). PHS supplied resources for training local residents, maintaining gardens, and creating groups to manage gardens. This group is generally credited with expanding the community focus of greening in Philadelphia and grew with the support of PHS



*Belmont Plateau in Fairmount Park West–* Federikto | CC-BY-SA-3.0

by the early 1990s to include many programs including gardening, tree planting and care, and numerous individual neighborhood initiatives. As a result of PHS, Philadelphia Green managed close to 2000 greening projects in the city by the early 1990s.

One initiative with which Philadelphia Green partnered was the West Philadelphia Landscape Project (WPLP). The project began in 1987 as a partnership among The University of Pennsylvania and established community groups like the Mill Creek Coalition (founded in 1990). The WPLP partners published a plan in 1991 after extensive analysis of re-naturing possibilities for vacant land. The initiatives

West Philadelphia Landscape Project initial reports
**1991**

Philadelphia Green and the City partner to begin the vacant land management program
**2001**

**1992**
Fairmount Park Historic Preservation Trust

**1993**
Parks Department and Pennsylvania Horticulture Society partner to sponsor parks revitalisation project

that were developed and implemented through the plan were often managed by formal or informal block associations. These initiatives included tree plantings and small planter installations, community gardens, parks, and urban wilds. The WPLP partners continued to create and maintain greenspaces in West Philadelphia throughout the 1990s and early 2000s.

Between the mid-1990s and early 2000s, the supports for community gardens and other community based greening initiatives were almost entirely dismantled. Federal, local, and philanthropic resources for supporting gardens were removed at this time. As well, city policies shifted toward maintaining vacant sites as developable land. The result was a steady decline in the number of gardens in the city, so that the number of active gardens reduced from 501 in 1994 to 226 in 2008 and most of the loss occurred in wealthier areas.

Community-led greening efforts that created a vast stock of gardens and other actively stewarded spaces by 1990 were partially a response to the severe decline of established greenspaces throughout the city following the municipal budgetary challenges associated with post-World War II population and job loss. There were, though, a number of public and private sector efforts to renovate individual legacy parks and nature preserves that were developed during the city's rich industrial past. For example, in 1992, the Fairmount Park Historic Preservation Trust was one of the first efforts to target resources toward a legacy park. The Trust became a formal foundation in 1998 and then in 2001 started the Fairmount Park Conservancy with a wide goal to preserve and protect parks throughout Philadelphia.

In another example of programs that targeted decline in the existing parks system, a 1993 Philadelphia Parks Department and the Pennsylvania Horticulture Society partnership sponsored proposed parks revitalization projects system-wide. This program was a key turning point in upgrading the maintenance and operation of existing parks throughout the city. It reinforced work being done by the Friends of Parks organization, which began in 1983 to create a formally recognized network of civil society groups that stewarded parks in conjunction with the Parks Department. In 2008, Friends of Parks became the Philadelphia Parks Alliance, which today is the major advocacy and stewardship group for greenspace in Philadelphia. That same year, the city formed a newly enlarged Department of Parks and Recreation and passed a parking tax increase to provide a new funding source for parks.

In the beginning of the 2000s, Philadelphia for the first time in five decades was seeing signs of rebirth following the period of industrial decline. The population began to rise again driven largely by young residents moving into urban neighbourhoods. At this time, the 1990s work on active use greening of vacant lots shifted toward making these lots an aesthetic and ecological amenity and expanded greatly. In 2001, Philadelphia Green partnered with the city to build on their earlier work on vacant land reuse to launch the Clean and Green Program. The new program focused on management of vacant spaces,

**Dimensions of greening in Philadelphia**

Policy Integration

Green Talk

Physical Implementation

Health Focus

Procedural Participation

— Philadelphia   — Midwest and Northeast US   ····· All

**Equal Access Standard** ✓
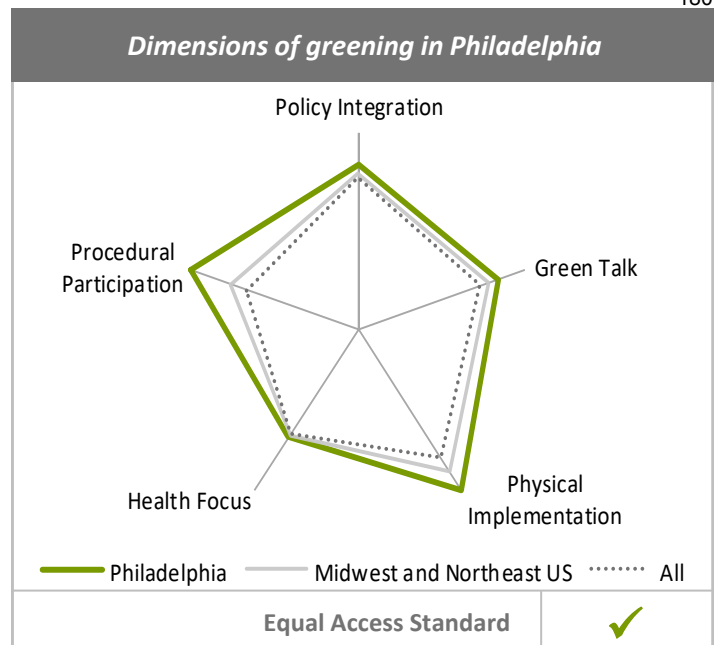
Civic Vision and Action Plan for the Central Delaware
**2006**

The Philadelphia Parks Alliance formed
**2008**

Green City, Clean Waters plan adopted
**2011**

**2004**
First master plan for the Navy Yard released

**2009**
First Greenworks Plan released

transforming abandoned parcels into well-maintained greenspaces. By 2008, 8,000 lots were under management in the vacant lots program, providing cleaned up green space as a draw for development throughout the city.

Soon, as vacant land re-use gathered steam and Philadelphia's post-war decline seemed to be reversing, greening transitioned from a largely neighbourhood-scale community led process of reclaiming abandoned space and reversing decline to a central strategy for redevelopment. In 2004, the first Master Plan for the Navy Yard, a former naval base converted into a business park, was released with an emphasis on greenspace as an anchor for the campus. Two years later, the planning process began for redevelopment of the Delaware River waterfront. That plan, which was adopted in 2012, led to approval of many new greening projects adjacent to high end development including the massive park at Penn's Landing along the Delaware River. In 2009, the quasi-public Delaware River Waterfront Corporation was established to manage the waterfront planning and it took over the master planning for Penn's Landing. Indicative of the view taken by the redevelopment agency on greening, the Delaware River Waterfront Corporation used the expected increases in real estate values and associated tax revenues near the park as a key justification for public expenditure on greening.

By the time that plans for redevelopment of the riverfront were moving forward, the city government launched enthusiastically into greening and sustainability initiatives, with the mayor declaring that Philadelphia would be the number one green city in America. In 2009, the first Greenworks plan was released. This was the City's sustainability plan, which called for a large increase in greenspace. In 2010, the Green 2015 program formalized Greenworks ideals with an operational plan for adding 500 acres of publicly accessible greenspace by 2015. In 2011, this program was quickly followed by the Open Lands Protection Ordinance, which provided permanent protection for newly created greenspaces by prohibiting any city owned park or recreation land from being transferred to another use. That same year, the city government released what came to be one of its signature urban greening initiatives: the formal agreement was signed for the Green City, Clean Waters plan to reduce stormwater pollution through greening. It led to programs for generating thousands of small-scale green infrastructure projects in the years following the plan. In 2013, the Philadelphia Trail Master Plan called for expanded green hike and bike trails throughout the city. And, in the 2016, the update to the City's sustainability plan, Greenworks, proposed an equity index to measure the extent to which all Philadelphians benefited from all of the greening initiatives.

Overall, Philadelphia had a strong community based greening movement by the early 1990s that emerged from decades of local organizing to fight against urban decline. This movement created a solid civil society infrastructure around greening and successfully pushed the city government to invest more in maintaining and expanding greenspaces. As the city saw an upswing in growth beginning in the late 1990s, greening became more attached to development initiatives, such as Penn's Landing, waterfront redevelopment, and the Navy Yard. These initiatives have not negated the power of the civic activism around greening, but have shifted the purpose of greening toward a growth-oriented strategy. That said, Philadelphia – unlike most cities in 2016 – had a particular program to focus on the equity implications of greening within the city government.

*Author: James J.T. Connolly*

**Notes**
1) For more information, see: http://www.pewtrusts.org/~/media/assets/2016/03/philadelphia_the_state_of_the_city_2016.pdf

2) For more information, see: http://www.citylab.com/work/2014/03/us-cities-highest-levels-income-segregation/8632/

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# Portland

## Background/Context

Portland is located in Oregon State in the Pacific Northwest of the United States and has a population of 639,863.[1] The city has a global reputation of being a model for sustainability with environmental and sustainability policies dating back to the early 1970s. Currently Portland has a prominent entrepreneurial culture that in large part stems from its creative industries.

Over the last few decades, Portland has been working to brand itself as a green and competitive "Walking City of the West" that is open for business. Since the mid-1990s, Portland has taken on number of initiatives related to the environment that include urban greening. This is part of the City's strategy to position itself as a globally competitive city leading the way with a green economy agenda to create jobs, attract customers and talent, improve the environment and address social challenges. The City of Portland Parks and Recreation Department maintains nearly 8,000 acres of natural public land.

## Greening Trajectory

Portland's urban nature and parks and recreation planning took off in the early 1970s with plans to restore access to the riverfront and create parks along the water. In the 1970s the city was also active in protecting its natural resources as well as developing a plan for city centre regeneration – both of which increased the amount of greenspace in the city. The Willamette Greenway Plan, aiming to protect and enhance the Willamette River and the adjacent lands, is one key green space project that took place from the late 1970s to mid-1980s. Following the vision from the previous decades' green urban development, from the late 1980s until the present day, the City has installed or planned for at least 56 new parks. In the 1990s, parks and recreation planning was focused on creating a liveable city and further developing open space leading to the creation of greenways, waterfront redevelopment and the installation of mini-parks,


*Berkeley Park–* Finetooth|CC-BY-SA-3.0

as well as playing fields and recreation facilities.[2] These activities were financed in part through the adoption of a $58.8 million Parks SDC bond in 1994. In line with these planning directives, in 1991 the City planned for the Springwater Corridor, which was the final part of the city's 40-Mile Loop connecting the Willamette River to Mt. Hood National Forest. The completed 40-Mile loop that was originally planned in 1904 under to the Olmsted Park plan materialised into 140 miles of walking and biking paths, and is linked to 30 parks.

Since the 1970s, waterfront renewal projects have developed out of the 1972 Downtown Plan and the

| Planning for the Springwater Corridor began | | Forest Park designated as a protected site | | Eastbank Esplanade completed |
|---|---|---|---|---|
| **1991** | | **1995** | | **2001** |
| | **1994** | | **1999** | **2001** |
| | $58.8 million Parks SDC bond introduced | | Parks 2020 Vision developed | River District Park completed |
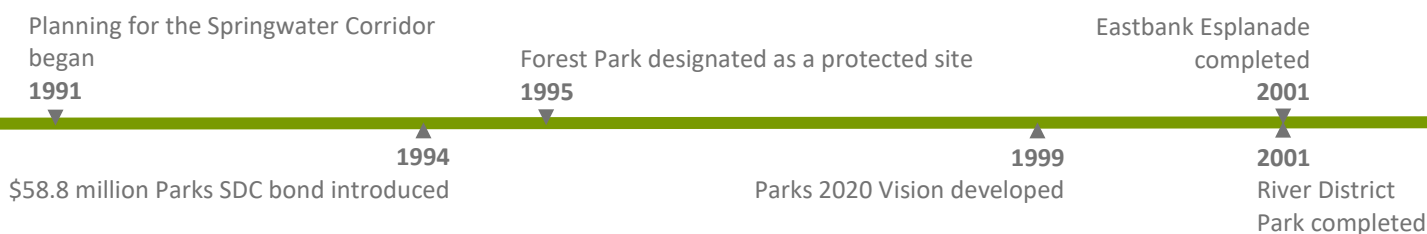
subsequent 2004 River Renaissance Strategy. The primary goal of riverfront development has been to provide opportunities for residents to experience natural areas and increase recreational opportunities. Planning for Eastbank Esplanade waterfront project was officially completed in 2001 and was renamed the Vera Katz Eastbank Esplanade after the City's mayor. The esplanade now includes a boat dock and canoe launch, paths, statues and artworks, both pedestrian and biking trails, and visitor facilities. The River District Park project, completed in 2001, was another important project linked to the waterfront with the planning process beginning in 1998. Of three parks created from the River Parks project, the most well-known is Jamison Square, a highly-utilised square with an outdoor exhibition of sculptures.



Dimensions of greening in Portland
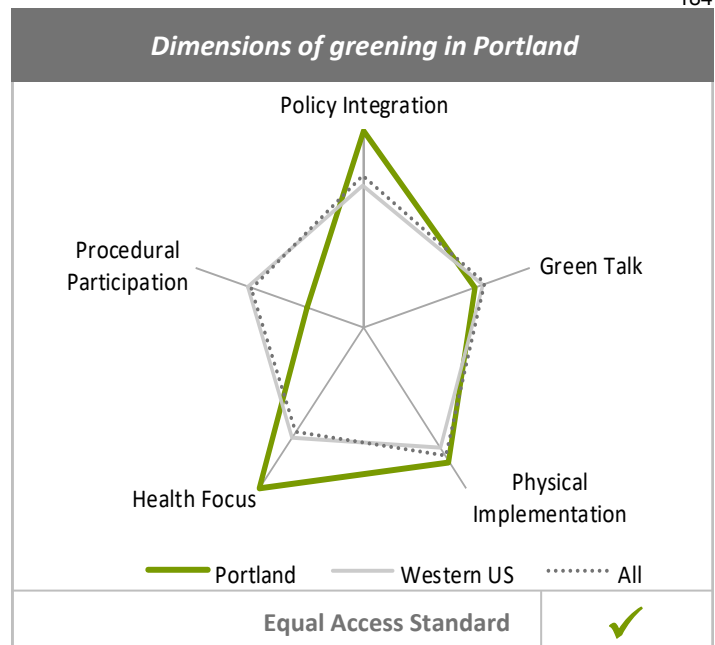
In 1999 the city developed the Parks 2020 Vision stipulating the need for high-quality maintenance of parklands, with more equitable distribution of and access to parks and recreation areas. Additionally, the City wanted to increase the number of parklands, sports fields, community centres, and trails. The 1999 Plan stated that Portland was seeking to secure funding through public-private partnerships, finding ways to engage residents in environmental stewardship, and provide more volunteer opportunities. The Williamette Park, built in 1904, is just one of several parks currently undergoing modern renovation works. Additionally, under the 2009 South Portland Riverbanks Project, seven natural area parks are undergoing/ have been through maintenance and restoration processes, including Miles Place Riverbank (2007), Butterfly Park and Neighborhood Nature Park (2008), and Stephens Creek Confluence (2008). The Williamette Moorage Natural Area and Powers Marine Natural Area also benefited from revegetation and restoration programs post-2009.[3] The City also released plans to open both the Gateway Green (a large urban hiking and mountain bike park) and Cully Park (which occupies a former landfill site) in 2017. Portland is renowned for its excellent park system, garnering a gold medal award from the National Parks & Recreation Association in 2011. Currently there are currently 38 parks projects in progress, some of which include park revitalisations. Additionally there are 20 newly completed parks, as well as 20 upcoming growth and maintenance projects, and five ongoing natural areas/trail projects in progress.[4]

Being surrounded by forests, the City adopted its first Urban Forestry management plan in 1995, updated in 2004.[5] The plans were developed in order to maintain and enhance existing urban forests through protection and stewardship measures. Currently, Portland is aiming to increase the number of trees in the city through the Tree Canopy programme. Between 2000 and 2015, canopy cover increased by nearly 31%. By 2030, the programme aims to provide 25% of residential areas and 15% of the urban core with tree canopy, covering a totally of 1/3 of the city's area. The City also has a Community Tree Care programme as well as a Tree Planting programme that began in 2008. Since then, 40,000 trees have been planted in Portland. Trees, along with other types of vegetation such as bioswales, also contribute to the 2007 Green Streets programme, the City's green infrastructure and stormwater management strategy. As
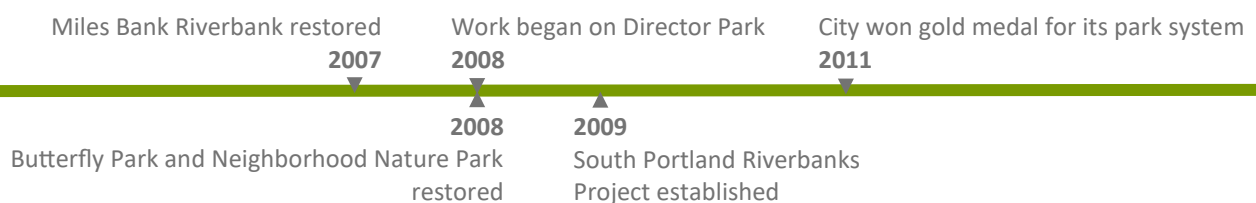
Miles Bank Riverbank restored
**2007**

Work began on Director Park
**2008**

City won gold medal for its park system
**2011**

**2008**
Butterfly Park and Neighborhood Nature Park restored

**2009**
South Portland Riverbanks Project established

part of the City's restoration and protection of natural areas initiatives, the 5,100-acre Forest Park, the largest American urban forest within municipal boundaries, has been classified as a protected area since 1995, gradually acquiring more acres. The park has a range of hiking, equestrian and biking trails, as well as visitor attraction amenities and viewing points.

Urban renewal is taking place across the entire city through neighbourhood-specific plans that tend to include the physical greening of neighbourhoods in various forms.[6] The River District renewal project, created in 1998, incorporated the development of parks and open spaces into its plans. Other projects, such as the South Park Blocks renewal programme, also established new green and open spaces. The Simon and Helen Director Park, locally known simply as the Director Park development as part of the South Park Blocks project, became under construction in 2008. The park features the Teachers Fountain, artworks, a large covered terrace with café, a large chess board, and its distinctive glass canopy. More recently, the City of Portland Parks and Recreation Department announced its newly adopted 2017 Five-Year Racial Equity Plan to address historical and current disparities in parks distribution, access and quality.[7]

*Author: Stephanie Diane Loveless*

**Notes**

1) Population correct as of July 1, 2016, according to United States Census Bureau. Between 2011 and 2015, 14.1% of the population was foreign born.

2) A graph showing Portland's Parks Timeline can be found at: https://www.portlandoregon.gov/bps/article/126432

3) These projects can be found at: https://www.portlandoregon.gov/bes/article/188627

4) Projects under the Department for Parks and Recreation can be found at: https://www.portlandoregon.gov/parks/43290

5) The updated plan from 2004 can be found at: https://www.portlandoregon.gov/parks/article/184641

6) The progress of the City's urban renewal projects can be found at: https://www.portlandoregon.gov/bps/34248, http://prosperportland.us/what-we-do/urban-renewal/

7) This plan can be found at: https://www.portlandoregon.gov/parks/article/623289

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Prosper Portland, 2017. Site page accessed October, 2017: http://prosperportland.us/what-we-do/urban-renewal/

# Québec City

## Background/Context

Québec City[1] is the capital city of the province of Québec and one of the oldest cities in North America, with 545, 485 residents.[2] Due to its position as a provincial capital, its geographic location, and its architectural heritage, the largest employment sectors in the area are government administration and defence, commerce, transport, and tourism. In 1985, its historic core, *Vieux-Québec*, became a UNESCO World Heritage Site.

Situated at the narrowing of the St. Lawrence River, the site of Québec City was an important military location for colonial contests. Thus, a number of the City's public and green spaces are historically connected to its military heritage and were created in past centuries. Québec's waterfront, once largely industrial, has in recent years been transformed to include a series of public spaces for recreation and celebration. Outside the dense urban areas of the modern Québec City, some significant natural amenities are found in its waterfalls, lakes, and forests. Of the entire territory making up Québec City, 48% is composed of woodlands, wetlands, and water bodies.[3]

## Greening Trajectory

During Québec's early twentieth century expansion, land companies promoted residential migration into the healthier airs of the surrounding rural regions; at this time, some of the larger urban projects, parks, and public spaces were installed. Due to strong heritage protections[4] on the historic centre, recent greenspace interventions have also occurred largely outside the old city.

The predominant narrative in recent urban greening efforts by the City and partner commissions has focused on turning industrial sites along the riverbank into parks or green amenities, improving surface water quality, and giving the river and its beaches back to citizens.[5]



*Promenade Samuel-De Champlain—* Gilbert Bochenek | CC- BY-3.0

For example, the industrial riverfront site of *La Baie de Beauport* has in recent years been converted to a public park and beach, where swimming (as of 2016) is once again permitted after 50 years. The site had been an extension of the City port authority lands since the 1960s and was used for the shipment of petroleum products throughout the 1970s and 1980s. The arrival of the Tall Ships exhibition to Québec City in 1984 led to its clean-up and redevelopment, and marked a reorientation of the city toward the river. The restoration of vegetation, land habitats, and the aquatic ecosystem at this site and others has followed in the years since.

Latin America Park inaugurated
**1995**

**1993**
Jardin de Sant-Roch development

**1997**
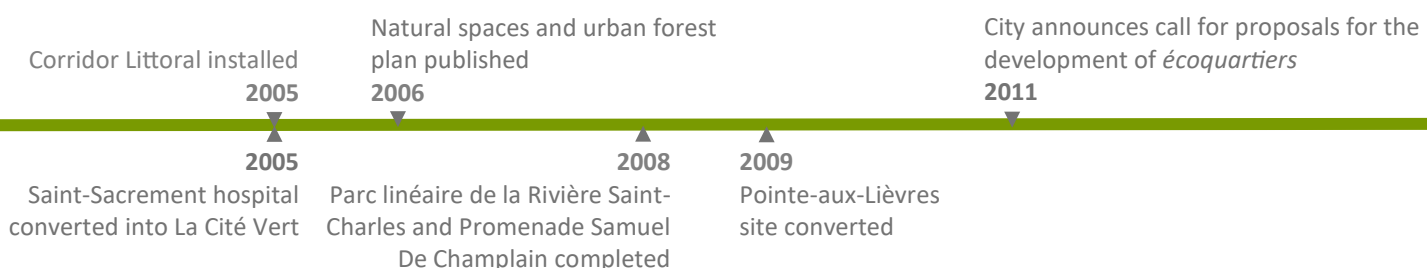Expansion of the Domaine Maizerets

In terms of urban parks, many of Québec's are the remnants of battlefields or open spaces dedicated to historical events or figures.[6] Several parks and open spaces were however created, expanded, made public, or redeveloped by the City in the 1990s and 2000s. Some of these park projects have led to substantial subsequent investments in surrounding-area redevelopment. For instance, in 1993, the revitalization of the Saint-Roch neighbourhood was given particular momentum with the redevelopment of its public garden, the Jardin de Saint-Roch. Its modern approach to greenspace design gained significant attention and catalysed major public and private investments in the rest of the neighbourhood. Similarly, the rehabilitation of the riverside Pointe-aux-Lièvres site was a priority for the surrounding



**Dimensions of greening in Québec City**

neighbourhood and in 2005 the City announced a plan to rehabilitate the formal industrial site into a four-season park.[7] In the years between these two projects, the city inaugurated the riverside Latin America Park in 1995 and expanded the Domaine Maizerets - a historic site and green space in the Limoilou borough - in 1997 with the addition of a 7-hectare, 1500-tree arboretum that replaced a snow-dumping site.[8] More recently, parks for the elderly, for youth,[9] and intergenerational parks have been created and promoted for recreation and leisure; at parc Bon-Pasteur, parc Juchereau, parc Sainte-Geneviève, and parc Jean-Guyon, recreational parks for the elderly opened in 2010.
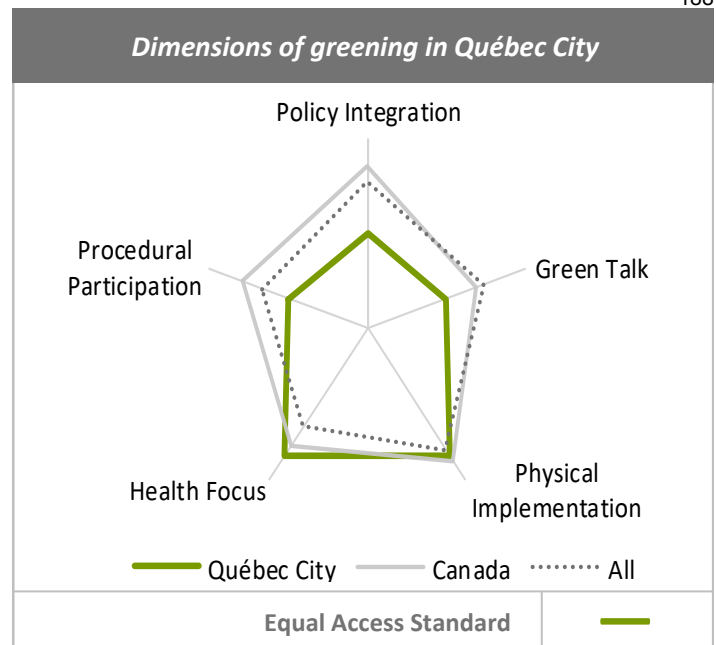
Linear parks and greenspace connections – particularly those situated along the waterfront - have formed a significant part of the City's greening repertoire since the mid-2000s. In 2006, $70 million dollars were committed to the redevelopment of the Promenade Samuel-De Champlain from an expressway into a linear park and grand boulevard. The linear park was completed and inaugurated in 2008 in an act of "giving the river back to Québecers" for the city's 400th birthday. For the same occasion in 2008, the Parc linéaire de la Rivière Saint-Charles was opened, providing 32 km of restored riverbanks and pathways between the Saint Lawrence River and Saint Charles Lake, where much of the City's drinking water is sourced. Following this momentum, since 2008, the City has undertaken (sometimes in collaboration with the metropolitan agency, *Communauté métropolitaine de Québec,* or the capital city commission, *Commission de la capitale nationale du Québec[10]*) a number of *verdissement* (greening) and *végétalisation* (revegetation) projects on street promenades, along riverbanks and in parks. Several of the city's districts, "*arrondissements,*" celebrated their own milestone birthdays around the same time as the city itself. During these municipal birthdays, small parks and commemorative public spaces such as the Place du Vieux-Bourg and the Place 375e du Beauport were constructed on neighbourhood main streets or near new residential areas. Although the incorporation of trees into new and renovated public spaces had become a hallmark for City projects since 2008, Québec has only recently started formalizing its urban tree policy.[11]

In recent years, Québec has begun using the language of *écoquartiers* (eco-districts),[12] with two planned constructions for such sites as the aforementioned Pointe-aux-Lièvres and the Pointe-D'Estimauville,

Corridor Littoral installed
**2005**

Natural spaces and urban forest plan published
**2006**

City announces call for proposals for the development of *écoquartiers*
**2011**

**2005**
Saint-Sacrement hospital converted into La Cité Vert

**2008**
Parc linéaire de la Rivière Saint-Charles and Promenade Samuel De Champlain completed

**2009**
Pointe-aux-Lièvres site converted

which is located near the already expanded Domaine de Maizerets and the revitalized Beauport beach area. Both are former industrial and current brownfield sites. The City began to formally promote the idea of eco-districts in 2011 by putting out a call for proposals for concepts. A precedent existed from 2005 when a former hospital, nursery and convent in the Saint-Sacrement neighbourhood was sold for redevelopment to the creators of La Cité Verte, an eco-living complex planned around green spaces, pedestrian and bike routes, and environmentally-oriented construction. The City now actively sells land for the development of such projects.[13] In the Pointe-D'Estimauville case, the construction has begun with the creation of an urban park and other green spaces, in response to needs expressed by citizens.[14]

Comprehensive city planning through the *Plan directeur d'aménagement et de développement* (municipal development plan)[15] includes strategy and actions on many sustainability issues such as water resources management, compact development, active transport, organic waste management, and brownfields decontamination. Publicly-available information on the past planning of greenspace is however relatively sparse. The 2005-2025 PDAD does additionally propose the creation of a "Blue, Green and White" plan to consolidate and connect the various natural spaces and heritage destinations of the city in order to ensure universal access to green space by neighbourhood residents and to promote ecotourism and "recreotourism." Beyond the PDAD, two other City plans specifically address greenspace. The 2006 *Plan directeur des milieux naturels et de la forêt urbaine* was a master plan for the expanded protection of urban natural spaces and the urban forest, while the 2010 Sustainable Development Vision focused on urban sprawl and sustainability more broadly. The 2010 Vision also argued for needs-adaptable "complete living spaces" implemented through a model of smart densification and mixed-use development for "under-utilized" and "susceptible" zones. New residential communities created in these zones would be oriented toward young professionals and their values (defined as work-life balance, personal accomplishments, respect for the environment, innovation, entrepreneurship, integrity, and humanity). The City is now expanding on these ideas with a local take on the Complete Streets approach called, "*rues conviviales.*" This planning and design tool uses over 40 indicators to identify opportunities for improving streetscapes and adjacent public spaces.[16]

*Author: Tatjana Trebic*

## Notes

1) Note that depending on the document, the city is referred to, interchangeably, as: "Québec," "Ville de Québec," "Québec City," or "La capitale nationale." Entities of, or belonging to the *city* of Québec are referred to with, "de Québec" and entities in Québec with "à Québec." These forms are distinct from references to the *province* of Québec, where "du Québec" and "au Québec" are used. The word "nationale" (national) when used in reference to Québec, refers to the province of Québec and its specific political standing in Canada, not to the country of Canada.

2) 2017 Population (Affaires municipales et Occupation du territoire, Gouvernement du Québec). The city's small (4%) visible minority population is the smallest of any major Canadian city. (Statistics Canada, 2006 Census, 2006 Community Profiles)

3) For information on Québec's repertoire of natural amenities, see: https://www.ville.quebec.qc.ca/planification_orientations/milieuxnaturels/repertoire_milieux_naturels/index.aspx

4) Modern-day Québec contains a small fortified older city (*Vieux-Québec*) to which several surrounding municipalities were annexed at the start of the twentieth century and several more merged at the start of the twenty-first.

5) Much of the current environmental policy in the municipal region of Québec is concerned with the protection of drinking water sources. Greening has been part of these efforts in the form of constructed stormwater retention basins in a number of neighbourhoods. For examples, see: http://www.optionamenagement.com/portfolio/bassins-de-retention-ville-de-quebec/

6) Publicly available documentation shows that some parks were constructed in the first third of the twentieth century and then again around the 1970s. Several parks were created in the 1970s by the capital commission, and have undergone renaming and rededications since the 1990s. See: http://www.capitale.gouv.qc.ca/system/documents/media/000/000/122/original/11_168_CCNQEspacesverts2015.pdf?1442924707

7) For information, see: http://www.quebecurbain.qc.ca/2005/02/17/amenagement-de-lensemble-de-la-pointe-aux-lievres-la-ville-propose-un-concept-alliant-des-usages-recreatifs-et-residentiels/

8) Although the City transferred ownership to the national capital commission, it still manages the lands and facilities. See: http://www.domainemaizerets.com/domaine

9) A skate park was inaugurated in parc Victoria in 2011. See: http://www.lapresse.ca/le-soleil/actualites/societe/201106/21/01-4411381-nouveau-skatepark-a-quebec.php

10) The Commission has completed several public green space projects of its own accord and in partnership with the City. In 2005 the Commission and City jointly developed 4.7 km of the Corridor Littoral (http://www.capitale.gouv.qc.ca/realisations/voies-d-acces/corridor-du-littoral)

11) The *Vision de l'arbre 2015-2025* document provides a canopy index for neighbourhoods, identifying target areas for tree planting in order to achieve a 35% city tree cover.

12) *Écoquartiers* refer to small-scale modern mixed-use communities designed and operated to higher environmental standards (sustainable construction, energy and water use efficiency/conservation, internal energy and waste flows circulation, walkable spaces, community gardens and green spaces, etc...).

13) For more on the city's approach to *écoquartiers*, see: http://www.ville.quebec.qc.ca/planification_orientations/amenagement_urbain/grands_projets_urbains/ecoquartiers/pointe_aux_lievres.aspx#groupes

14) See the City's plan for the Pointe-D'Estimauville *écoquartier*: https://www.ville.quebec.qc.ca/planification_orientations/amenagement_urbain/grands_projets_urbains/ecoquartiers/destimauville.aspx

15) Note that PPUs (*Programme particulier d'urbanisme*) also exist as smaller-scale district plans that addresses local land use, new construction design guidelines, infrastructure project implementation, and public facilities' improvements. (See: https://www.ville.quebec.qc.ca/planification_orientations/amenagement_urbain/ppu/)

16) For details on the *rues conviviales* concept, see: https://www.ville.quebec.qc.ca/planification_orientations/amenagement_urbain/rues-conviviales/

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# Raleigh

## Background/Context

The city of Raleigh was chosen as the site for the capital of North Carolina in 1788 and is one of the earliest planned cities in the US. The original city plan included a grid pattern, organized around five central public squares, two of which remain today. Raleigh is part of the tri-city area known as "the Triangle", along with Durham and Chapel Hill, each of which house a major university. In 1959, Research Triangle Park was established between these three cities as a major hub for research institutions and government agencies working in the sciences.

By the early 21st century, Raleigh was one of the fastest growing mid-size cities in the US; between 1980 and 2015, the city doubled in population and tripled in area through annexation of several surrounding towns. Today the city is home to 451,066 residents.[1] The Raleigh Parks, Recreation and Cultural Resources Department manages over 200 parks on 6,000 acres[2] and oversees several lakes and natural reserves. The Capital Area Greenway System includes over 100 miles of paved trails connecting many of the city's natural features.

## Greening Trajectory

The city undertook the development of a major comprehensive plan in 1989; this plan was amended over two decades. Over time, due to the many amendments, the city's rapid population and area growth, and a changing social climate, the 1989 plan was determined to be too cumbersome and could no longer address the city's contemporary goals and challenges. The process of replacing the 1989 comprehensive plan began in 2008, starting with a public "big ideas" campaign, for which events were held at diverse venues (a children's museum, taverns, parks, etc.) around the city where ideas for visions for the city's future were collected from local residents. The new comprehensive plan, completed in 2009 following

*Lake Lynn—* Mr.Z-man|CC-BY-SA-3.0

a series of public workshops, meetings, and the use of an interactive website, incorporates planned updates every 5 years through 2030. This "2030 Comprehensive Plan for the City of Raleigh" includes a heavy emphasis on urban design, providing recommendations to address placemaking and reinforcement of the design principles for Raleigh's neighbourhoods, business districts, and commercial corridors. Specific area plans followed suit between 2008 and 2016, including a 2015 Downtown Plan that stressed the need to extend the city's greenway system in the downtown, increasing the open space-to-resident ratio for a growing downtown with insufficient greenspace, and encouraging the creative private contribution of new open spaces within new developments through spaces such as gardens and

$28 million parks bond passed in referendum
**1995**

Lake Lynn Park constructed
**1996**

**1998**
Strickland Road Neighbourhood Park developed

**1990**
Leesville Community Park opened

**2000**
$16 million bond passed for parks improvements, investments and land acquisition

green roofs.

A 2015 update to the comprehensive city plan went further to call for a downtown-specific parks plan and suggested partnerships and funding mechanisms for downtown parks projects. This version of the plan emphasized open space preservation and the creation of a green infrastructure plan with land use regulations, best practices and an ecological approach to matching development with the city's natural form. In order to meet the City parks plan's goal of conserving 5,000 acres of land by 2030, the comprehensive plan committed to an action item of acquiring a minimum of 250 acres of land annually for parks, greenway corridors, or open space.[4]

**Dimensions of greening in Raleigh**

Policy Integration — Green Talk — Physical Implementation — Health Focus — Procedural Participation

—— Raleigh —— Southern US ········ All

**Equal Access Standard** ✓
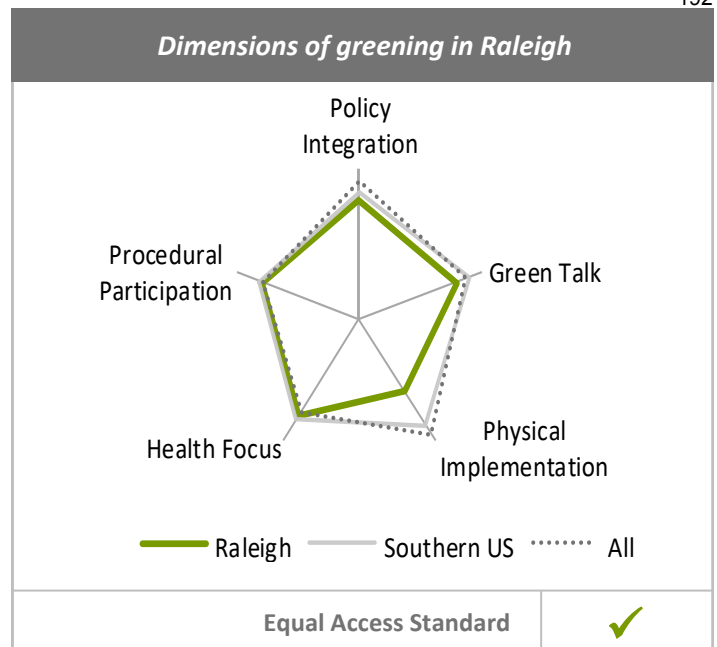
In addition to the comprehensive city planning efforts, Raleigh's departments for parks[5] and sustainability have also shaped the city's greening trajectory during the past several decades. Since the withdrawal of federal parks funding in 1981, Raleigh had wholly taken control of the acquisition, funding and development of its park system. In what the parks department calls the "Open Space Era" for Raleigh parks between 1981 and 2004, the City has had to seek increasingly creative funding mechanisms to finance the additional parkland development required for the City's level of growth.[6] The residents of Raleigh have supported and funded the Department's parks development with the passage of a series of bond referenda since the mid-1980s. After the first bonds helped fund two sports facilities and three large new parks, residents approved a $28 million bond in 1995. The City remains accountable to residents on the use of these funds via a Council-appointed Parks, Recreation and Greenway Advisory Board. During this period of dramatic expansion in the city's population and land area, park assets were overwhelmed and the department responded by focusing its energy on maintaining adequate and equitable park provision according to updated standards which categorized levels of provision by park type (mini park, neighbourhood park, community park, metro park, nature preserve, and special park).[7] Many parks and park acres were added to the system, largely in the northwest, northeast and eastern portions of the city.

In 2003, the Parks, Recreation and Cultural Resources Department initiated the development of System Integration Plans for properties that the City had acquired for future park development. These plans documented existing conditions, articulated any special intent for each proposed park, and developed a set of guidelines for the interim management of acquired lands prior to the initiation of the 2004 master plan for parks. Acting as the link between System Integration Plans and the comprehensive city plan, the 2004 Raleigh Parks Plan marked the start of a new era for Raleigh Parks. With its largest-yet bond of $88 million approved by residents in 2007, the City has expanded on its greenway system, classified several nature preserves, and completed a number of projects with private, volunteer, non-profit, and neighbouring municipality partners.[8] With guidance from the City Council's official Public Participation Program (adopted in 2012), the creation of the 2016 the Parks, Recreation and Cultural Resources System Plan began three years earlier in consultation with residents. In its final form, the plan focuses on better integrating the city's system of parks into its infrastructure in a way that meets changing resident needs.

$47 million bond passed for parks development
**2003**

Dr. Annie Louise Wilkerson Nature Preserve Park created
**2006**

New Downtown Plan focusing on livability and connectivity
**2015**

**2004** Raleigh Parks Plan adopted

**2007** $8 million bond passed for parks and greenways

**2012**

Marshall Memorial Park and House Creek Trail completed

Raleigh began to focus on more general sustainability initiatives in 2006, when City Council created the Environmental Advisory Board which would advise the city on environmental matters such as fuel efficiency, energy-efficient buildings, climate protection, and environmental education.[9] In 2008, the City's first sustainability manager was hired and tasked with making Raleigh a "national leader" in sustainable cities and, in 2009, the city created and staffed the Office of Sustainability to manage sustainability policies, programs, and resource development. Most recently, Raleigh was a winner of the 2016 Siemens Sustainable Community Award in the mid-size community category for its "wide range of initiatives implemented, along with the collaboration at all levels of government and within the community," resulting in improved economic strength, social equity and environmental stewardship.[10]

*Author: Helen V.S. Cole*

## Notes

1) 2015 U.S. Census Bureau estimate. According to the Raleigh 2016 Data Book published by the City Planning Department, 60.4% of Raleigh residents identify as white alone; 29.8% identify as Black or African-American alone; 10.4% as Hispanic or Latino; 4.8% as Asian alone; 0.2% as American Indian & Alaska Native alone; and 3.0% as other races.

2) With 9,764 acres of developed and undeveloped public park and greenway lands within the city.

3) One of the main themes of the 2015 Downtown Plan is "Breathe: A Greener Raleigh - Create public open spaces where people can pause and breathe, gather, and relax within the city." Many of the plan's catalytic projects are centered on green and public spaces.

4) Raleigh has made a number of acquisitions, such as the 308 acres of land secured to create Dorthea Dix Park in 2015.

5) Parks are administered together with the arts and cultural activities of the city under the Raleigh Parks, Recreation and Cultural Resources Department.

6) For example, the City developed a Facility Fee Program which collects fees from developers to directly into a fund for parkland acquisition and development.

7) Raleigh's original park provision standards were adopted in the late 1970s with guidance from national standards. The most current parks plan calls for a maximum one-mile travel distance to a park experience for every resident from their home or place of work.

8) Along with the parks department's efforts at greenway development, the City's bicycle planning efforts have supported the establishment of new greenways through the 2009 and 2016 comprehensive bicycle plans.

9) The City of Raleigh defines sustainability in terms of healthy communities, natural and historic resource preservation, contained urban sprawl, safety, job availability, lifelong education, and accessible transportation and healthcare.

10) Raleigh has several active environmental education and service groups including a cooperative extension service through North Carolina State University. In addition, several initiatives and organizations serve all of Wake County and/or "the triangle area", not just the city itself.

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# Sacramento

## Background/Context

California's capital city, Sacramento, was founded in 1849 at the confluence of the American and Sacramento rivers. With a Mediterranean climate and an historic connection to agricultural, the city's current vision is to be the most liveable in California. Since the 1990s, the primary narrative for enhancing liability has been around a "Smart Growth" strategy, expressed mostly in terms of denser rather than sprawling expansion of the population. Early commitment to Smart Growth made Sacramento a model region for current land use policy in California and is based on neighbourhood-based plans for compact, transit-oriented development that incorporates open space. There is a parallel narrative around urban sustainability that is especially expressed in regional planning efforts and energy efficiency programs.

According to current census estimates, the city of Sacramento has a population of nearly 500,000. Median household income is $52,151, with about 20% of people below the US poverty line. 30% of residents have a bachelor degree or higher. Nearly 40% of residents speak a language other than English at home and 55% identify as non-white, with 27% identifying as Latino/Hispanic.

## Greening Trajectory

In the 1990s, Sacramento expanded its park infrastructure and advanced several important greening initiatives. Between 1989 and 2004, the City developed 33 new parks. The 1989 *Master Plan for Park Facilities and Recreation Services* prioritized construction of these parks and sought to generate new funding sources for maintenance and development costs. During this time, the municipal government created a citywide park development impact fee (1999) that could be used for parks and created new district-based park facilities fees.[1] The city government also reorganized during this time in an effort to make all services neighbourhood oriented. As a result, the Parks Department was



*McKinley Park Rose Garden*– Greg Balzer|CC-BY-2.0

dissolved and instead became a major portion of the new Neighborhood Services Department, thus enforcing a local, neighbourhood-oriented approach to parks planning and maintenance in Sacramento during the 1990s.

Also during the 1990s, the Sacramento Municipal Utility District (SMUD) began focusing on greening through energy efficiency, tree planting, and support for alternative fuels and transportation. In 1990, it launched a free tree planting program that by 2010 resulted in 500,000 new trees planting in the metropolitan area. SMUD also developed early infrastructure, including the first solar powered charging

**1992**
Sacramento Municipal Utility District constructed first electric car charging station on the West coast

**1990**
Sacramento Municipal Utility District launched free tree planting program began

**1999**
Citywide park development impact fee introduced

station on the west coast of the United States, to incentivize the use of electric cars.[2] During the 1990s, the city also began requiring new commercial developments to make adjustments for storm water quality and management.[3] These adjustments were part of a larger focus on greening through land use controls that built on an emerging Smart Growth vision. The 1988 City General Plan already contained Smart Growth goals, including infill development complemented by protection of natural environments, as well as plans to address open space and air quality. For the region, these goals served as a foundation for the greening initiatives that would characterize the 2000s.

*Dimensions of greening in Sacramento*

Policy Integration

Green Talk

Physical Implementation

Health Focus

Procedural Participation

—— Sacramento ——— Western US ·········· All

**Equal Access Standard** ✓

In 2000, the reorganization experiments of the 1990s were ended and a stand-alone Department of Parks and Recreation was re-established. The new Department's main aim was to increase the quality of life for the city's residents through greening maintenance, expansions, and improvements. Currently, the City funds one-third of its parks and recreation activities from the Department's annual operating budget that comes from the General Fund of the city. Otherwise, funding comes from grants, participant fees, and the business community.

One of the central strategies for improving quality of life through greening in the early 2000s was to capitalize on the rivers through riverfront redevelopment accompanied with a transformation of the riverfront into a "vibrant recreational" area. In 2003, the Sacramento Riverfront Master Plan was approved. Plans for redevelopment include both commercial developments and improvements to the already frequently used riverbanks in order to make them attractive promenades and open spaces. In the General Plan for the city, the goal was to discourage private development of riverbanks and docks in order to leverage these areas as public parks and recreational areas. This goal was formalized in the 2007 Docks Area Specific Plan and the Promenade Parkway Plan, which called for adding between 3 and 10 new acres of parkland along a section of the waterfront slated for new housing development.

The new stand-alone Parks and Recreation Department was supplemented with a new Parks and Recreation Commission in 2005, further embedding a focus on citizen outreach around greening in the city government. The commission was created immediately following approval of the 2005-2010 Parks and Recreation Master Plan, which called for new parks as anchors for smart growth efforts to focus development on infill of the denser urban centre. As a result of goals established in this plan, the city added more than 20 new parks between 2004 and 2017. According to the Parks and Recreation master plan, as well as the General Plan 2030 and 2035, this trend is meant to continue. These plans call for new green space to be added within the city through building urban gardens, open space preservation, and seeking control over sites that are suitable for new park creation. Additionally, the plans call for improvements through retrofits and identify deficiencies in existing parks.

Furthermore, Sacramento park plans include integrated and connected green buffers around parks. Green

Sacramento Riverfront Master Plan published
**2003**
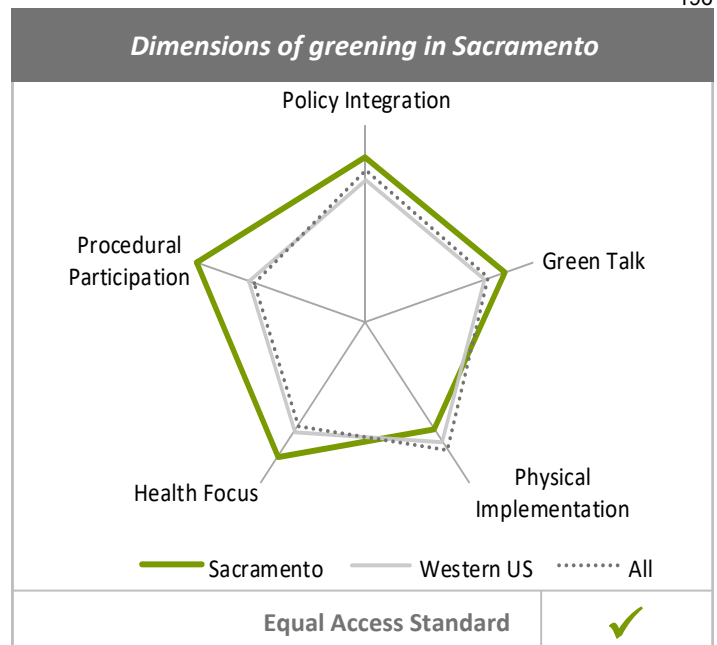
Parks and Recreation Sustainability Plan adopted
**2008**

**2005**
Parks and Recreation Master Plan published

**2012**
Climate Action Plan adopted

buffers will require adjacent green space development to complement or benefit parks and open space. They are meant to create a unique sense of place that is responsive to context (e.g. through use of local materials and native species when planting), while taking into account climate, culture, and history. Trees are an essential part of green buffers. The city is protecting the existing canopy and working to increase the number of trees in the city. Sacramento currently plants 1,000 trees per planting season, with plans to continue until optimal tree stock is met. New plantings will help reduce the impact of heat waves and heat island effect as well as improve storm water management and become incorporated in the city's green infrastructure.

The 2008 Parks and Recreation Sustainability Plan further specifies these parks goals with detailed strategies for how parks can help the city achieve energy independence, climate protection, and air quality improvements. It also addresses the need for material resources to support parks, urban design and land use of parks, green building within parks, and expansion of habitat conservation and water management. The 2008 plan also highlights the role of green spaces in protecting public health and nutrition, which served as a key motivation for a goal established in the 2011 Sustainability Implementation Program for the city of accessible public parks or recreational open space within 1/2 mile of all residences. Progress toward this goal is periodically being assessed.

More recently, the City released a 2012 Climate Action Plan with a central role for greening. In it, compact land use, green building, alternative energy, and waste reduction plans are central. The Climate Action Plan goals are integrated into the current (2015) City General Plan. As well, the 2013 plan for the Sacramento Center for Innovation calls for conversion of landfill sites to parks, golf courses and sports fields. Currently, municipal programs also support bike lanes and urban agriculture, encouraging locally grown, organic foods. In terms of bike lanes, the city has begun to implement new bike infrastructure within its neighbourhood development strategies. In terms of urban agriculture, the city wants to increase urban gardens in a number of neighbourhoods, especially through the creation of community rooftop gardens, preservation and protection of existing gardens and an overall growth in urban agriculture. The city and its incumbent businesses have also embraced a farm-to-fork vision that places a priority on locally grown and sustainable foods.

*Author: Stephanie Diane Loveless*

**Notes**

1) For more information, see: http://www.cityofsacramento.org/-/media/Corporate/Files/ParksandRec/parks-planning/masterplan2005-2010.pdf?la=en

2) For more information, see: https://www.smud.org/en/about-smud/company-information/innovation/innovation-history.htm

3) For more information, see: https://www.cityofsacramento.org/-/media/Corporate/Files/DOU/Specs-Drawings/SWQ_DesignManual_May07_062107.pdf?la=en

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# San Diego

## Background/Context

San Diego is located along the Pacific Coast in Southern California, an area with mild weather and a Mediterranean climate. With a population of 1.4 million inhabitants (2015), it is the eighth largest US city. San Diego has a relatively diverse population, with 41% of residents identifying as non-white, and Hispanic population (both white and non-white) accounting for 28.8%. San Diego also has a diverse economic base, which includes clusters of industries in defense/military, tourism, international trade, and industrial research/manufacturing.

Home to Balboa Park, one of the largest and oldest public use parks in the United States, San Diego has a long history of ensuring a high amount of green space per resident and has unusual access to large state and national parks.[1] The city has an extensive network of municipal parks, beaches, and playgrounds[2] and a current community plan for ensuring sustainability measures are enacted in every district of the city. These measures include initiatives for energy efficiency (today, San Diego is the number one solar energy city in California), green business, climate protection and new green spaces as a strategy for economic development.[3]

## Greening Trajectory

In the early 1990s, San Diego residents took important steps toward regional environmental preservation. The area saw a strong push on the part of local environmental activists toward green space preservation for habitat protection and watershed management. In 1990, the first regional water resource management plan was approved.[4] The plan addressed water contaminants and habitat preservation around waterways. Also, following the 1992 passage of California's Natural Communities Conservation Planning (NCCP) Act, a diverse set of stakeholders in San Diego County developed a plan for habitat preservation under the Multiple Species Conservation Program. As part of this



*Balboa Park–* [Ming-yen Hsu](...)|[CC BY-ND 2.0](...)

process the San Diego National Wildlife Refuge was created as an 11,000 acre preserve and the final conservation plan, approved in 1998, led to the purchase of a number of additional properties for permanent protection.

Also, in the 1990s, the city of San Diego added 16 new small to mid-sized parks in the affluent northern communities near Miramar, Carmel Valley, and Mira Mesa. Most of these new parks were between 5 and 20 acres and provided local neighbourhood residents with amenities for outdoor activities. As well, during the 1990s, three new sections of waterfront promenade were built in the downtown area of San

Creation of the San Diego National Wildlife Refuge
**1996**

**1998**
Approval of the San Diego Multiple Species Conservation Program Plan

Diego, including the Marina Linear Park, Children's Park, and the Martin Luther King, Jr. Promenade.[5] These greenspace additions along the waterfront reflected an effort to upgrade the appearance of the downtown area in contrast with ongoing conservation efforts that focused on the peripheral parts of San Diego County.

By the early 2000s, San Diego continued its push for environmental preservation and began to be actively engaged with sustainability initiatives. In 1998, San Diego voters approved the TransNet sales tax and expanded it in 2004. TransNet provided funds for environmental mitigation of transportation projects focused on habitat preservation.[6] Also in 2004, the first regional comprehensive plan was adopted by the regional



Dimensions of greening in San Diego

government. The plan focused on a smart growth vision for San Diego and, in 2006, the first regional smart growth concept map was developed from the plan. This concept map included a much greater reliance on transit than had been the case prior in the largely car-oriented and sprawling San Diego region.

In the early years of the 2000s, the city continued to create new parks mostly in the northern wealthy communities, but also showed signs of addressing green space needs in other parts of the city. Between 2000 and 2006, at least 12 new parks were created in the affluent northern communities near Miramar, Carmel Valley, and Mira Mesa. During this same time, 4 parks were created in more central neighbourhoods. In 2006, though, a new Downtown Community Plan created by Civic San Diego, called for the construction of 125 acres of open space, prioritizing the development of seven new major public open spaces for putting every downtown resident within a five- to ten-minute walk of public open space. In the decade following Civic San Diego's report, the central areas just south of Balboa Park did indeed get at least eight new parks, but these added only a few acres of new space – far shy of the 125 acres called for.

In the latter part of the first decade of the 2000s, San Diego greening began to be framed to a large extent within public-private partnerships focused on energy efficiency and carbon emissions reductions. In 2008, the Green Port Policy was approved (The Port of San Diego is a public corporation co-managed by different agencies). The ultimate goal of the program is to achieve long-term environmental, societal and economic benefits through resource conservation, waste reduction and pollution prevention. The Green Port Program unifies the Port's environmental sustainability goals in six key areas: energy, waste management, sustainable development (linked to building), water, air and sustainable business practices. A major element of the Green Port Policy is incentives for business to implement more efficient and sustainable practices, such as those in the 2011 Green Business Challenge, which provided training information and incentives for businesses to reduce their environmental impact.

Most recently, San Diego has developed a diverse array of sustainability, climate action, and smart city plans with implications for urban greening. The Smart City San Diego[7] program has just established San Diego as a "2030 District" where private industry and local builders commit to a reduction in energy,
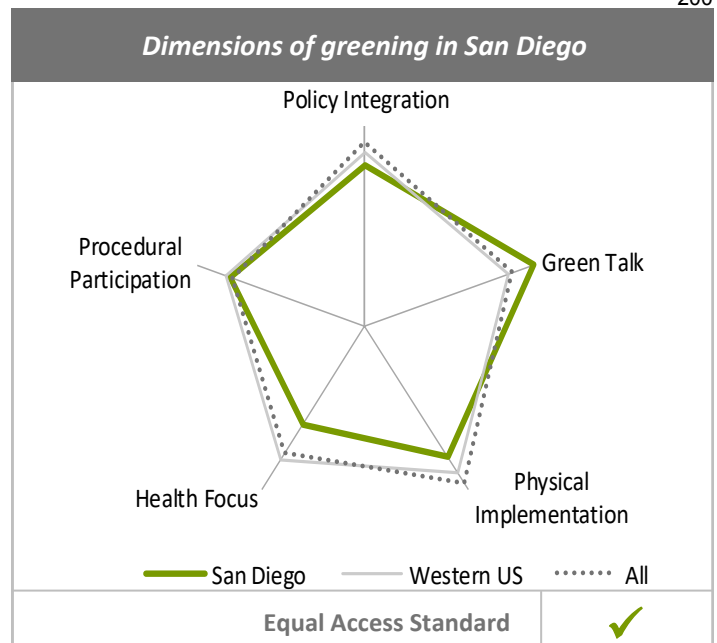
Climate Protection Action Plan published
**2005**

NEVP waterfront project launched
**2012**

**2004**
Park at the Park opened

**2008**
Green Port Policy approved

**2015**
New Climate Action Plan published

water, and emissions form designated buildings. These plans are also a key justification for focusing development downtown and greening is one of the tools used to make downtown more attractive for such projects. For example, the North Embarcadero Visionary Plan[8] (NEVP) was launched in 2012. Development of the first phase of the plan started in 2014. Features of Phase 1 include, among others: a linear park, or esplanade, over 100-feet wide between the Harbor Drive roadway and the Bay, a continuous 30-foot wide promenade adjacent to the Bay, with signature paving, for mixed pedestrian and bicycle use, a wide landscaped median in West Broadway and a public plaza at the foot of the street, formal gardens featuring groves of jacarandas, storm water drainage system and energy-efficient lighting. As well, Fault Line Park in downtown opened in 2015 as part of a larger development in the East Village called "Pinnacle on the Park." This development will include 950 new homes, street level commercial and retail space, underground parking, a stand-alone commercial structure, and public restrooms. In contrast to 1990s and early 200s, the majority of new parks have been built in downtown area. For example, the long-delayed Horton Plaza Park long-delayed project opened in 2016, as did Hawk Pocket Park, East Village Green Park, and St. Joseph's Park. As well, the largest park in Mission Valley district, called Civita Park, is expected to be finished by 2017. It will include "a large central plaza with rose gardens, an outdoor amphitheater with grass seating, a game area, a dog park, two basketball half courts and a community garden." The 14-acre park is part of the Civita community, "a 230-acre urban village that will ultimately have 4,780 homes and apartments."[9]

The Climate Action Plan of 2015 also demonstrates a higher priority for greening. The renewed plan, unlike the 2005 version, incorporates a climate resilience strategy that calls on the city to "Prepare a Parks Master Plan that prioritizes parks in underserved communities." This plan, which seeks to shift to 100% citywide renewable energy by 2035, also calls for continued development of tree planting programs throughout the city. Finally, the importance of greening in San Diego is also seen in the 2015 San Diego County Strategic Plan 2016 – 2020, which includes implementation of new parks, under the slogan "Live well in San Diego" as a "Healthy Families" initiative.

*Author: Lucía Argüelles Ramos*

**Notes**

1) A 2006 report of green space equity finds 32.5 acres per 1,000 residents, page 21: https://www.issuelab.org/resources/9517/9517.pdf

2) Geo localization of maps are available at the city's parks and recreation website: https://www.sandiego.gov/park-and-recreation/centers/map

3) For more information, see: https://www.sandiego.gov/planning/community/profiles

4) For more information, see: http://www.sandag.org/uploads/publicationid/publicationid_1515_11905.pdf

5) For more information, see: https://data.sandiego.gov/datasets/park-locations/

6) See: http://www.sandag.org/uploads/publicationid/publicationid_1788_16614.pdf

7) This can be explored in more detail at: http://www.sandag.org/uploads/publicationid/publicationid_1788_16614.pdf

8) For more information, see: https://www.portofsandiego.org/north-embarcadero.html

9) From http://timesofsandiego.com/life/2016/09/30/mission-valleys-largest-park-halfway-to-public-opening/

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# San José

Health Improvements

Downtown Revitalisation

Vulnerable Neighbourhood Regeneration

Post-industrial Redevelopment

Climate Preparedness and Resilience

Nature Preservation and Restoration

## Background/Context

The City of San José is located in the central and eastern portions of the Santa Clara Valley, between the foothills of the Santa Cruz Mountains to the west, the Santa Teresa Hills to the south and the Diablo Mountain Range to the east. Diked ponds, saltmarsh, the waters of San Francisco Bay and the adjacent cities of Milpitas and Santa Clara border the City to the north. In the 1950s-60s the city shifted away from a farming-based economy and saw fast population growth based on new car-oriented housing developments. Today San José residents are majority non-white (73.3%, 2014) and the city is the capital of the technology hub Silicon Valley. It is home to several large corporate headquarters including Cisco Systems, eBay, IBM and Adobe.

In 2007, San José adopted a "Green Vision," to become "a world centre of Clean Technology innovation, promote cutting-edge sustainable practices, and demonstrate that the goals of economic growth, environmental stewardship and fiscal responsibility are inextricably linked." Since then, the city has worked to achieve a set of specific goals in line with the Green Vision by the year 2022.

## Greening Trajectory

An important foundation for urban greening in San José between 1990 and today was established with the 1975 passage of the California State Law known as the Quimby Act. The purpose of the Quimby Act (California Government Code Sections 66475-66478) was to preserve open space and parkland by authorizing local governments to establish ordinances requiring developers of new subdivisions to directly create or pay a fee for new parks. In 1988, San José established the Parkland Dedication Ordinance (PDO) based on the Quimby Act standards, which require new subdivision developments to help meet a threshold of at least three to five acres of parkland per 1,000 residents of a neighbourhood. In 1992,

*Plaza de Cesar Chavez–* Eric Fredericks|CC-BY-SA-2.0

the City Council expanded these efforts with adoption of the Park Impact Ordinance (PIO) which applied parkland dedication requirements to new units in non-subdivided residential projects. The PDO and POI led to the creation of many new parks in the city beginning in the1990s.

Shortly after the PIO was created, the City also advanced its tree planting and urban forestry programs. In 1994, the Our City Forest[1] plan was funded. Between that time and 2016, Our City Forest planted over 50,000 trees in partnership with hundreds of citizen volunteers and several local non-profit organizations. By the early 2000s, Our City Forest grew into an established urban forestry and

Park Impact Ordinance (PIO) adopted
**1992**

Urban Growth Boundary published
**1996**

**1994**
Our City Forest plan funded

**2000**
Greenprint Plan adopted
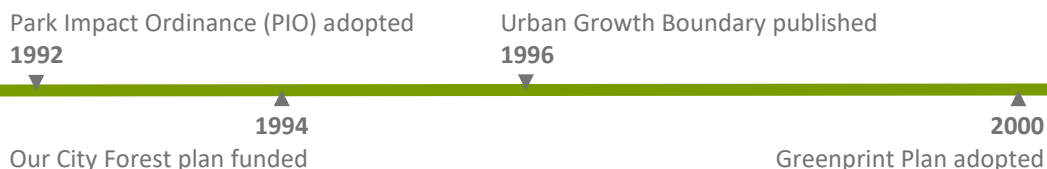
environmental education non-profit serving Silicon Valley.

By the mid-1990s, San José had an established constituency for urban greening based on its parks and tree programs, which mobilized to embed an environmentally sustainable growth model in the City's growth plans. In 1996, the City strengthened its commitment to environmental leadership by incorporating its Urban Growth Boundary (UGB) into the 2020 General Plan. Adoption of the Urban Growth Boundary identified the limits of the City's potential expansion and, as of publication, continues to permanently limit urbanization in San José to those areas already developed and/or already planned for urban development.



*Dimensions of greening in San José*
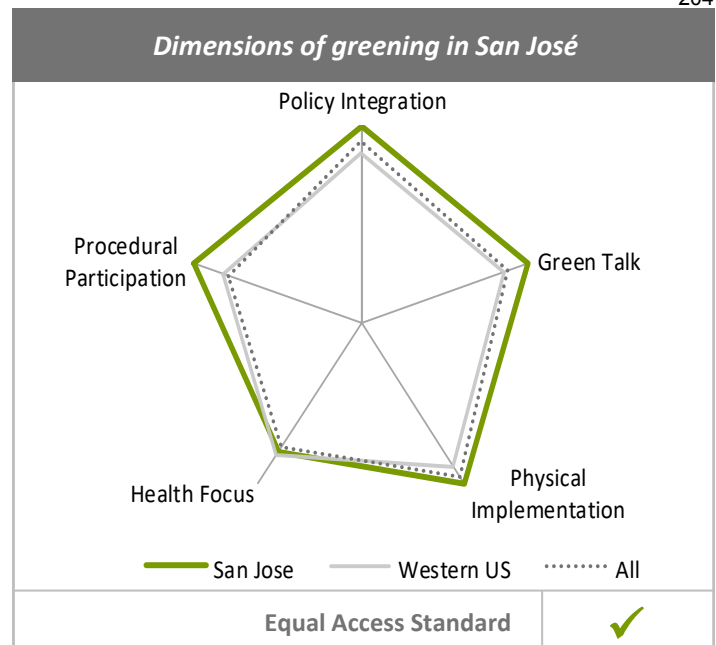
San José's 1996 Urban Growth Boundary, also known as its "Greenline" serves multiple purposes. The UGB is intended to preserve as open space substantial areas of the surrounding hillsides, baylands, and other lands. In furtherance of the City's fiscal goals, its UGB is intended to direct urban development within infill locations where the City can most efficiently provide urban services. In 2000, a ballot measure re-establishing the Urban Growth Boundary and procedures for its modification was placed before and easily approved by the City's voters, demonstrating broad community support for this limitation upon the San José's outward expansion and preservation of the surrounding hillsides as open spaces areas.

Two years after the 1996 establishment of the Greenline, San José took an early step toward advancing green building in the city. The Green Building Task Force was established in 1998 and the consequent Green Building Program was launched in 2001. San José was the first city in its county to adopt a green building standard and it built the first certified green public library. It also participated in several pilot programs with the United States Green Building Council (USGBC).[2] The Green Building Policy was updated in 2008 to require that all building projects constructing or adding more than 10,000 square feet of occupied space be designed and constructed to achieve at a minimum the USGBC LEED Silver level of certification. Key Green Building principles were incorporated into the General Plan through the Envision San José 2040 General Plan update process.

In 2000, San José launched its major urban greening initiative with adoption of the Greenprint Plan. Greenprint is a long-term strategic plan that guides the future expansion of San José's parks, recreation facilities, and community services. It is built upon earlier park planning documents like Leisure and Life 2000. It creates a policy and program framework to support day-to-day and annual decision-making related to expansion of parks facilities. Under Greenprint, which was updated in 2009, the City's parks and open space inventory expanded greatly. From 2000 to 2009, San José acquired approximately 111 acres of land for future park development and developed approximately 40 acres of vacant land as neighbourhood/community parkland. As well, housing developers added another 35 acres through the "turnkey" process associated with PIO requirements, and schools provided approximately 60 acres of shared facilities space that have been made accessible for public recreation.

Urban Environmental Accords released
**2005**

Greenprint 1st update
**2009**

**2007**
San José Green Vision adopted

**2011**
Envision San Jose 2040 published
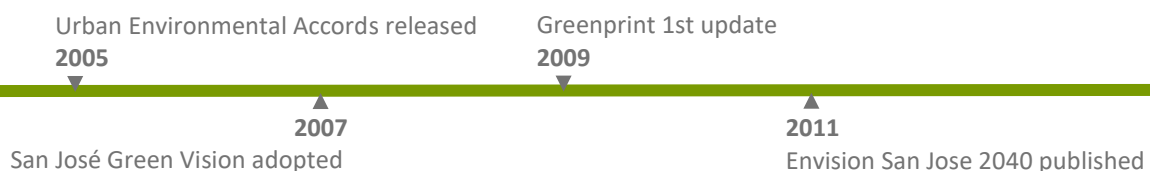
During the first round of Greenprint implementation, in 2005, San José's City Council signed on to the Urban Environmental Accords, a declaration of participating city governments to build ecologically sustainable, economically dynamic, and socially equitable futures for their urban citizens. The Urban Environmental Accords includes 21 actions in seven different areas such as energy, waste, and urban nature, that would help improve the quality of life for residents and preserve San José's environment and resources. The urban nature goal that relates to green space states: "Ensure that there is an accessible public park or recreational open space within half a kilometre (approximately 1/3 of a mile) of every city resident."

In October 2007, the City Council adopted the San José Green Vision. The Green Vision is a 15-year plan to transform San José into a world centre of Clean Technology, promote cutting-edge sustainable practices, and demonstrate that the goals of economic growth, environmental stewardship and fiscal responsibility are inextricably linked. One of the goals of the Green Vision is to create 100 miles of interconnected trails with 400 miles of on-street bikeways (Goal 10). It is a 15-year plan for "economic growth, environmental sustainability and enhanced quality of life". As part of this Program, the city developed relevant works on green infrastructure to solve water runoff problems. It is cited as a case study at the EPA guide for green infrastructure. Smart growth is also highlighted.

In December 2009, the City Council adopted the City of San José Greenprint 2009 Update. The Greenprint 2009 Update is the City's 20-year current strategic plan for parks, recreational facilities, and programs. The 2009 Greenprint assumed the population in San José would reach 1,137,700 persons by the year 2020 and identified underserved areas of the city that would require additional facilities to meet the City's Level of Service standards of providing 3.5 acres of parkland for every 1,000 residents. In 2016, a second update built on extensive community participation was launched. As part of this second update a community survey tool, called Mapita[3], was utilized. Mapita asks users to identity where they live, work or visit in San Jose, what park, trail, and community centre facilities they use, what activities they do there, and the condition of the facilities.

Two years after Greenprint 2009 was approved, the Envision San Jose 2040 plan incorporated it into general growth goals for the city and the same will likely occur for Greenprint 2016. Envision 2040 specifically calls for adding parkland to meet the City's service level objective. From 2009 when the Green print update was adopted to 2016, the city added another 32 acres of parkland. Today, PRNS manages a total of 3,473 acres of parkland across 199 sites of varying size and amenities.

*Author: Lucía Argüelles Ramos*

**Notes**
1) See more at: http://www.ourcityforest.org/

2) For more information, see: http://www.sanjoseca.gov/index.aspx?NID=1518

3) For more information, see: https://maptionnaire.com/en/1448f

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# Seattle

## Background/Context

Seattle is the largest city in the Pacific Northwest, with a population of approximately 621,000 (2012). Seattle is one of the fastest growing major cities in the US. Historically one of the whitest cities in the country, the foreign-born and minority populations have increased rapidly since the 1990's.[1] There are substantial socioeconomic inequities in the city; the top 1% earns approximately 25x more than the income of the lower 99% percent. Seattle has the third largest port in North America. During the 1980's and 1990's, Seattle became a boom town for the technology industry after Microsoft moved to the suburb of Bellevue in 1979. The many technology companies in the city have brought both rapid population increases and subsequent increases in property prices. The city's position on the water front places it at increased risk for natural disasters due to climate change, and this has informed many of the city's planning efforts.

The city has over 6,500 acres of parkland within the city limits. Seattle has a vibrant greening culture, as evidenced by substantial focus in city planning on urban forest renewal, parks renewal, bicycle infrastructure, and community gardening.

## Greening Trajectory

In 1994, the city of Seattle began the process of establishing a city-wide master plan, which centred on targeting population and employment growth in already well-established urban neighbourhoods. In return for accommodating the burden of this growth, these designated "urban villages" would benefit from increased capital investment in their communities. In conjunction with the comprehensive city plan, 37 individual neighbourhood plans were created for targeted areas (completed in 1998, and adopted by the city in 1999).[2] Over 20,000 citizens participated in creating the neighbourhood plans. According to a 2009 assessment of progress to date for the

*Beer Sheva Park–* <u>Orange Suede Sofa</u>|<u>CC BY-SA 3.0</u>

37 neighbourhood plans as well as the city's plan for park-related projects (including creating new parks, remodelling existing parks, and building additional amenities in existing parks), nearly all of the 277 parks projects had been completed or were underway. Additional plans at the city level address planning in specific areas[3] such as the 2009 Pedestrian Master Plan, a long-term action plan with the goal of making Seattle the most walkable city in the nation through the use of policies, programs, projects, and design criteria.

Over the years, Seattle has used several strategies to fund many of the parks and other greening

Master plan including "urban villages" established
**1994**

37 neighbourhood plans approved
**1998**

**1997**
Puget Ridge Playground project funded by NMF

initiatives proposed in planning efforts. For example, beginning in 1990, the Neighbourhood Matching Fund (NMF) program (approved in 1988), began to provide "matching dollars" for neighbourhood project improvement, organising, or development. Projects include the Puget Ridge Playground Project (1997), Greenwood Sidewalks (2008), and the Rainier Beach Urban Farm and Wetlands (2015). The Fund has awarded more than $49 million to more than 5,000 projects throughout Seattle and has generated an additional $72 million of community match.

During the 2000's several levies were used to fund parks.[4] The 2000 Pro-Parks Levy was passed to pay for parks-related improvements. This funding was supplemented by 21 million dollars in private donations and grants from the city, county and state for specific projects. The 2007 Kings County Parks Levy provided $217 million for parks, regional trails over 6-year period (2008-2013), and some of these funds were allocated for trail improvements. In 2008, the Parks and Green Space Levy passed, which provided $146 million between 2009 and 2014. In conjunction with the Parks and Green Spaces Citizens' Advisory Committee, which was inaugurated in 2008, and opportunity fund was created, providing $15 million for projects identified by neighbourhood and community groups. The 2013 King County Parks Levy generated approximately $66 million per year from 2014 through 2019 (projected) to fund parks, trails and open spaces. In 2014, the City approved the Seattle Parks District with Proposition 1. This saw a shift in funding from levies to an on-going funding stream collected through property taxes.

In addition to the use of general and small area planning, greening initiatives in the city have also been incorporated into land-use planning efforts. For example, the Seattle Green Factor (2010), a land use code provision intended to increase and improve urban landscaping in dense urban areas, uses a score-based system to increase and improve green landscaping in new development. It includes a menu of landscaping strategies that is required for all new development in neighbourhood business districts with more than four dwelling units, more than 4,000 square feet of commercial uses, or more than 20 new parking spaces.

As a port city, many of Seattle's greening initiatives and planning processes are informed by a focus on sustainability and climate change adaptation. There are several on-going programmes that fund natural resource protection and restoration, such as the King Conservation District, a regional initiative offering conservation programs and services to landowners and residents. In the mid-2000's, the city also began a substantial effort to increase the quality of existing urban forests, and to increase tree canopy coverage, primarily relying on non-profit organizations. A comprehensive plan for renewing urban forests was completed in 2006 followed by an urban stewardship plan, encouraging citizen participation in tree planting and caring for trees, in 2013. During this time, the city also began work on a comprehensive Climate Action Plan (completed in 2013), focusing heavily on sustainability.

A focus on sustainability is also evidenced by the establishment of a non-profit organization, Sustainable

| Racial and Social justice Initiative began **2004** | Seattle Green Factor adopted **2010** | Bike master plan for new greenways; Seattle Parks District approved **2014** |

**2007**
Kings County Parks Levy dedicated $217 million for parks

**2015**
Rainier Beach Urban Farm and Wetlands project funded by NMF
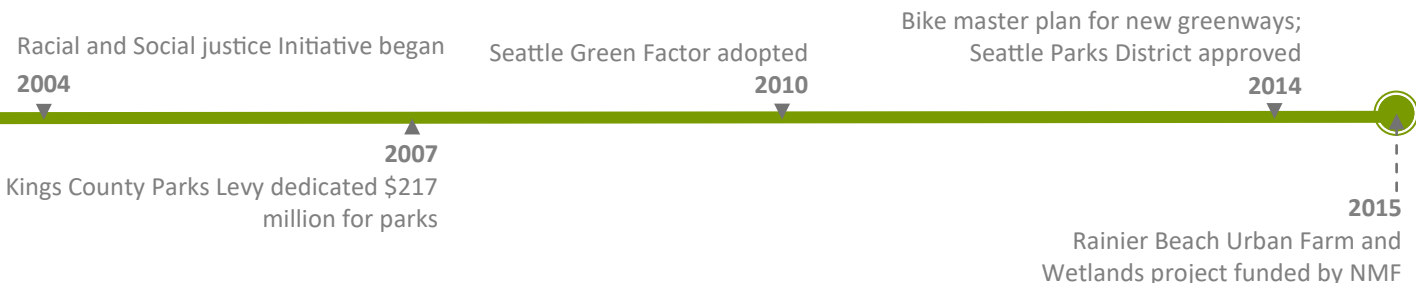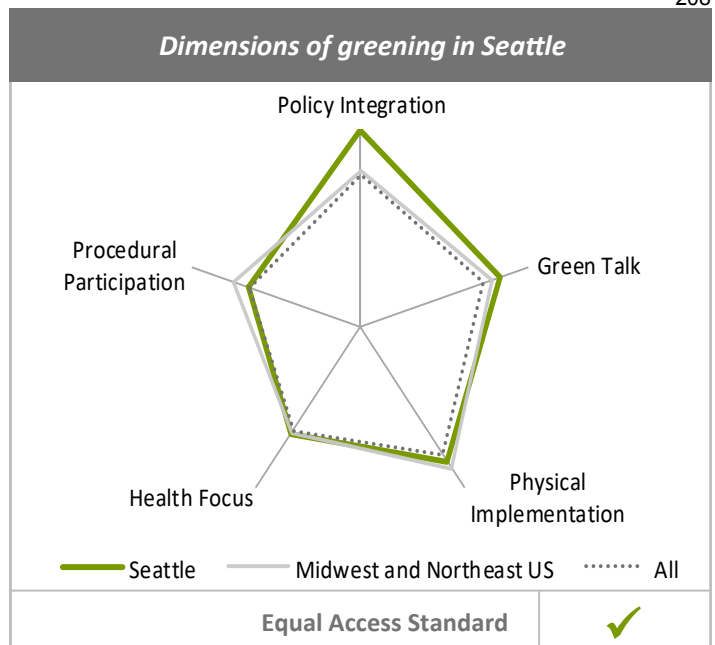
Seattle, in 1991. This organization promotes city-wide initiatives focused on sustainability including the "incubation" of new sustainable local businesses and a sustainability awards program. Additionally, in keeping with the city's sustainable vibe, various institutions such as the Safeco Field (the baseball arena) tout their sustainability initiatives, including an urban garden established by Safeco on the baseball field. Seattle has a number of areas that were previous brownfield sites that have been cleaned up and converted into parks, including the Outdoor Sculpture Park and Gas Works. As a result of it's sustainability efforts, Seattle has received notice for its status as a green city. In 2014, it was granted a STAR Community Ranking for sustainability from the nation's first rating system to evaluate livability and sustainability of U.S. communities by evaluating local sustainability (encompassing economic, environmental and social performance measures). Seattle has also been recognized for 30 years as a Tree City USA by the National Arbor Day Foundation, and for 19 years as a Tree Growth City.

In the 2000's, the city also began to focus on racial and social justice, a key theme of many city planning efforts, reaching across city agencies and planning processes. In 2014, a 3-year plan was put in place to supplement the comprehensive city plan, specifically focused on addressing institutional racism and inequity in city policies and initiatives. This expanded the role of the Racial and Social Justice Initiative, which was put in place in 2004 to address institutional racism in internal city operations and programs. This theme carried forward to the development of a plan to address environmental justice in Seattle, completed in 2016. The current iteration of the comprehensive city plan was completed in 2015, and includes a 20-year plan. This plan carry's forward the earlier notion of "urban villages" and includes substantial rhetoric on social justice and equity.

Seattle's greening efforts through the implementation of green infrastructure is notable. The Seattle transportation department's Bicycle Master Plan Progress Report (original plan released in 2014), notes updates to infrastructure for bicycling in the city, which includes the establishment of new greenways and bike routes. After much debate at the local, regional and state levels about the details of its replacement, it has been decided that a tunnel will be built which will be capped with a new waterfront public park. This project was approved by the Washington state legislature and is under construction. Citizen-led projects also contribute to the overall green infrastructure in Seattle. The P-Patch Community Gardening program, managed by the City, is a non-profit organisation developed in the 1970s. The program is one of the first and largest in the country, and includes over 85 garden sites, 5 in development (as of 2013), and 3 market gardens. Current initiatives include the six-year Parks and Open Space plan completed in 2017, which describes Seattle Parks and Recreation Department facilities and lands and establishes a future vision for Seattle's parks informed by Seattle's changing demographics.

*Author: Helen V.S. Cole*

**Notes**

1) As of 2010, people of color (non-White race or Hispanic/Latino ethnicity) represented 34% of Seattle's population, with Asians representing the largest minority group, 14% of the population. Over 17% of the city's population was foreign-born.

2) A catalogue of these plans is available through the Seattle city planning department's archive department: http://www.seattle.gov/neighborhoods/programs-and-services/neighborhood-planning

3) Other plans include: *Seattle 2035* - the City of Seattle's Comprehensive Plan, *2014 Parks Legacy Plan*, the *2016 Seattle Recreation Demand Study*, the *2015 Community Center Strategic Plan*.

4) Prior to this, in 1995, Seattle voters reject a $111 million property-tax levy that would have funded development and construction of the Seattle Commons, a 61-acre park stretching from downtown Seattle to Lake Union. This has been described by some as Seattle's missed opportunity for a 'Central Park'.

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# Seville

## Background/Context

With 698,690 residents, Seville is the fourth largest Spanish city and the capital of the Andalusia autonomous community.[1] Although located in a traditionally agricultural region, much of its recent economic development has been fuelled by tourism and investments in the tertiary sector. In the 1960s and 1970s, many residents emigrated from Andalusia to the northern industrial cities of Spain, leaving behind poor and marginalized urban neighbourhoods that were later revitalized through urban regeneration projects.

In 1992, Seville hosted the Universal Exposition (The Expo), an international event that gave the city global visibility, boosted economic development, and marked the start of a new era. Since this event – which took place on a climate-controlled and "greened" island 10 degrees Celsius cooler than the rest of the city – residents have worked to increase the urban green cover and have advocated for city planning interventions for climate change adaptation, with a focus on urban heat island effects.[2] Today, after a number of City-led and citizen-led interventions, Seville is one of the greenest Spanish cities with its 12 urban centre parks that cover 250 hectares.[3]

## Greening Trajectory

As one of the warmest regions on the Spanish peninsula, Andalusia (and Seville in particular) has historically engaged in sustainability debates and interventions around mitigating urban heat island effects. This has been physically manifested in the cooling of parts of the city and adapting the urban landscape to climate impacts. As a pioneer project, the 1992 EXPO venue at Isla de La Cartuja (Cartuja island) was built with bioclimatic interventions to decrease local temperatures.[4] Similar considerations affected the design of the public gathering spot, Las Setas de Sevilla (The Mushrooms of Seville). Built over six years (2005-2011) as a large wooden canopy structure, this public space also



*Plaza Encarnacion, Setas—*

incorporated bioclimatic design as a heat mitigation strategy.[5] The project design was, however, criticized by residents for catering to tourists and visitors with its imposing mushroom-like structure, rather than serving the greening needs of the city for its residents. In addition to the municipal emphasis on climate adaptation,[6] the local sustainability agenda has focused on energy efficiency, sustainable mobility, and most recently on promoting green urbanism. As illustrated by the content and public-private partnership emphasis of the 2016 locally-organized URVE - Feria Nacional Urbanismo Verde (National Green Urbanism Fair), Seville has positioned itself as a national leader in the discussion on nature in the city.[7] In practice, the City has also led, having multiplied its green area cover by 10

Expo '92 hosted
**1992**

Sevilla Ciudad Verde initiatives start
**1995**

**1993**
Parque del Amillo and Parque de Miraflores inaugurated

**1996**
Corredor Verde project begins

**1997**
Parque José Celestino Mutis opened

between 1981 and 2006.

Prior to the Expo (from the mid-1980s until 1992), as well as post-Expo (1995-2000), the city dedicated European Regional Development Fund (ERDF) funds to the revitalization of peripheral urban areas (such as the neighbourhoods of Macarena and Triana) and of some of the old town districts (San Luis-Alameda and San Bernardo). While these projects have regenerated degraded or underinvested sections of the city, they did not put much emphasis on greening and sustainability. The redevelopments in these neighbourhoods have also been associated with gentrification pressures on the resident population.[8] Indeed, several studies and media articles situate Seville at the epicentre of gentrification processes in the late 90s.[9]



*Dimensions of greening in Seville*

From the year 2000 onward, Seville's environmental efforts were driven by sustainable mobility and energy efficiency goals. In a period of five years, the city started the pedestrianisation of the old quarter (2004), built new networks of bike paths (2005 onwards, for a total of 170 km of bike paths today), and opened both a tramway system (2007) and a metro network (2009). As a result of these efforts, Seville has recently been ranked the 14th bike-friendliest city in the world.[10] From an energy efficiency standpoint, since 2010, efforts to improve the efficiency of the city's infrastructure have been guided by the Sustainably Energy Action Plan (PAES), and the subsequent 2016 Sustainable Energy and Climate Action Plan (PACES). Through the program "Sevilla Ciudad Solar 2020," the city has dedicated funding to projects for the incorporation of renewable energy solutions in social housing and in municipal buildings.

In the planning and creation of greenspace, local leaders have worked since 1995 to increase the number of urban parks and green areas[11] despite diminishing municipal funding in the aftermath of the Expo event and in the absence of a long-term specific greening agenda. Indeed the 1987 General Urban Territorial Plan (PGOU 1987) contained no specific information on urban greening and green space access. Similarly, while the 2006 PGOU includes an Environment section, indicates park maintenance goals, and identifies park access disparities between neighbourhoods, it offers no clear planning goals related to new park construction or rehabilitation.[12] The 1995 draft of the Integral Environmental Plan of Seville did however include the Sevilla Ciudad Verde project, which, running from 1995 to 1999, saw the "massive reforestation of streets, avenues, plazas and small urban spaces," as well as the creation of a number of large parks, all with the goal of increasing the provision of greenspace from 1.7 m2 to 9.2 m2 per inhabitant.[13] In fact, over a period of twenty-five years (1981-2006), the city's 152 hectares of greenspace expanded to 672 hectares, reaching 10.86 m2 per inhabitant.

A number of large new parks have been built in peripheral and/or historically marginalized neighbourhoods. In 1993, the City inaugurated the Parque del Alamillo (47 hectares) at Isla de Cartuja and expanded it by 10 hectares in 2009. Also in 1993, the 86-hectare Parque de Miraflores opened in the working class district of La Macarena. This park was the outcome of a decade-long citizens' mobilization to
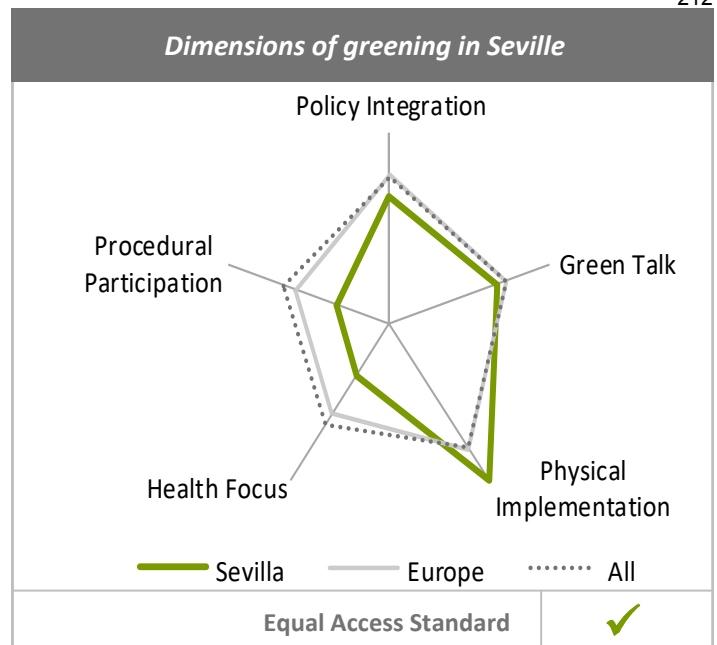
PGOU adopted
**2006**

Parque Ribera del Guadaira riverbed restoration began
**2014**

**2010**
Jardines del Valle opened

reclaim an unused site and transform it into a green space with recreational facilities and community gardens.[14] Similarly, neighbourhood action led to the 1997 creation of the 41-hectare Parque José Celestino Mutis, which is now home to one of the most significant botanical collections in the city.[15] In 1996, a brownfield regeneration project was initiated with the goal of creating a greenbelt (Corredor Verde) along the SE-30 highway and former cattle routes.[16] Today, the greenbelt forms a network of united green spaces in Seville's metropolitan area, offering new recreational and environmental spaces for residents while connecting rural and urban areas.[17]

More recent greenspace and park developments have focused on the city centre and the Guadalquivir riverfront, with some completed in conjunction with neighbourhood regeneration projects. For instance, in 2010, the Jardines del Valle opened to the public on the site of a former convent garden after much citizen pressure on the City to reclaim the site for residents. In 2014 a 60-hectare riverbed restoration project of the Parque Ribera del Guadaira was concluded after a first-stage inauguration in 2011. The original project included the rehabilitation of existing housing, the creation of 8,000m2 of recreational areas, and the planting of more than 4,400 trees and shrubs, while the most recent construction has brought in new community gardens and a space for environmental education.[18]

In contrast to the city-led greening projects, the citizens' platform "Red Sevilla por el Clima" has promoted the construction of green rooftops and green facades for heat mitigation, as well as other actions related to sustainability such as establishing community gardens.[19] Citizens' initiatives in general have played an important role in the promotion, construction, and contestation of green and public space areas in Seville. In this context, the recent mobilization of another citizen platform, the "Plataforma de Afectados por el URBAN," reflects much of the social conflict that emerged after the EU-funded projects of the 1990s were deployed in the city. With the current DUSI Norte de Sevilla plan[20] to remove the city's northern slums and the transformation of the El Vacie informal community into a green area, fears around gentrification have been reignited among a substantial portion of residents.[21]

*Author: Lucía Argüelles Ramos*

## Notes

1) As of 2017 (Statistical Service of Seville). In 2015, only 4.7% of Seville's residents were immigrants, a proportion much lower than those of other large Spanish cities.

2) The citizen's platform, "Red Sevilla por el Clima" (Seville Climate Network) advocates for municipal action on sustainability and climate change issues and catalyses citizen awareness and action around community greening initiatives. For information on the citizen network, see: http://www.redsevillaporelclima.org/

3) For a description of Seville's 12 urban parks (in Spanish), see: http://sevilla.abc.es/sevilla/20150122/sevi-parques-sevilla-metros-201501211159_1.html

4) Visitors experienced outdoor air-conditioning via cool mist that was sprayed along streets and in gathering spots, where fountains and green canopies further contributed to the cooling of the ambient air.

5) The canopy structure covers an archaeological museum, a market, shops, and other amenities. See: http://setasdesevilla.com/

6) Since 2005 Seville has been part of the Spanish Network of Cities for the Climate (http://www.redciudadesclima.es).

7) For information on the inaugural URVE fair, see: http://www.urve.es/urve-2016-i-feria-urbanismo-verde-sevilla/

8) For more information on the gentrification pressures faced by residents of Seville's historic neighbourhoods, see http://www.ub.edu/geocrit/-xcol/8.htm

9) For a local editorial on the issue, see: http://elpais.com/diario/1998/06/08/andalucia/897258126_850215.html

10) For media coverage, see: https://www.theguardian.com/cities/2015/jan/28/seville-cycling-capital-southern-europe-bike-lanes. For the 2017 rankings, see: http://copenhagenize.eu/index/14_seville.html

11) For additional context on the struggles to increase locally-appropriate parkland in Seville and for the perspective of residents, see: http://www.el-jardin-del-gigante-egoista.es/novedades/articulos/la-triste-realidad-de-los-nuevos-parques-de-sevilla-la-importancia-de-la-participacion-ciudadana-el-gigante-egoista/

12) The 2006 plan also fails to address the socio-environmental and health implications of inequities in green space access. For the full document, see: http://www.pgou.eu/Sevilla.htm

13) On the Sevilla Ciudad Verde project, see: http://habitat.aq.upm.es/bpes/onu98/bp444.en.html

14) On the popular greening initiative, see the following summary: http://habitat.aq.upm.es/bpes/ceh2/bpes37.html

15) See: http://www.sevilla.org/ayuntamiento/competencias-areas/area-de-habitat-urbano-cultura-y-turismo/a-servicio-de-parques-y-jardines/parques/parques-urbanos/parque-jose-celestino-mutis

16) See: http://www.sevilla.org/ayuntamiento/competencias-areas/area-de-habitat-urbano-cultura-y-turismo/a-servicio-de-parques-y-jardines/parques/zonas-verdes-y-parques-perifericos/plantaciones-de-la-se-30/plantaciones-de-la-se-30

17) For more information on the greenbelt: http://www.juntadeandalucia.es/medioambiente/corredorVerde/mostrarFicha.do?idCorredor=25

18) See: http://www.mapama.gob.es/en/prensa/14.07.09%20Inauguraci%C3%B3n%20Parque%20Guada%C3%ADra,%20Sevilla_tcm11-336125_noticia.pdf

19) The primary objective of the group is to increase vegetation on every surface where greenery is absent (i.e. paved urban spaces, vacant land, tree-less streets, and industrial areas). See: http://www.diariodesevilla.es/sevilla/Red-Clima-rechaza-proyectos-revegetar_0_1085592067.html

20) A project that has received €15 million in EU funding. See: http://www.sevilla.org/noticias/3-10-2016-el-ayuntamiento-de-sevilla-recibe-15-millones-de-fondos-europeos-para-proyectos-de-inversion-socioeconomica-en-las-zonas-norte-y-macarena and http://www.sevilla.org/ayuntamiento/alcaldia/comunicacion/campanas-de-comunicacion/estrategia-iszn/estrategia-dusi-norte-sevilla

21) For local media reflections on these concerns, see: http://www.diariodesevilla.es/sevilla/temor-gentrificacion_0_1070593548.html

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# Sheffield

## Background/Context

Sheffield is an industrial city in the north of England and the fourth largest municipality in the country with 552,698 residents.[1] Known globally during the 19th century for its steel production, the economic and political conditions driving the industry's collapse in the 1980s significantly increased inequality in the city and remains a pressing issue.[2] In the late 1990s, 141,000 people in Sheffield lived in households receiving Council (social) benefits (26% of adults and 31% of children).[3]

Sheffield sits at the eastern foothills of the Pennine Hills and in the valleys of the River Don, which create an urban environment with 150 miles of rivers and streams. The city often boasts of being the UK's or even Europe's greenest city: almost three-quarters of the city is taken up by natural vegetation and waterways, including 175 woodlands, 78 parks and 74 allotment (food growing) sites.[4] Sheffield arguably has more trees per person than any other city in Europe - an estimated 2 million in total. However, an ambitious municipal greening agenda to improve the stock of green and welcoming public spaces in the city centre is currently at odds with budget realities.

## Greening Trajectory

According to a European Union study on public policy instruments in 'Greenstructures and Urban Planning,'[5] the strong tradition of socialism in Sheffield in part explains the large size of its public green estate – another key explanation being the local topography and river system which render much of its land undevelopable. In this tradition, public ownership of land has been regarded as an important goal in its own right and as a means of protecting an attractive landscape. However, the cost of maintaining this large public green estate meant that during the economic recession of the late 1980s and early 1990s, the quality of maintenance suffered. With its strong socialist base the City Council prioritised the economy,


*Devonshire Green Skateboard Park —* [David Dixon](#)|[CC-BY-2.0](#)

housing, education and social welfare, and it substantially cut the Leisure Services Department budget. During that period, some land regeneration projects did however receive Council funding, including Blackburn Meadows, a Nature Reserve created (between 1993 and the late 2000s) on the former brownfield site of Tinsley Sewage Farm and managed by Sheffield City Council, with assistance from Sheffield and Rotherham Wildlife Trust.[6]

Sheffield's Unitary Development Plan, adopted in 1998, was its first statutory city-wide development plan for 40 years. The document, still in use, addresses new development, conservation and changes in

Unitary Development Plan adopted **1998**

Manor Park Fields restoration begins **1999**

**1993** Blackburn Meadows nature reserve regeneration

**2000** First Sheffield City Centre Masterplan adopted

land and building use. Its vision is of a city for people, a more thriving city, and a more accessible and caring environment, all achieved through the promotion of a better environment and better quality of life. The green environment section of the UDP outlines policies to regulate greenbelt development and to conserve nature. With the guidance of this 1998 plan, the City placed its focus on protecting, enhancing and extending a network of green corridors and green links. Much of the UDP focuses on regenerating built-up areas and developing unused or underused sites, including derelict and contaminated land in the main urban area, with the intent of giving "new life" to older areas or converting suitable plots to open space and forestry.



*Dimensions of greening in Sheffield*
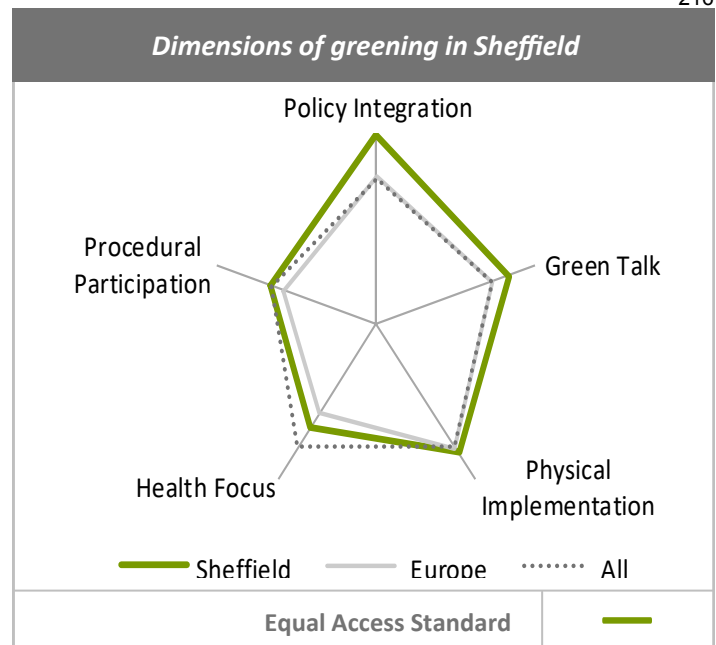
Since 2000, Sheffield has undergone dramatic transformation through several regeneration projects. For example, the South Yorkshire Forest, a project started in the late 1990s took almost ten years to complete and included restoring derelict land for recreation, timber production, and nature conservation purposes. In 1999, the city also invested £1.5 million to restore Manor Fields Park in a 15-year program linked with adjacent private sector housing investments. The 25-hectare, previously derelict site was converted into a park with a sustainable drainage scheme.[7]

During the late 1990s and 2000s, several greening projects took place in the under-provisioned city centre, many of which were underpinned by a 2000 City Centre Masterplan. For instance, in 2004, the City partnered with the British Waterways Board and Rotherham Borough Council to restore the derelict Sheffield and Tinsley canal landscape and create a canal-side walking route from the city centre to the Meadowhall shopping centre, about three miles away. In addition, Five Weirs Walk was completed in 2010 in partnership with the Five Weirs Walk Trust as an 8km walking and cycling path along the banks of the historically polluted River Don, from Sheffield City Centre to Meadowhall Don. Various canals and riverside paths have now been connected to one another and to parks. Of smaller scale, Devonshire Green, a degraded public open space, was upgraded to include flowerbeds, trees and a terraced grass amphitheatre in 2007-2008 with £1.6 million funding from the developers of adjacent housing developments. Also in the city centre, the South Street Park project (2010-2012) led to the creation of a new £800,000 greenspace, arboretum and amphitheatre behind the city centre railway station.[8]

In 2009, the City adopted a new set of planning documents, the Sheffield Core Strategy and its underlying Sheffield Development Framework, describing how the city will develop spatially until 2026. While transformation and sustainability are the core guiding principles, various sections of the strategy focus on open space provision as a strategy toward offering opportunities, wellbeing and quality of life for all. The greenbelt and strategic green network are to be protected through the control of development, the enhancement of existing open space, the creation of new open space in conjunction with new development and through developer contributions. Climate change concerns are also addressed in the strategy, reflecting increased concerns since devastating floods in 2007 raised the city's attention to its

2010-2030 Green and Open Space strategy adopted
**2010**

South Street Park opened
**2012**

**2004**
Sheffield and Tinsley Canal regeneration and walking path construction

**2014**
Waterway Strategy launched
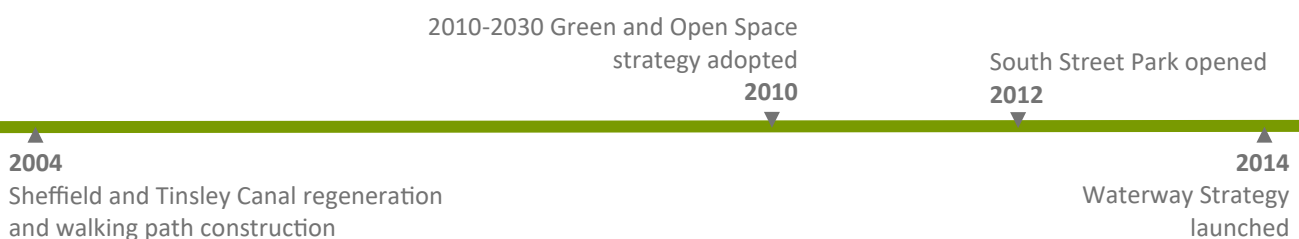
vulnerability. Since then, a 2014 Waterways Strategy has been developed by a multi-stakeholder group for the re-naturalisation, restoration, and sustainable redevelopment of the city's waterways.

Most recently, since the early 2010s, Sheffield began prioritising liveability and urban health in its planning; the Green and Open Space Strategy for 2010-2030 envisions Sheffield as the greenest city in Britain, with high quality green and open spaces where diverse communities actively participate and share in the social and health benefits. To this end, the City aims to convert 300 hectares of existing open space into Urban Nature Areas, over 3 years, starting in 2013.

Liveable city priorities are also reflected several neighbourhood action plans and projects. In 2013 the city inaugurated Edward Street Park, a flexible community and sports green space in the heart of urban Sheffield. Funded by the European Union and Sheffield City Council, the park replaced an underused site within a low-income city-centre community. Plans for the north-eastern, formerly industrial community of Attercliffe have, since 2011, included new canal-side paths, leisure spaces, a village green, and improved landscaping throughout the neighbourhood. In one of the City's most recent projects, a 'Grey to Green' corridor with sustainable urban drainage, perennial vegetation, and linear public (green) spaces is being developed to transform Sheffield's Riverside Business District.[9]

Despite the ample presence of greening in its planning and policy, Sheffield today faces a tension between its ambitions to be the greenest British city and the significant cuts to greenspace maintenance as part of recent austerity measures. For example, since 2012 the City's highway maintenance contractor has felled thousands of mature trees[10] and its Parks and Countryside Department experienced a £2 million cut to its budget.[11] In the context of these cuts, community engagement in greenspace maintenance has been emphasised, and there has been a rise in friends' groups and trusts that manage green spaces; these groups are typically volunteer-run or non-profit agencies that seek funding from government and non-governmental sources.

*Author: Melissa García-Lamarca*

**Notes**

1) 2011 Census Population, Office for National Statistics, Nomis Database (Durham University). In the year 2011, Sheffield's non-white population made up 16.3% of the population (16.3%).

2) A Tale of Two Cities: The Sheffield Project provides details of inequalities and their political economic roots (see references).

3) Further details available here: https://www.sheffield.gov.uk/your-city-council/sheffield-profile/deprivation-statistics.html

4) For the full account of Green amenities managed by the Sheffield City Council, see: http://www.greenstructureplanning.eu/COSTC11/Sheffield/shef_policies1.htm

5) For details of the EU COST C11-WG1B study, see: http://www.greenstructureplanning.eu/COSTC11/sheffield_policy.htm

6) For more on the transformation of the sewage farm: http://www.wildsheffield.com/nature-reserves/our-reserves/blackburn-meadows

7) For more information on the project, see: http://www.manorfieldspark.org/history.html

8) The project is part of the ongoing Sheaf Valley Park regeneration project to create an extensive green setting for 1,000 new homes. See: http://www.sheffieldnewsroom.co.uk/work-starts-to-expand-sheffields-green-lung/

9) Funded by the European Regional Development Fund and Sheffield City Region Investment Fund. See City Council news: http://www.sheffieldnewsroom.co.uk/turning-grey-to-green-in-sheffields-riverside-business-district/

10) More on the tree conflict: https://www.theguardian.com/commentisfree/2016/nov/21/dawn-raid-war-on-trees-sheffield

11) See minute 1:05 in interview with Sheffield City Council's head of Parks and Countryside: https://vimeo.com/180066139

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# Stockholm

## Background/Context

Stockholm is the capital city of Sweden and the most populous city in the Nordic countries, with 881,235 residents.[1] Stockholm is the cultural, political, and financial centre of Sweden. Roughly 85% of its jobs are in the service industry with an almost complete absence of heavy industry.[2] At the same time, Sweden has seen the largest increase in inequality of any developed country over the past 25 years according to OECD figures.[3] With segregation rising faster than in other European cities over the last decade, Stockholm has witnessed increased and vocalised community tensions.[4]

The city spans 14 islands on the south-eastern coast of Sweden. Surrounded by 219 nature reserves, 30% of the city's area is green space[5] and 95% of the population lives less than 300 meters from green areas. The City of Stockholm owns a large portion of land and waterways within city boundaries. As Europe's first "green capital," Stockholm was granted the European Green Capital Award by the EU Commission in 2010, formally establishing its reputation as a leader in urban greening.[6] The city's current environmental programme is its fifth since being initially established in the mid-1970s.

## Greening Trajectory

Stockholm has a long-standing and broad array of greening activities; the city has worked in a structured, documented and goal-oriented way on environmental issues since the 1970s. The City joined ICLEI's "Cities for Climate Protection" campaign in 1995 and has worked systematically since then to comply with its 5 milestones of measurement, commitment, planning, implementing and monitoring.[7] The city engages in a plethora of actions regarding climate change, from its Action Programme on Climate Change running since 2000, to a city partnership of actors working on climate change through the 2007 Climate Pact.



*Stockholm Royal Seaport—* Holger.Ellgaard | CC BY-SA 4.0

City action on environmental issues has been guided by a series of environment programme documents. The Environment Programme of 2008-2011 provided general objectives for the sustainable use of land and water, for the long-term management of significant natural areas for flora and fauna, and for the promotion of public health. The data behind this plan lent substantial support to the City's European Green Capital candidacy. The newest (2012-2015 and 2016-2019) Environment Programmes have increased focus on energy-efficient construction and public health.

The transformation of its industrial shoreline has played a large role in the greening of the city in recent

Stockholm City Plan adopted
**1999**

**1994**
Nationalstadsparken natural and cultural preservation area protected

**2002**
Environmental Billion Fund created

years. Stockholm's application for the European Green Capital award notes that since the year 2000, the old and partly abandoned industrial and harbour areas near the Inner City Area have been a focus for city planning. Even before then, the city had begun to engage in the construction of large-scale eco-districts such as the Hammarby Sjöstad (Hammarby Lake City), now completed on an underutilized industrial site.[8] The City has actively reused and redeveloped these brownfields sites and many of them have been strategically developed to directly link to a new high-speed mid-city tram system. These sights provide good access to other forms of public transport and are located close to water. A large part of the city's housing programmes have constructed residential areas on these sights. In fact, one third of the

**Dimensions of greening in Stockholm**



housing built from 2000 to 2007 (9,000 apartments) was on brownfield sites. The Stockholm Royal Seaport has been an urban district under planning and construction since 2009, with broad policy and financial support for its strong environmental profile.[9] Meanwhile, initiatives such as the Arstafältet wetland habitat creation and surface water restoration project on Arstaviken Bay exemplify the greening dimension of the City's waterfront restoration efforts of the mid-2000s.
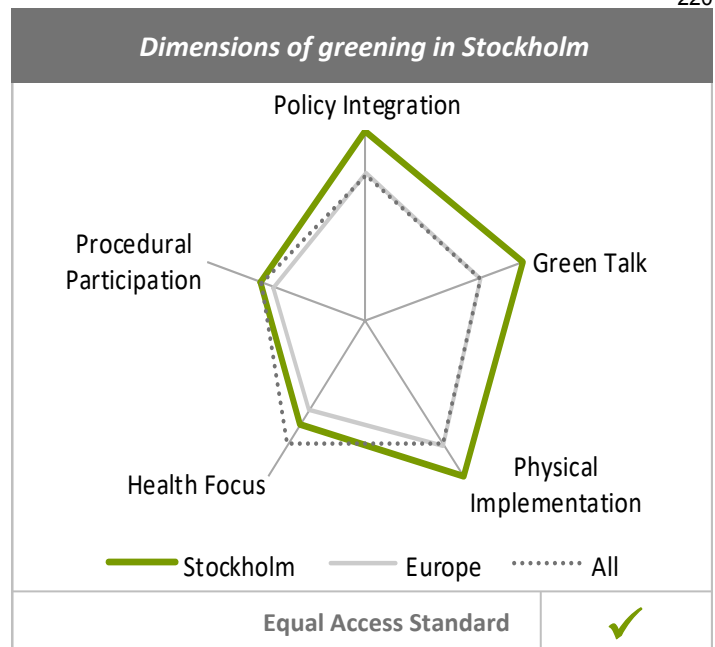
In 2002 the City of Stockholm's municipal district energy company, Birka Energi, was privatised and in the process set aside a one billion kroner reserve, the "Environmental Billion" to carry out various environmental projects in the city. Between 2004 and 2005, 1.1 billion kroner ($125 million USD) was awarded to 158 projects within municipal administrations and companies, with project implementation carried out until the end of 2010. Two projects exemplify the kind of work done under this program: the Laduviken water park which opened in 2009 and the Lövsta landfill remediation that opened as a 15-hectare green area with pedestrian and cycling paths in 2010.

In terms of park creation and green space preservation, municipal planning tools and programs have tried to balance green space provision with the maintenance of the character and existing urban qualities of the city. The Stockholm Park Programme, created by the Stockholm Municipal Council in 2006, is an action plan for the development of Stockholm's parks and green areas. It provides guidance for their planning and management, and emphasises the right of all residents "to live close to park areas," for "green retreats, playing, walking and resting in the sun." Other areas of municipal planning also focus on the importance of greenspace. The Stockholm Planning and Building Act, for example, states that Stockholm's green areas are "all part of the innate beauty and identity of Stockholm." Despite strong rhetoric around parks, densification has emerged as the leading greening strategy in the city alongside the establishment of nature reserves and rehabilitation of the waterfront.

There has been significant implementation of new green-blue space developments in the form of nature reserves and waterfront or wetland areas in the past decade. Nature reserves in the city are created largely in the context of a losing battle against urbanisation. In other words, the establishment of these

Laduviken water park constructed
**2009**

**2006**
Stockholm Park Programme adopted

**2010**
European Green Capital status awarded

**2015**
Hammarby Sjöstad completed
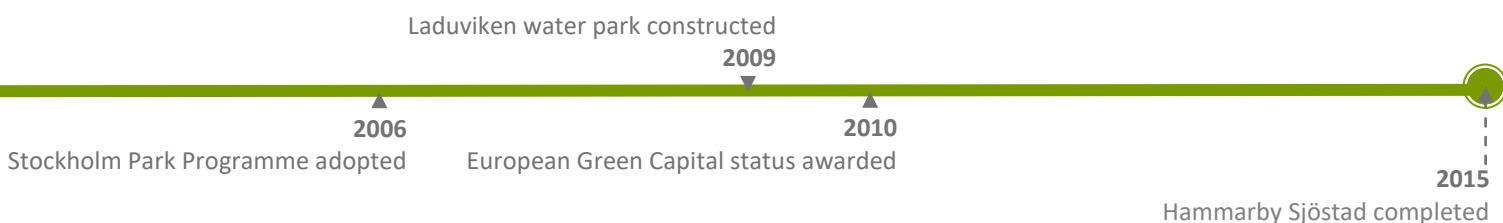
natural areas through the formal protection of existing natural spaces can be characterised as a struggle in the face of development rather than a strategy contributing to new greenspace creation. In the mid-1990s to mid-2000s a number of nature reserves were established, including the Hansta, (1999), Sätraskogen (2006), Nackareservatet (2006), and Flaten (2007) reserves. As part of its winning bid for European Capital, Stockholm highlighted its nature preserve efforts and planned for the creation of 26 additional reserves.

The Stockholm City Plan of 2010, called "The Walkable City," replaced the City's 1999 plan in guiding the use of land and water in Stockholm. While the 1999 plan had focused on sustainable development and "building the city inwards," the 2010 version outlined urban development strategies for sustainable growth toward attaining a vision of Stockholm as a "world-class city" by 2030. World-class, in this case, is associated largely with business, innovation, and with becoming a "smart city."  The plan's strategies for ensuring greenspace quality are fairly vague and while greenspace disparities are recognised in the document, the only clear proposal to address them is through social planning. A more recent, whole-city vision was adopted in 2015, laying out a four-part sustainability agenda that includes concepts of equal opportunity, ecological lifestyles, accessibility and security.[10]

*Author: Melissa García-Lamarca*

## Notes

1) 2013 Stockholm Statistics department (see: http://statistik.stockholm.se/attachments/article/21/facts%20and%20figures%202013_webb.pdf). The foreign-born population constitutes 23% of city residents. For more details on 2011 country-of-birth breakdown: http://statistik.stockholm.se/temp_eng/a-tabeller/tv3d9e.html?t=a7&sprak=eng

2) In the last decade, Stockholm has seen a significant number of jobs created in high-tech companies, but service-oriented jobs still dominate.

3) Disparities have risen at four times the pace of the United States. (See: http://www.reuters.com/article/us-sweden-inequality-idUSBRE82K0W320120321)

4) Of 13 European capital cities, Stockholm has seen the greatest rise in segregation between the rich and the poor in the past 10 years. For more information on spatial segregation and inequality in Sweden and other European countries, see Van Ham and Tammaru, 2015. In May 2013 Stockholm - in particular the neighbourhood of Husby - was the centre of rioting, led largely by members of immigrant communities. (See: http://www.bbc.com/news/world-europe-22650267)

5) Or 40% when nature reserves are included in the definition of 'greenspace.'

6) Some of the reasons why Stockholm won include: the integration of environmental aspects into budgeting, operational planning, reporting, and monitoring; its reduction in carbon dioxide emissions by 25% per capita in ten years; and its decision to be fossil fuel free by 2050. (See http://ec.europa.eu/environment/europeangreencapital/winning-cities/2010-stockholm/)

7) For more information on the campaign by the International Council for Local Environmental Initiatives , see: http://archive.iclei.org/index.php?id=10829

8) For more information on the Hammarby Sjöstad project, see: https://www.thenatureofcities.com/2014/02/12/hammarby-sjostad-a-new-generation-of-sustainable-urban-eco-districts/

9) For more information on the Stockholm Royal Seaport projects, see: http://international.stockholm.se/globalassets/ovriga-bilder-och-filer/visionsrs2030_medium.pdf

10) "Vision 2040 - A Stockholm for Everyone" was approved by Stockholm City Council in 2015. It focuses on: 1. A Stockholm that stands united (good schools for all, good social services to ensure equal opportunities, etc.); 2. An eco-smart Stockholm (sustainable construction and residences, eco-friendly life and a clean and beautiful urban environment); 3. A financially sustainable Stockholm (unique work opportunities, lifetime learning,  smartest city in the world) and 4. A democratically sustainable Stockholm (lively democracy throughout the city, freedom from discrimination for all, an accessible, safe, and secure city for everyone).

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# Stuttgart

## Background/Context

Stuttgart is Germany's sixth largest city and the capital of Baden-Württemberg state with a population of 611,979[1]. Despite significant population decline in the second half of the 20th century, from the end of the 1990s Stuttgart experienced renewed population growth and now maintains more births than deaths. During the last few decades, urban development evolved in several stages. During the post-war period, the planning focused on reconstruction and extensive expansion of the city with large-scale housing construction until 1975. Subsequently the enhancement of the city centre was a priority during the 1908s. Both the radical economic structural change and the disused military and industrial sites gave a new opportunity for urban development to reinvest in the city centre and mitigate the consequences of past urban segregation. In the last decade, Stuttgart has prioritised increasing its connectivity and competitiveness with other large metropoles, projecting itself as *das neue Herz Europas,* "the new Heart of Europe".

Stuttgart is surrounded by a range of green areas such as hills (many of them covered in vineyards), valleys (especially around the Neckar River and the Stuttgart basin) and parks. Green space and recreational areas in the city increased by 50.9% (adding 400 ha) between the 1980s and early 2000s.

## Greening Trajectory

The concept of urban greening in Stuttgart has evolved hand-in-hand with spatial planning developments from the 1990s into the 2000s. The increase of green space in the city came out of goals to achieve sustainable development and a balance between the environment and population density. High quality green infrastructure was framed as a valuable asset to the urban economy of Stuttgart and a key contribution in developing the city's global presence and importance. Investments in green infrastructure were highlighted to be of great significance but require economic justifications.


*Schlossplatzfest–* Maxmann|Public Domain

In addition to planning policy developments, Stuttgart has maintained an international and competitive advantage dating back to the early 1900s. The city hosted several festivals celebrating green space: the 1939 garden show *Reichsgartenschau,* the 1950 German Garden show *Deutsche Gartenschau,* the 1961 Federal Garden Show *Bundesgartenschau,* the 1977 Federal Garden Show *Bundesgartenschau,* and most recently the 1993 National Horticultural Show *Internationale Gartenbauausstellung* (IGA). These shows helped establish both Stuttgart's green space agenda and its national and international presence in green space influence. The 1993 IGA resulted in the project's final three parks being completed in time for the exhibition, and has contributed to the continuous building and enlargement of parks in the

Wartberg Park and Liebfriedscher Garten built
**1993**

**2001**
Establishment of Sustainable Construction Management (NBS)

Southern area of the city known as the Green U.

The Green U, named after the shape it forms around Stuttgart, has a long-standing history in the city's green space agenda[2]. Since the 1920s, continuity between the existing parks and gardens has been created, spanning across 8 km to provide public green areas and maintain the city's history and heritage. The parks included in the Green U are Castle Garden, Villa Berg park, Rosenstein park, Wilhelma botanical garden, Leibfriedscher garden, Wartberg park, and Killesberg park. Although the initial goal of uniting the parks was achieved for the 1993 IGA, the Green U's newest park, the Green Fugue, was completed in 2012.

**Dimensions of greening in Stuttgart**



Legend: Stuttgart — Europe — All

Equal Access Standard ——

In the 1990s, urban planning in Stuttgart began to incorporate green space in a measure to connect the greenscape with its urban counterpart. Residential areas were connected to green spaces through the construction and development of green corridors and open spaces, as well as refurbishments of the built environment to better connect it to the surrounding countryside. These efforts followed sustainable development rhetoric that focused on reducing land usage in the city whilst maintaining enough construction areas for residential and commercial use, under the assumption that the protection of green areas in the city is the basis for the life of humans, animals and plants.[3] *Nachhaltiges Bauflächenmanagement* (NBS), the Sustainable Construction Management project, was adopted in 2001 as a tool to identify the potential uses of different development areas and aimed to prioritise city-led developments over external projects. One focus was the redevelopment of brownfield sites, looking at the use of open spaces in the city. One of the few municipal-led greening projects during this period (in addition to the parks constructed as part of the for the 1993 IGA) is the restoration of the Bismarckturm memorial tower and the park around it in 2002.

In 2004, a new urban development concept, the *Stadtentwicklungskonzept* (STEK) was launched, outlining the functional and spatial development potential of Stuttgart for the following 15-20 years, again emphasising the role of construction projects in enhancing the city's global competitiveness. Within the STEK framework, several large-scale projects were undertaken. Stuttgart 21 (starting in 2010), the project responsible for the reconstruction of the old Central Railway Station and the development its surrounding areas, aims to host a new high-speed rail route connecting Paris to Budapest, and claims to increase green space through its development. Despite this, the project has been subject to controversy, partially due to environmental and green space concerns. The *Landschaftsraum Filder,* or Filderpark, a green landscape project around the airport, was also constructed during this period (2004). The aim of the project was to create a connection between the outskirts and other zones in the city. Filderpark spans over 15km$^2$ and connects 7 districts, some of which belong to the municipality of Stuttgart. Another project, the Landschaftspark Neckar (2005) also maintained continuity between different areas, by focusing on 90 km along the Neckar River, crossing municipal boundaries. Landschaftspark Neckar incorporates a total of 17 short and long-term projects. Those in the municipality of Stuttgart include the old Güter Railway station restoration and creation of green areas on the 22 ha site (expected to remain delayed until the
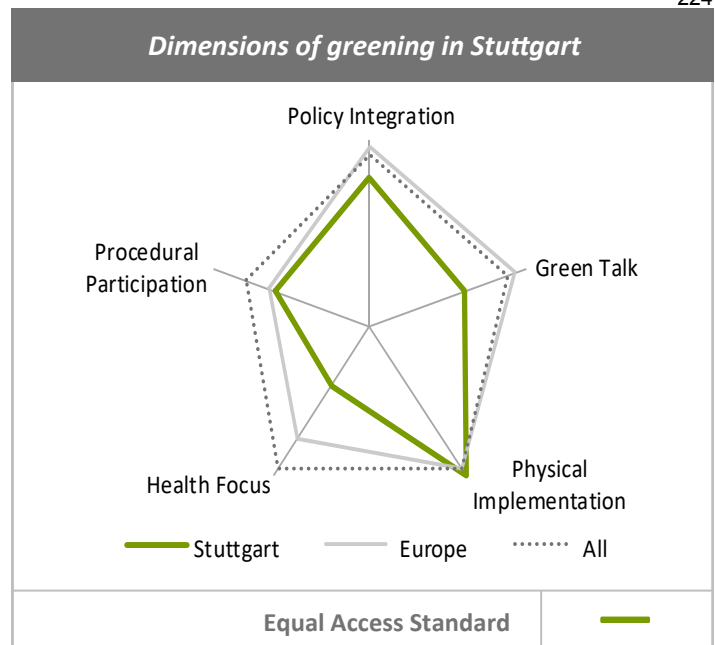
Filderpark built; STEK adopted
**2004**

Stuttgart 21 started
**2010**

**2007**
Landschaftspark Neckar began

**2012**
Green Fugue park built

completion of Stuttgart 21), Wasenufer, Naturoase Auwiesen, Uterpark Austraße and the River Restoration project. The goals of the latter are to bring water back into the city, and develop post-industrial economic growth in Stuttgart's eastern areas. In doing so, the project seeks to create a new type of landscape, including recreational and sports areas on the water.

Stuttgart's STEK-influenced greening agenda that has informed current green space rhetoric saw an increase in the number of greening projects as well as procedural changes in planning processes. Unlike the previous greening era of primarily municipally-led projects, the STEK concept resulted in increased collaboration between stakeholders such as politicians, businesses, the City, various field experts and the general public, whereby topics and projected projects were discussed with citizens at public conferences, and public-private partnerships were favoured. Before the STEK concept dominated Stuttgart's greening agenda, urban greening policy maintained a level of decentralisation with municipal activity being carried out by the NBS. Additionally, some projects such as the Ebene 0[4] were commissioned by the City but administered privately.

*Author: Carmen Pérez del Pulgar*

**Notes**

1) Population as of October 31st, 2017 according to the City of Stuttgart website. As of the same date, Stuttgart has a foreign population of 155,723 people

2) For more information, see: https://www.stuttgart.de/item/show/54310/1

3) Own translation. For more information, see: Die Gesamtstadt im Blick - Zuständigkeiten und Aufgaben der Stadtentwicklung at: http://www.stuttgart.de/item/show/338954/1

4) For more information, see: http://www.ebene0.de/

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# Tucson

## Background/Context

Tucson is a city of 530,706 residents,[1] located 60 miles from the U.S.–Mexico border. Although inhabited as far back as 12,000 years ago by Indigenous peoples, the current City was incorporated in 1877. The Davis Monthan Airforce Base, established in the 1930s, attracted various defence-related industries to develop on the outskirts of the city. As a result, residents began to migrate outward toward the base for work; by 1951 twice as many people lived outside the city as inside the city limits, leaving the centre of the city to decay. The 1960s brought urban renewal, the demolition of housing in predominantly Mexican-American neighbourhoods and the construction of new urban housing that favoured luxury development. Rapid population growth, urban sprawl and the city's geographical location have presented a number of development and infrastructure challenges.[2]

Tucson is situated in a basin surrounded by a mountain range, national forests and upland desert. Its Parks and Recreation department operates and maintains over 120 parks on 2,658 acres, as well as the city's open spaces, greenways, plazas, and gardens. Many undeveloped park properties are also maintained by the department for possible future development.

## Greening Trajectory

The General Plan for the City of Tucson provides an umbrella framework for more localized neighbourhood plans. First adopted in 1979, the General Plan has undergone a number of iterations, but in 1998 a larger shift in the scope and requirements for general plans in Arizona occurred: a state Growing Smarter Act came into effect requiring that all general plans identify growth areas and address growth issues, plan for open space preservation and connection, and account for environmental impacts of planned developments.[3] The next General Plan was adopted in 2001, with a greater orientation toward environmental planning and conservation than past plans, but also adopting among its main



*The El Paso and Southwestern Greenway –*

themes urban form, quality of life, and the economy.[4] A new general plan, reframed as a general and sustainability plan with the name "Plan Tucson" was developed in 2013. The 2013 plan was driven largely by the following themes: sustainability, new urbanism, smart growth, context-sensitive design, and transit oriented design.

Many neighbourhoods in the city have existing "area plans" which document guiding policies regarding land use and development. Many of these date back to the 1970s and 80s when they were initially adopted by the mayor and city council and have been amended over time to reflect changes. Despite

Arizona Growing Smarter Act becomes law
**1998**

**1996**
Julian Wash Greenway construction began

**1990**
First Avenue Community Garden started

the 53 neighbourhood and sub-regional plans, parts of the city do not have a more localized plan, and are only guided by the larger City document. In response to the passing of the Growing Smarter legislation in 1998 and again in 2000, many of the neighbourhood plans of the 2000s focused on identified areas of growth in the city. More recent neighbourhood plans (post-2000) were often developed with the help of outside consultants and included some degree of public participation and cooperative frameworks between public and private entities.[5]

Other Tucson City agencies have devoted themselves to planning and programming efforts that impact greening in the city, most notably the Parks and Recreation department. The 2006 City of



**Dimensions of greening in Tucson**

Tucson Parks and Recreation 10-year Strategic Service Plan identified 6 strategic directions: 1) improving connectivity between parks, open space and recreational facilities; 2) protecting natural resources; 3) providing accessibility to parks and recreational facilities; 4) developing signature facilities; 5) maximizing resources in managing and operating parks and programs; and 6) developing lifetime customers for parks. In a strategic planning process that spanned six years, the department sought to define how a values-based parks strategy can be built to support the City's diverse citizenry through the meaningful involvement of its residents. This plan gave City parks its classification system and emphasized the expansion of the park system and its programming.

The most successfully implemented among the goals of the 2006 parks plan was the effort to increase connectivity between parks, however larger implementation was interrupted due to the economic recession that followed the plan's adoption. The establishment of new parks and 'green' programs as included in the 2006 parks plan was significantly affected; between 2007 and 2012, programming in parks was greatly reduced. However, expansion of the parks system and improvements to existing facilities carried on between 2006 – 2012 through the delivery of bond programs (2000 City of Tucson and 2004 Pima County bonds) as well as the expenditure of federally-funded Community Development Block Grants, local development impact fees and the Pima County Neighbourhood Reinvestment program.[6] The city parks department now has a new master plan, published in 2016, that recommends – in consultation with the public and using parks data analysis - a mix of reinvestment in existing facilities; citizen awareness of programs and facilities; partnerships for funding, shared in-kind services and shared facilities; and a focus on health and wellness dimensions for parks programming and facilities.

Greening-specific plans are imbedded within the City's General Plan, the parks department plan, and the neighbourhood plans, however, few City documents include information on specific planned or constructed parks. While planning documents attempt to generally encourage sustainable development, the creation of green areas in neighbourhoods, new green and/or open spaces, restoration of natural wildlife habitats, and the use of native plans for landscaping, these plans do not include specific locations or timelines for the development of new greening projects. Independent groups addressing community
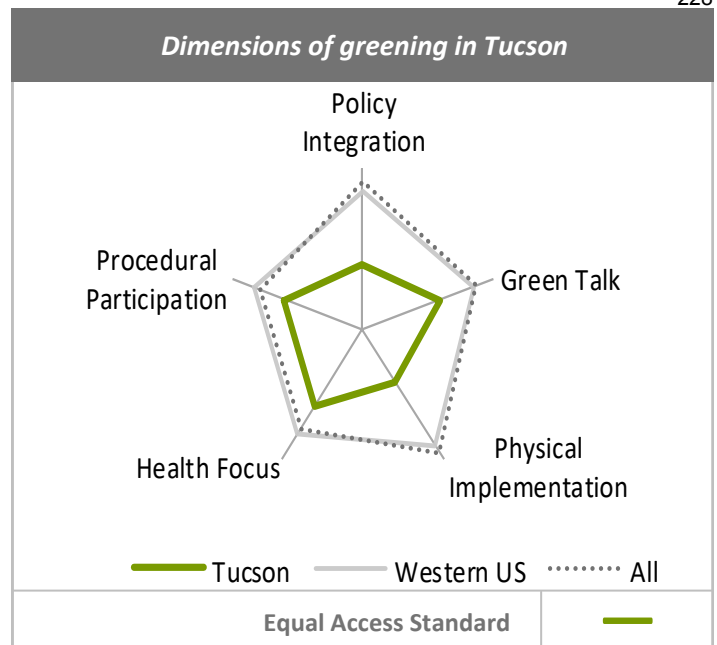
Parks and Recreation 10-year strategic service plan
**2006**

Completion of Loop connections between existing river parks
**2010**

Plan Tucson General and Sustainability Plan published
**2013**

**2009**
Tucson Regional Plan for bicycling approved

**2011**
Pantano River Park completed

**2012**
El Paso and Southwestern Greenway master plan published

gardening and cycling, however, do include more detailed documentation on the expansion of the greenway system.

Activity-specific initiatives in the city have complemented larger-scale planning for greening-related projects over at least the past two decades. Tucson has a relatively active bicycle culture, a bike-friendly downtown area, and a department devoted to developing bicycle infrastructure.[7] 'The Loop', a pedestrian path planned to stretch over 131 miles around the city, is currently in development with over 100 miles having been completed by the time further expansion began in 2014. Several parks are connected by the paths, greenways, and open spaces constructed as part of the 'Loop' project. Most notably, the 1996 construction of the Julian Wash Greenway, the 2004 start on the Pantano Wash section of the 'Loop', and the completion of the Pantano River Park in 2011 ensured that major connections between existing river parks were completed over the course of the 2000s.[8] Following a 2012 master plan and the Tucson Regional Plan for Bicycling, the El Paso and Southwest Greenway was built to provide a transportation corridor along a 6-mile path aligned partially with the abandoned El Paso and Southwestern railway through several of Tucson's oldest neighbourhoods and its downtown.

Similarly, an active community garden program began in 1989 in Tucson, led by a cooperative extension agent from the University of Arizona. The initial community garden closed in 1995 after the land it occupied was purchased and developed. However, 6 additional gardens were developed between 1996 and 2006.

*Author: Helen V.S. Cole*

**Notes**

1) 2016 U.S. Census Bureau estimate. Tucson's population, broken down by ethnicity and race is: 47.2% White; 41.6 Hispanic or Latino of any race; 5.0% Black or African American; 2.9% Asian; 0.2% Native Hawaiian and Other Pacific Islander; and 15.2% other races.

2) Key challenges have included traffic management, water availability, stormwater runoff and solid waste disposal.

3) The Act was the first large planning–related piece of legislation at the state level in 20 years and it required the creation of municipal strategies and policies that ensure new growth pays its fair share for the new public facilities it requires.

4) This is the oldest general City plan available online.

5) As an example, see the Civano Master Planned Area Development document of 2005: https://www.tucsonaz.gov/files/pdsd/plans/civanopadall.pdf

6) Partnership with the county has also led to planning that attempts to balance community values with financially profitable development. The county's 2001 Sonoran Desert Conservation Plan has guided where public money is spent and has been instrumental in guiding land use and greening efforts in Tucson. The plan was developed to take into account the protection of the cultural and natural resource heritage of the area while maintaining an "economically vigorous and fiscally responsible community". (See: http://webcms.pima.gov/government/sustainability_and_conservation/conservation_science/the_sonoran_desert_conservation_plan/)

7) Tucson is known as a bicycle-friendly city. The League of American Bicyclists awarded the city gold rating for bicycle friendliness in 2007, making Tucson one of only nine cities in the US possessing gold status. The city also annually hosts the largest perimeter cycling event in the United States.

8) The Loop is maintained by Pima County, but included a number of projects in and with the City of Tucson. For details on 'The Loop' project, see: http://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/The%20Loop/Annual%20Reports/1386%20-%20Loop%20Annual%20Report_web-ready.pdf

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# Tulsa

## Background/Context

The population of Tulsa is approximately 403,505 (estimated, 2015), with approximately 981,000 residents in the greater Tulsa metropolitan area. According to the 2010 US Census, the population is approximately 57.9% non-Hispanic white, 15.6% African American or Black, 14.1% Hispanic, and 5.3% Native American, with the remainder identifying as Asian, multiracial, or some other race. It is located in the North-eastern corner of the state on the Arkansas River in the foothills of the Ozark Mountains. Most of the modern city of Tulsa is located within the Native American Creek Nation, with parts in Cherokee and Osage Nations. During the 20th century, the city was a hub in the oil industry and was even known as the "oil capital of the world", attracting migrants from the East coast and Midwest regions of the US. Tulsa was hard hit by the 1982 recession due to its heavy economic dependency on the oil industry. This led to diversification of business industries in Tulsa, which now include the aerospace industry, manufacturing, telecommunications, education, technology, healthcare, transportation, construction, and energy.

As of 2016, Tulsa had approximately 9,500 acres of park land within the city limits, the vast majority (over 8,000 acres) managed by the Tulsa Parks and Recreation Department. Other parks in the city are managed by Tulsa County or the River Parks Authority.[1]

## Greening Trajectory

Due in part to a low population density in the city of Tulsa, park and open space acreage per capita is relatively high, however these acres include both useable park land and undeveloped sites. Many plans for improvements and development of the parks focus on improving existing sites, developing parks and trails along the Arkansas River, and as part of the revitalization of Downtown Tulsa and other older areas. The economic benefits of parks and open space, including the rising property value around new and improved parks, is a focus in many city plans.

*Creek Council Oak Tree Park–* [Tulsa Topics](#)|[CC BY-SA 2.0](#)

The city of Tulsa's planning efforts have included master city plans, supported by several district plans which provide more localized guidance for development since at least 1978. Thus, several of Tulsa's neighbourhoods have small area plans, which have been developed over the past few decades, and focus on the specific details of needs for their respective areas. Contributors to these small area plans include various stakeholders. For example, starting in 1989, the University of Tulsa, along with several churches and businesses in the Kendall-Whittier area at the Eastern edge of downtown Tulsa together

Kendall-Whittier Area Plan published

**1991**

**1996**
Charles Page Boulevard Neighborhood
Revitalization Plan published

put forth half of the necessary costs for producing a neighbourhood plan for the area, challenging the city to fund the other half. The neighbourhood had fallen on hard times during the economic downturn in the 1980's and area businesses had a vested interest in revitalizing the area, making it attractive to new residents, homeowners, and patrons. The resulting plan, completed in 1991, focused on converting Whittier Square into a "town square" and included plans to revitalize area schools, create a new park near Whittier Square, and improve storm water drainage throughout the neighbourhood. The Whittier Square business district improvements were the focus of a follow-up plan produced in 1996.

**Dimensions of greening in Tulsa**

- Policy Integration
- Green Talk
- Physical Implementation
- Health Focus
- Procedural Participation

— Tulsa    — Southern US    ⋯⋯ All

**Equal Access Standard** ✓
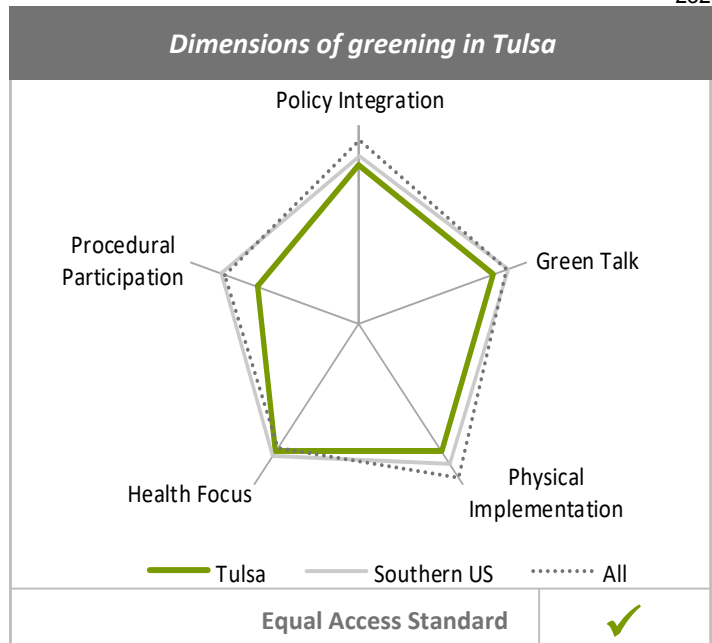
During the late nineties and early 2000's, three "infill" plans, called for by then Mayor Susan Savage, were developed. These plans focused on planning redevelopment in older areas of the city, and included refurbishment of existing parkland as part of redevelopment process. A 1996 plan for the Charles Page Boulevard Area, historically an industrial and residential area, calls for refurbishing facilities and features at Owen Park (the city's oldest park), creating more access points for the River Parks and adding additional trails for pedestrians and bicyclists. The neighbourhood, having lost nearly 8500 residents between 1960 and 1990, or nearly 2000 residents per square mile, intended the plan to revitalize the area, attracting home buyers and investors back to this historic area. Upgrades and improvements to Bullette and Crutchfield Parks according to a 10-year plan were proposed in the 2003 Crutchfield Neighborhood Master Plan.

In 2003, the Vision 2025 capital funding program, approved by city leaders and voters, targeted enhancement and revitalization of infrastructure throughout Tulsa County (in which the city of Tulsa is located). This initiative was funded by a 13-year sales tax increase (through 2016). The primary project, completed in 2008, was the BOK Center, a multipurpose arena hosting major concerts and conventions in downtown Tulsa. Much attention at this time was also given to "destination development" of the area along the banks of the Arkansas River in downtown, including improvements to the River Parks trails and trail connections between downtown and nearby neighbourhoods. Such attention to downtown and the riverfront has also sparked development of new housing and entertainment venues through public-private partnerships, and the redevelopment of older historic buildings in downtown into loft housing, retail and entertainment venues. In 2016, voters approved three propositions to extend funding for Vision Tulsa projects and in early 2017, the city started a bond program, which will provide funding to the initiatives.

Tulsa's 2010 comprehensive plan update (PLANiTULSA) was an effort to replace the past city plan, originally written in 1978, acknowledging that the old plan was out-of-date and no longer represented the future that Tulsans envision. The 2010 plan, referencing the Parks Master Plan, also adopted in 2010, calls for an increase in parks acreage between 2010 and 2030. The plan details the benefits of green and open space, which include: health benefits for local communities, including opportunities for social interaction; self-directed activities; economic benefits, including the rise of home prices in the vicinity of parks;

Arkansas River Corridor Master Plan published
**2005**

PLANiTULSA– Tulsa Comprehensive Plan published
**2010**

Construction begins on phase 1 of Cousins Park
**2013**

**2003**
Tulsa County voters pass the Vision 2025 initiative

**2010**
Tulsa Parks and Recreation Master Plan and Downtown Area Master Plan published

**2014**
Construction begins for Phase 1 of the Gathering Place for Tulsa

environmental sustainability such as the management of storm water; tourism; and as locations and infrastructure for active transportation alternatives. The plan also calls for an effort to integrate new and existing parks into the city rather than "cordoning off" natural areas, and for more park space in the centre of the city, which would complement additional plans to revitalize downtown Tulsa, creating a more inviting living space with urban housing attractive to younger people.

Two related plans, the Downtown Tulsa Master plan and the Tulsa Parks Master Plan, include greater details about proposed new parks and parks improvements. Compared with other similar mid-sized low population American cities, Tulsa has relatively more park acres per capita, approximately 15 acres per 1,000 persons, thus the goal of the Parks Master Plan is to improve parks quality and facilities within the parks rather than to increase the amount of park land, particularly as this figure includes both developed and undeveloped sites within the parks system. The Downtown Area Master Plan includes a number of specific projects, both new parks and improvements to existing parks within the Downtown area, as well as improvements in the trail system linking Downtown to other areas of the city.

Although planning around green space development and revitalization in Tulsa has been quite extensive, budgetary challenges have prevented many projects from being completed. During hard economic times, the parks budget has often been the first to be cut, and the last to be restored, preventing the completion of many municipal parks projects. In addition, small area plans have often guided use of funding for ancillary projects (such as street or utility work), but historically no funding has specifically been allotted to fund green projects proposed in small area plans. Despite these challenges, a few notable projects led by the city and private investors are currently underway. The construction of Grace K. Cousins Park in south Tulsa began in 2013, with funding from the City Council and private donations. Land for Cousins Park had first been donated to the city by the Cousins family in 1998 with the stipulation that it be used as a conservation area and that the family be involved in its design. Meanwhile, construction for the Gathering Place for Tulsa, a project of the Kaiser Family Foundation and funded by a mix of corporate and philanthropic organizations, began in 2014 (scheduled completion 2018). This space will transform the Arkansas Riverfront in the city, providing recreation areas on nearly 100 acres.

*Author: Helen V.S. Cole*

**Notes**
1) The Trust for Public Land. 2016 City Park Facts. Accessed at: https://www.tpl.org/sites/default/files/2016%20City%20Park%20Facts_0.pdf.

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# Turin

## Background/Context

Situated in Northwest Italy, Turin is the country's 4th largest city with a population of 890,529 (2015). Turin is considered an important political and intellectual centre of Italy. Today it is one of the country's strongest economic hubs and has been an important site for Italian industries, especially in the automotive sector. With neighbouring Milan and Genoa, it once formed the "industrial triangle", playing a critical role in the Italian economic miracle of the post-war period.

The city's historic built environment includes many open spaces, palaces, gardens and plazas, constructed during the 16th to 18th centuries when the capital of the Duchy of Savoy moved to Turin from Chambery, France. Much of Turin's baroque, neo-classical, and rococo architectural influences were established at this time, with art nouveau elements later incorporated around the turn of the 20th century. In the ensuing Fascist era of the 1930s, buildings were demolished to build several wide axes and public spaces paved over with stone and concrete to accommodate monuments in the rationalist style. Turin provides 19.05m$^2$ of green space per resident with over 18 million square metres of green areas. Turin has 17 major public parks and was ranked first for green space in a review of 24 Italian cities.

## Greening Trajectory

Turin's greening trajectory can best be understood from the city's historic and ecological heritage, the post-industrial urban redevelopment plans and projects starting from the 1990s, and the way green spaces are categorized in this period. Linked to its industrial heritage, little attention was given to new green space development in Turin from the turn of the 20th century to the 1970s. Industry was considered to have tarnished green space, making it unsuitable for development. As these industries collapsed, local authorities made considerable efforts to improve the quality of green space, especially through river network

Borgo Medievale in the Valentino Park - Xiao Jing / CC-BY-SA-4.0

restorations and brownfield site renovations. Today, Turin is considered at the forefront of Italian urban regeneration due to its experimentation with various initiatives learned through active participation in international city networks. However, unlike Northern European countries, Italy does not have a strong national urban development framework, explaining why Turin became more involved internationally.

In the mid-1990s, the Italian Public Works and Infrastructure ministries adopted EU formulated URBAN program models, building on other nationally piloted initiatives. The UK City Challenge program was also mirrored to some extent to direct limited national finances to the cities with the most competitive

PRG Master Plan adopted **1995**

*Torino Internazionale* Strategic Plan published **2000**

**1997** First phase of Porta Palazzo project proposal published

regeneration proposals. Turin adopted its first Master Plan *Piano Regolatore Generale (PRG)* in 1995 after 45 years. It set out new land use regulations to transform strategic brownfield sites and re-zone industrial lands to allow for private development. This resulted in new mixed-use neighbourhoods with residential developments and over 40% of the land set aside for parks and commercial activities. The Master Plan marked a new period of local government attentive to economically and environmentally distressed areas. Subsequently, both the Colletta and Crescenzio Parks at the confluence of the Dora and Po rivers were built, as well as the development of links between the S. Vito, S. Nobile, Rimembranza and Superga parks. The latter created a continuous green and blue system across four rivers, between protected areas from city to suburbs, woven together by bike lanes and pedestrian paths.

**Dimensions of greening in Turin**



Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

—— Turin —— Europe ······ All

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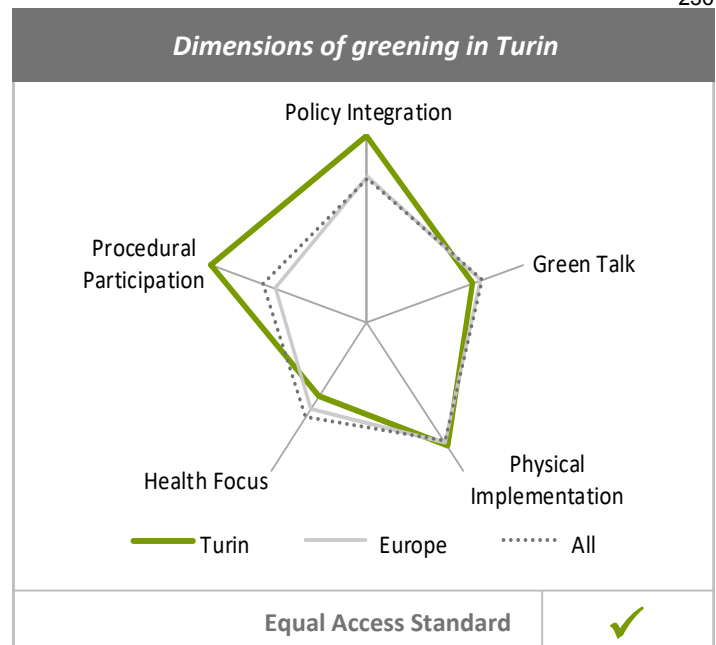
In the context of Turin's new master plan and the *Special Project for Marginal Neighbourhoods*, the city proposed the comprehensive regeneration of low-income and ethnically-diverse inner city neighbourhoods. The first phase of the Porta Palazzo project proposal was called the "The Gate: Living, not leaving", launched in 1997 and formerly concluded in 2002. The second phase, "the Local Development Agency", continued from then onwards. The city engaged with citizens using a bottom-up participatory model for urban regeneration, focusing on its outdoor flea market, one of the largest in Europe. An important aspect of the work was to build trust among inhabitants as well as with institutions and police. Although the neighbourhood regeneration documents lack somewhat in mentions of green space, the neighbourhood is bordered by the Dora River and contains several important historical parks and monuments such as the Giardini Reali, Porta Palatina, as well as smaller gardens and green spaces. The Giardini Reali was reopened in 2016 after nearly 10 years of closure for renovations costing 1.5 million euros. In 2006, the city began a programme in the northern part of the San Donato district, *Spina 3*, to convert this former industrial district of Turin into a 456 ha park. *Parco Dora* has been built where the old Michelin plant and Fiat ironworks were located, leaving little trace of the area's former heritage. Construction is also underway to uncover the Dora River which was buried under the Fiat factory.

In 2000, Turin's mayor Castellani established Turin's (and Italy's) first city Strategic Plan – *Torino Internazionale*- promoting a new international image for Turin, with special emphasis on the Barcelona model for urban and economic regeneration. Local Agenda 21 would underpin the plan's sustainable development objectives which included environmental innovation and technology as well as urban renewal and social integration. *Torino Internazionale* aimed to increase the structural integration of greening in urban projects, with a focus on urban renewal and social integration. Neighbourhood plans such as those of the Arquata and Mirafiori Nord areas (2007), increasingly incorporated greening through tree planting and required new housing developments to include green spaces. Surveillance cameras and SOS stations were newly installed and a new body formed by the municipal police to monitor parks. Today financing for green spaces is largely dedicated to maintenance.

Spina 3 project begins
Turins hosts Winter Olympics
**2006**

Sangone Park inaugurated
**2007**

Dora and Paradiso Parks inaugurated
**2011**

**2009**
Arrivore Park inaugurated

**2013**
€ 1.3 million dedicated to safeguarding parks
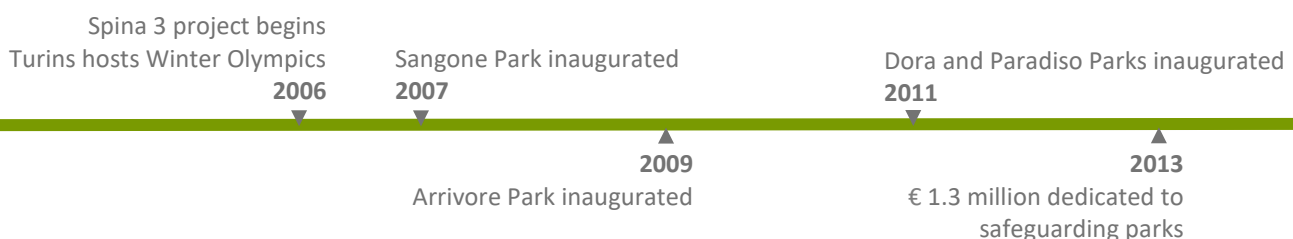
Turin's third strategic plan was published in 2015, the same year in which the city was awarded European Capital of Sport. The plan outlined the creation of the regional Green Crown Agency, which was to expand green infrastructure and ensure improved coordination in the management and maintenance of green areas, promotion and communication, awareness- raising and education, implementation of public health initiatives, and broadening partnerships with the private-sector and non-profit organisations. The plan builds on existing green spaces to improve design, with increasing attention on spaces and facilities for teenagers dedicated to exercise and sports.  Green spaces are viewed as an important and integral aspect of Turin's cultural, agricultural, and ecological heritage. The green network is also referred to as a "lung" that provides residents with recreational and relaxation spaces, while regulating city temperatures and purifying the air. The official "Public Green" city website (2013) has four categories of parks and gardens, defined as: urban parks, river parks, hill parks and gardens. Trees are also counted and described according to variety and maintenance.

Turin's success in undertaking its projects under the Master Plan and 2000 Strategic Plan is in part due to mayoral leadership and state financing, as well as the success of public-private partnerships including bank foundations, universities and cultural associations, among others. Current city branding is particularly geared toward innovation sectors and smart city rhetoric. The kinds of parks being built today on Turin's former industrial zones are technology parks, but innovation parks dedicated to renewable energy, film and multimedia. Due to the Winter Olympics and now Turin's status as the European Capital of Sport, there is also emphasis on recreational activities for sports and exercise. The prevalence of a healthy city discourse can in part also be due to the development of the SMILE Master Plan. In 2010, building on the EU push for smart city strategies, the Smart, Mobility, Inclusion, Life and Health, and Energy Master Plan went into effect (SMILE). It aims to achieve its goals by 2020 and is mainly funded by Horizon2020. Working with Politecnico di Torino, it provides grants to researchers with innovative ideas for city development, and pays particular attention to improving citizens' quality of life whilst achieving environmental goals. While greening is not a core aspect of place-marketing it is nonetheless important to neighbourhood planning and considerable effort has been dedicated to the integration of a green and blue network throughout the city and region.

*Author: Galia Shokry*

**Notes**

1) Statistics retrieved from: http://www.comuni-italiani.it/001/272/statistiche/. In 2014, 15.4% of the population was foreign born.

2) The city's automotive industry attracted hundreds of thousands of migrants in the post-war years.

3) See Colantonio and Dixon, 2016.

4) See Taylor, 2013.

5) Colantonio  and Dixon, 2010.

6) For more information, see: https://www.greenme.it/viaggiare/europa/italia/piemonte/19721-giardini-reali-torino#accep

7) For more information, see: http://www.comune.torino.it/comitatoparcodora/parco/

8) Pinson, 2002.

9) For more information, see: http://www.comune.torino.it/verdepubblico/patrimonioverde/curaverde/parchisicuri.shtml

10) Turin's second strategic plan was published in 2006 but lacked a greening agenda and was restricted by the global financial crisis.

11) See the plan here: http://www.torinosmartcity.it/wp-content/uploads/2013/11/SMILE-MASTERPLAN-FOR-TORINO-SMART-CITY1.pdf

12) For more information, see: http://www.researchers.polito.it/en/funds_jobs_and_training/ projects_and_strategic_initiatives_at_politecnico/torino_smile_smart_mobility_inclusion_life_health_energy

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# Valencia

## Background/Context

With 790,201 residents (2016), Valencia is Spain's third largest city. In the 1990s and 2000s, the municipality invested extravagantly in becoming a cultural, tourism, and sports destination. Many interventions were however plagued by political corruption and scandals, including sumptuous projects such as the Queen Sofia Palace of the Arts opera house, the 2007 America's Cup harbour buildings, and the City of Arts and Sciences cultural complex. As a result, in the late 2000s, Valencia's debt reached nearly 21 billion euros, representing 4.5% of its GDP.[1] Today, Valencia is a diverse and multicultural city. After sharp decreases during the worst years of the economic crisis (2008-2014), the proportion of immigrant residents has bounced back to 12.3%.[2]

Surrounded by the Mediterranean Sea to the east, parkland and farmland to the north and northwest, and the Albufera Natural Park wetland to the south, the Valencia metropolitan area boasts several large natural areas. Although vast stretches of green and blue open space surround it, Valencia itself only offers 5.3 m2 of greenspace per resident (2010), despite multiple interventions to increase the availability of urban greenspace.

## Greening Trajectory

The initial years of the democratic transition in Valencia were marked by the completion, in 1986, of the Jardin de Turia on the former riverbed of Rio Turia, the river that once crossed the city.[3] While the riverbed was originally demarcated in the 1966 Plan General de Ordenación Urbana (PGOU) zoning plan as a future train line and highway corridor,[4] a citizen's movement mobilizing under the slogan "the Turia riverbed is ours and we want it green"[5] managed to successfully advocate for the transformation of the space into an urban park. While the City initially opened the Jardin de Turia to the public in 1986, the park never stopped growing.[6]


*Jardines de Turia–* José Luis Filpo Cabana|CC-BY-3.0

During the 1990s and 2000s, the City further built out Jardin del Turia into several new parks and green spaces. In 2000, it inaugurated the Exposition Bridge and the Gulliver children's park. By 2004, its northwestern end had been turned into the Parque de Cabecera, a large area of riverbed woodlands and Mediterranean landscapes of water, greenery, and small hills. A year later, the large City of Arts and Sciences complex was completed and opened to the public, capping off the riverbed's other end. In 2008, the northern section of the Jardin became host to the Bioparc Valencia zoo. Overall, the Jardín del Turía is now the largest urban park in Spain, measuring at 110 hectares.

Green Valencia Special Plan adopted
**1992**

Gulliver Park opens in the Jardin del Turia riverbed
**2000**

**1998**
Construction of the *Parc de Marxalenes* begins

**2002**
First phase of Parc Rambleta

Beyond the Turia riverbed, Valencia planned and constructed several other parks in the early 1990s, following newly adopted plans and local ordinances, including the 1988 PGOU plan and the 1992 Plan Especial Verde Valencia (Green Valencia Special Plan). Public input figured into the development of these plans. For instance, in 1985, the citizens' group, La Ciutat que volem (The City We Want)[7] anticipating the creation of the PGOU, publicly and proactively imagined the city they wanted to live in. As a result of these visions and discussions, many of the city's peripheral neighbourhood parks were constructed at the end of the 1990s and through the 2000s, including the 14-hectare Parc Rambleta, built between 1999 and 2002 around a former drainage stream,[8] or the 8-hectare Parc de Marxalenes initiated in 1998 and inaugurated in 2001, both in the San Marcellino neighbourhood.



Dimensions of greening in Valencia

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

— Valencia    — Europe    ···· All

Equal Access Standard ✓
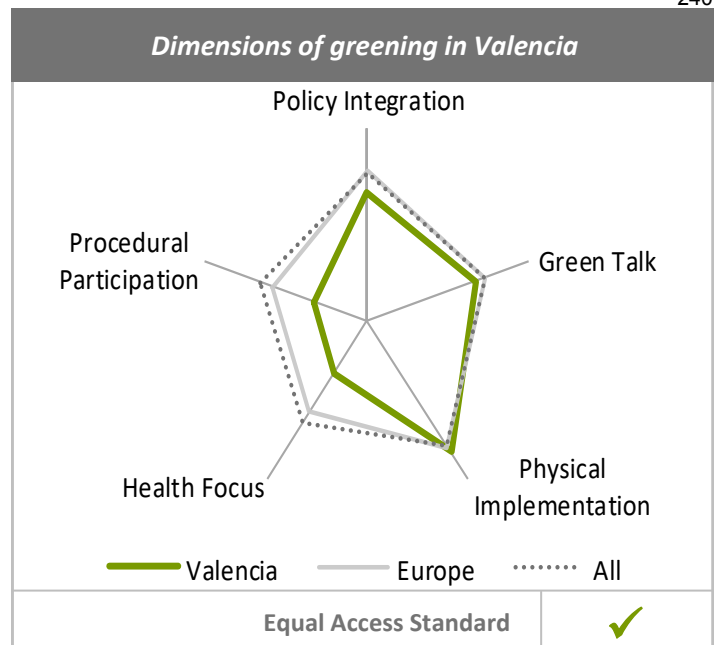
While residents have welcomed many of the green and open space interventions, they have at times voiced deep concerns over the ultimate purpose and impacts of redeveloping socially vulnerable districts and building more open space in the city. In 1998, social contestation amplified around a particular plan for the creation of a Paseo del Mar (sea walk), which promised to open the city to the sea, blending the urban grid with the waterfront. The project required the demolition of part of an old fishermen's village, whose social and architectural fabric the community mobilized for years to protect. The project was finally stopped in its original form, but a new municipal government included the site in its 2015-2020 Integrated Strategy for Sustainable Urban Development, transforming it into a participatory space for the revitalization of some of the most marginalized neighbourhoods in Valencia.[9]

Since 2003, Valencia has also been planning for the conversion of former industrial assets into greenspace. One such project has been the Parque Central, where 24 hectares of former railways are slated for conversion into new greenspace. Based on a 2003 agreement between the City and the national railway company, conversion of the former station and rails into a park finally started in 2016.[10]

Parallel to the construction of larger parks and extensive redevelopment projects, Valencia has also built an extensive network of a small gardens and neighbourhood parks, many stewarded or monitored by grassroots groups such as Valencia Parcs de Barri.[11]  As a result, Valencia now has 200 small neighbourhood parks covering almost 100 ha, most of which were built over the last twenty-five years. These spaces include the Parque de la Alquería de Ricós (where 1.9 landscaped hectares have surrounded a pedestrianized street since 2003), as well as the smaller Parque Profesor Antonio Llombart (1.4 hectares) and the Plaza José Maria Giménez Fayos (1.1 hectares). Spread throughout the city, and with a tighter network in peripheral districts, these parks provide accessible local recreation and opportunities for neighbourhood social activities, particularly so for children and the elderly.[12]

Over the last ten years, the municipality has conducted a revision of the old PGOU urban territorial plan,

Parque de la Alquería de Ricós rennovation
**2003**

New PGOU territorial plan first made public
**2008**

**2004**
Parque de Cabecera opens

**2005**
City of Arts and Sciences complex completed

**2008**
Bioparc Valencia opens

**2015**
2015-2020 Integrated Strategy for Sustainable Urban Development adopted

contemplating, among other subjects, how to proceed with the planning of new green areas, increase access to metropolitan green areas, and restore existing parks. The new plan was highly contested by residents when it was made public in 2008, and then again caused upset with 2010 and 2012 revisions, even though it promised the creation of new green areas to increase greenspace provision from 5.3 to 7.0 m2 per resident. Despite having received more than 20,000 comments and contributions, the plan was never approved, partially because it included the development of certain areas of La Huerta, the 4000 hectares of protected agricultural land that surrounds the city and defines its relationship with natural areas. As of 2017, the plan is being reviewed by the new municipal government, with the intention of creating new parks and protected spaces within and outside La Huerta, while protecting the area and raising Valencia's agro-ecology profile. Recent plans related to the use of the agricultural zone include the 2017 Action Plan for Territorial Zoning and Programming of La Huerta (PATODHV), the 2017 Territorial Action Plan for Coastal Green Infrastructure (PATIVEL), and the 2016 Valencia Metropolitan Green Belt plan; all of these plans highlight the importance of preserving and promoting green infrastructure around the city.

While these plans represent a municipal commitment to further green the city and improve its liveability, continued development pressure continues to threaten the availability of farmland, open space, and green areas in metropolitan Valencia. This pressure has repeatedly sparked intense civic mobilization for the protection of green and other natural resources.[13]

*Author: Lucía Argüelles Ramos*

**Notes**

1) See an example of media coverage on Valencia's overspending: http://www.telegraph.co.uk/finance/financialcrisis/9573568/Valencia-the-ghost-city-thats-become-a-symbol-of-Spains-spending-woes.html

2) 2016 statistical figures. Some neighbourhoods count immigrants as 20% of their residents. People have arrived in Valencia mostly from Romania, Bolivia, Ecuador, Colombia, and, most recently, Italy, Pakistan, Russia, and China.

3) The decision to divert the Turia originated in a devastating flood from 1957 that killed 86 residents.

4) See: http://www.iagua.es/noticias/espana/iuaca/16/03/26/autopista-rio-turia-lo-que-pudo-ser-y-afortunadamente-no-fue

5) For more information on the history of the movement, see: http://losojosdehipatia.com.es/cultura/historia/el-llit-del-turia-es-nostre-i-el-volem-verd-historia-de-una-conquista-ciudadana/

6) Much of the park's future extension is outlined in the 1988 PGOU plan, which defined development for surrounding area.

7) The goals of the group were to influence public debate on liveability models for Valencia, to promote a dialogue between residents, local policy-makers, and socially committed technicians from the municipality, and to raise attention regarding residents' needs. http://www.eldiario.es/cv/laciudadconstruida/interesa_6_271982801.html

8) Started in 1999, the first part of the construction was completed in 2002. More ambitious sections of the project were never built, but improvements were announced by the city in 2016. See: http://www.lasprovincias.es/valencia-ciudad/201606/06/parque-espectacular-valencia-mayor-20160606195248.html

9) See: http://www.europapress.es/comunitat-valenciana/noticia-sale-concurso-publico-estrategia-desarrollo-sostenible-cabanyal-20150805130358.html

10) See: https://elpais.com/ccaa/2017/06/15/valencia/1497539108_827853.html

11) For more information on the group, see: http://www.valenciaparcsdebarri.es/es/

12) See the network of neighbourhood parks at: http://www.valenciaparcsdebarri.es/es/el-proyecto/

13) Other movements such as "Salvem el Botánic" or "Salvem la Huerta del Pouet" have arisen to protect particular spaces under development consideration.

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# Vancouver

## Background/Context

Vancouver is home to 631,486 people and has a 45.2% visible minority population, with 16.4% of all visible minority Canadians living there.[1] It is the most densely populated Canadian city and the fourth most dense in North America. Its port, the third largest in the Americas, facilitates the shipping of its forest products, Vancouver's largest industry. The city, while offering a very high quality of life by some standards, has the second-most unaffordable real estate market in North America, and sixth in the world. Since the late 1980s, the availability of affordable and social housing in the city has drastically declined, and the city's homeless population has become significant, especially in the Downtown Eastside neighbourhood.[2]

Surrounded by the Strait of Georgia, Vancouver lies on a peninsula, with the Fraser River delineating its southern boundary. Mountains, islands and ocean views make up the cityscape, and temperate rainforests surround its urban landscape. The city boasts 230 public parks covering 11% of the city's land area. Access to the waterfront is similarly plentiful with ten ocean-side beaches, one freshwater lake beach, and a 28-kilometer Seaside Greenway – the longest uninterrupted waterfront path in the world. In 2012, the city set a goal of becoming the world's greenest city by 2020. Being regularly praised for being one of the world's most liveable cities,[3] Vancouver has been ranked as the fourth greenest city in the world by the 2014 Global Green Economy Index.

## Greening Trajectory

Vancouver has a strong history of environmental protection[4] and sustainability leadership. Since the 1950s, urban planning has operated under the policy of green space and open space protection as well as the preservation of views to the surrounding natural landscapes. This style and approach to densification in the centre of the city is known as 'Vancouverism' (Punter, 2003). Regional planning strategies, geographic limitations and strong citizen activism/

*Stanley Park–* [InSapphoWeTrust](#)|[CC BY-SA 2.0](#)

engagement shaped the initial conditions for the rise of the high-rise. This approach was also underpinned by Vancouver's former Director of Planning for the City of Vancouver's vision of "experiential planning" to combine good city form and function through "socially just and politically responsive participatory processes" (Grant, 2009).

Since the late 1980s and early 1990s, the conversion of underutilised industrial lands into parks and condominiums has progressed in tandem with the City's exploding real estate market. An interplay of cause and demand seems to have occurred between parks investment and growing property values. For

Vancouver Greenways Plan and Ridgeway Greenway Pilot Project
**1995**
▼

**1990**
Redevelopment of Coal Harbour began

instance, in 1990, a plan to develop Coal Harbour from an industrial maritime area into a mixed-use, mixed-income neighbourhood with strong natural amenities was proposed. Today, public open space and parks cover 6.48 hectares. The construction of a continuous, landscaped waterfront walkway and bike path called The Seawall together with a new marina have transformed this neighbourhood into a high-end mixed business and residential downtown area renowned for its quality of life, diverse cultural and commercial offerings, but also unaffordability.

Another example of industrial land use transformation is illustrated by the False Creek site, a short inlet in the centre of the city separating downtown from the rest of Vancouver.



**Dimensions of greening in Vancouver**

Policy Integration · Green Talk · Physical Implementation · Health Focus · Procedural Participation

—— Vancouver    —— Canada    ······ All

**Equal Access Standard** ✓

It was redeveloped since the late 1970s on contaminated, previously industrial land into a walkable, green, and equitable neighbourhood (Punter, 2010). In 2006 and 2010 respectively, the area was the site of the World Expo and the Olympic Village. Its planning process is notable for the express commitment by the City Council and Planning Department to make the new neighbourhood a "model sustainable community." In 2011, Southeast became the second neighbourhood in the world to achieve the LEED platinum standard in 2011.[5]

Yet, the more recent discussion around the redevelopment of Southeast False Creek has visibilised tensions between the goals of environmental sustainability, economic viability, and social justice and income equality. As a result, in 2017, in view of climbing housing costs and community concerns, the City of Vancouver declared its commitment to preserving the different housing styles, walkable streetways, and local housing coops that make up False Creek South and keeping the neighbourhood affordable through a new long-term planning effort following a "complete street" planning approach.[6]

For the past few decades, parks development in Vancouver has been highly active and received a significant portion of the municipal budget. This priority is supported by the vision developed by the Greater Vancouver Regional District in 1990 that centred on the relationship between the built environment and nature. A subsequent 1996 Livable Region Strategic Plan proposed to attain this vision by focusing on the preservation and enhancement of the Green Zone, the creation of complete and compacted communities, and the improvement of transportation options. This strategy has influenced the densification and development patterns in the years since. Park development has been historically directed by The Vancouver Park Board (VPB), an elected body and the only such entity in Canada which has published Park Development Standards in order to ensure the quality, safety and "maintainability" of city parks in the context of limited operating funds and climate change. Additionally, today the VPB sees itself as having an important role to play in "climate change and energy issues, stormwater management, species diversity, food security and public health" and to support Vancouver's larger sustainability ambitions.

Carrall Greenway construction began
**2005**

Vancouver 2020 plan adopted
**2012**

**2003**
Emery Barnes Park inaugurated

**2006**
Yaletown Park opened

First section of Comox-Helmcken Greenway opened

**2013**

In addition to the maintenance of large parks such as Stanley Park, the largest urban park in North America, a number of small parks have popped up in the city's redeveloping areas and received upgrades as the surrounding neighbourhoods became more developed. For example, in 2003, Emery Barnes Park consisted of a small stream with a fountain and benches among some plantings. By 2010, more substantial investments were made by adding a dog park, children's playground, seating areas, and other amenities. In 2012, the park was completed with numerous features making it into a welcoming public space. Some small urban parks and public were constructed and financed through a combination of developer and city resources. In the Yaletown Park example, the developer provided the land and half the park construction costs for the 2006 construction, which includes a surrounding residential complex.

Sustainable transit has been an important aspect of planning in Vancouver since the 1960s and the 1970s, with an emphasis on improved active transit options and with a strong citizen-led anti-freeway movement. It has resulted in the construction of Seaways and Greenways connecting greenspaces and blue spaces with each other and with neighbourhood or city amenities. Since 1993, greenways have been part of the capital plan and were piloted in 1995 as part of the 140 km, 14 city-greenway network. Among those, the Comox-Helmcken Greenway was proposed in 2008, approved by Council in 2012, and inaugurated in 2013 (Section 1) as an all-ages, all-abilities greened cyclist and pedestrian path between Stanley Park and False Creek. It is meant to tie into the larger regional Central Valley Greenway between Vancouver and adjoining suburbs, and to improve options through the downtown areas for pedestrians and cyclists as part of the Transportation 2040 Plan. Studies conducted in 2016 on its health benefits have revealed a 16% increase in moderate physical activity and a 9.8% decrease in the number of days where people experience poor mental and physical health.[7]

From a governance standpoint, the 2008 election of an environmentalist mayor led to the formation of a Greenest City Action Team that produced the 2012 Greenest City Action Plan meant to cement Vancouver's position as the world's leading city in green commerce/innovation and in living within its means, even though much of the green planning rhetoric still needs to be operationalized and instantiated. The 2010 Winter Olympics contributed to the spread of Vancouver green brand, with dozens of public transit, green infrastructure, and new park projects, which has recently been valued at $31 billion.[8] Yet, recent park and open space projects have seen contestations between citizens, the City, and various interest groups regarding rights to adequate greenspace, preservation of enjoyable access in busy parks, and intrusion of high-rise developments surrounding green spaces.[9]

*Author: Tatjana Trebic*

**Notes**

1) According to Statistics Canada: https://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99-010-x2011001-eng.cfm#a4. People of Chinese and South Asian origins are the largest groups, by number.

2) For further information on social/affordable housing in Vancouver, see Punter (2003, p.94). More details on the creation of serious social inequalities in the here: https://www.cpsa-acsp.ca/papers-2010/Schatz.pdf

3) For example, see: http://www.economist.com/blogs/gulliver/2009/06/liveable_vancouver

4) Vancouver is also the birthplace of the Greenpeace movement. See: http://www.rcinet.ca/en/2015/09/16/history-sept-15-1971-the-canadian-origins-of-greenpeace/

5) Visit for more details: http://vancouver.ca/home-property-development/southeast-false-creek.aspx

6) More information at: http://www.cbc.ca/news/canada/british-columbia/false-creek-south-lease-deadlines-1.4145820

7) For further information visit: http://vancouver.ca/streets-transportation/comox-helmcken.aspx

8) More information on the legacy of the Winter Games: https://islandpress.org/blog/legacy-2010-winter-olympics-vancouver
and on Vancouver's brand value: http://www.vancouversun.com/business/green+branding+Vancouver/11686117/story.html

9) This has occurred in Southeast False Creek and Yaletown. See respectively: https://uwaterloo.ca/assessment-planning-project/sites/ca.assessment-planning-project/files/uploads/files/BC 5 Alexander SE False Creek.pdf and http://www.cbc.ca/news/canada/british-columbia/yaletown-residents-sue-vancouver-over-emery-barnes-park-tower-1.2636447

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# Vienna

## Background/Context

With 1.8 million residents Vienna is the capital and largest city in Austria.[1] In 2001, the city centre was designated a UNESCO World Heritage Site for its display of architectural styles and its importance to the world of music between the 16th and 20th centuries. One of the wealthiest regions in the European Union, the Viennese economy is dominated by the service sector and the movement of foreign direct investments by local and international companies.

Vienna is divided into 23 districts that budget autonomously for their own facilities such as schools and parks. The enduring presence of social-democratic municipal policies throughout much of 20th century Vienna has left a legacy of extensive reforms in the social, health and education spheres; a number of innovative and comprehensive social housing projects, many of them incorporating public greenspace, were developed since after World War I. Parks, gardens, forests, and agricultural plots cover 200 square kilometres, or about half of the city area. The open spaces along its famed Danube River also form an important part of the city's green network.

## Greening Trajectory

Vienna's significant green amenities are in large part physical remnants of its imperial and monarchical past. Stately public spaces such as the Viennese forest, the Prater park, Schönbrunn Palace gardens, and the Belvedere grounds are important legacy greenspaces. Originally constructed at the city boundaries, these spaces currently lie almost entirely within central historic Vienna. Also contributing to the city's high proportion of greenspace is the Wiener Wald und Wiesengürtel (Vienna Woods and Meadows Belt), a greenbelt surrounding the city that was established in 1905 in order to conserve the forest and agricultural lands at the western and southern borders of the city.[2]



*Donauinsel Park Hubertl—*

Other green spaces in the city are the result of policies implemented in the so-called 'Red Vienna' between 1918 and 1934 when municipal policies bolstered the development of social housing and cooperative greenspace. In the aftermath of the Second World War, the reconstruction of social amenities once again yielded new public spaces. In decades since, a new concept of open space arose, inspired in part by the late-nineteenth-century Garden City movement, through which additional neighbourhood greening manifested in the form of small allotments meant to serve the self-sufficiency and recovery needs of the working class.[3]

Wienerberg lake opened
**1995**

**1995**
Vienna Green Belt Plan adopted

**2001**
50-Orte Programm started

**1990**
Minna-Lachs-Park constructed

The more contemporary municipal efforts toward building a green city started in the 1960s, when a four-decade period of megaproject development was inaugurated in conjunction with preparations for the International Garden Show. The Donaupark, Kurpark Oberlaa, and Wienerberg projects all transformed brownfield sites into large public parks during this time, while the Donauinsel project addressed flood protection with the creation of a new channel and recreational island. The latest of the greening actions among these megaprojects was the 1995 installation of a swimming lake in the 120-hectare Wienerberg recreational area.[4]

**Dimensions of greening in Vienna**

*(radar chart showing Policy Integration, Green Talk, Physical Implementation, Health Focus, Procedural Participation — with lines for Vienna, Europe, All)*

Vienna ——— Europe ——— All ··········

| Equal Access Standard | ✓ |

The redevelopment of brownfield sites continued through the 1990s, 2000s, and even the current decade, converting former metal warehouses, cable factories, slaughterhouses, and other aging industrial and commercial  sites into public parks. These conversions were manifestations of 1984 city policy to repurpose underutilized sites in order to meet growing housing and public amenity needs.[5] In the 2000s, several parking facilities were also transformed into parks, including the old car park next to Simmering prison, which was converted in 2003 to the Hans-Paulas-Park 'piazza', playground, and sports lawn. In the most notable recent example of Viennese brownfield redevelopment, an old railway station was replaced by Eurogate, the country's largest 'passive' housing block, with its green area, artificial lake, gardens, and play spaces. These green spaces were completed and opened to the public in 2013 as Leon-Zelman-Park and Ziakpark.[6]

In terms of comprehensive city planning, Viennese strategic documents since 1994 have not placed overwhelming emphasis on the need to further green the city, however environmental protection and nature conservation has long been an integral part of the functioning of several city departments and agencies. The STEP 1994, STEP 2005, and STEP 2025 urban development plans for the city speak of greenspace expansion as part of programming for ecological improvements, and in terms of the rest, leisure, and health needs of the population. The 2025 plan goes further to define greenspace as a right, under the framing of Grünraumgerechtigkeit (green space justice): "All citizens of the city have the same right to a high-quality supply of greenspace and open space." This framing assumes that green spaces are designed for everyday life, are well distributed across all city areas, and are key instruments in creating an inclusive society and assisting the construction and negotiation of residents' identities.[7]

The most prominent aspect of greening policy in 1990s Vienna was the development and enlargement of the city's greenbelt. The "1000 hectare Program" of 1994-1995 attempted to close the forest and agricultural belt around Vienna; many areas that had formerly been categorized as developable land for the city's expansion were reclassified as protected natural lands and protected agricultural lands.[8]  The Vienna Green Belt Plan was also adopted in 1995, outlining measures for the protection and enhancement of the 19,260 hectares of open natural and agricultural areas, parks and cemeteries making up Vienna's "green lung". One decade later, in 2005, the 120-kilometer Rundumadum-Wanderweg hiking trail was
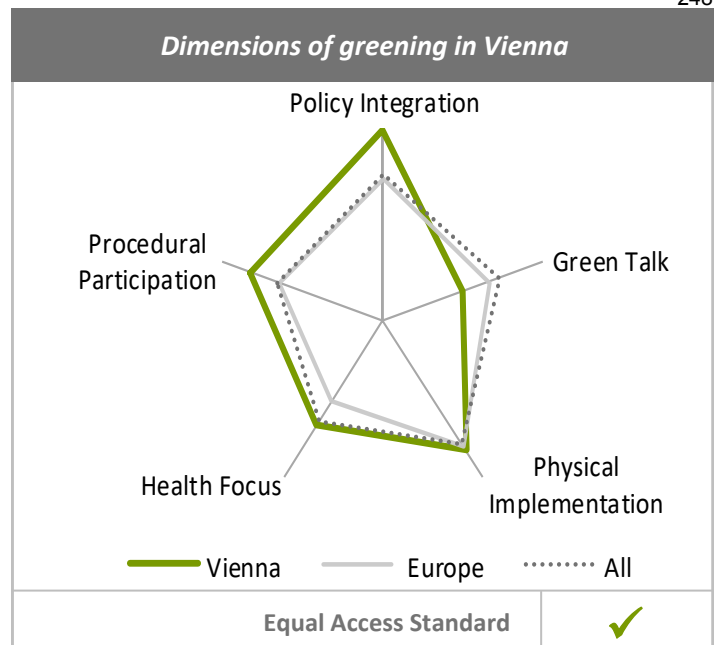
Rundumadum Wanderweg hiking trail opened
**2005**

Rudolf-Bednar park opened
**2008**

Eurogate green areas completed
**2013**

**2003**
Hans-Paulas-Park on former car park

**2008**
Heigerleingarten neighbourhood garden started

**2011**
Siebensternpark "baulückenpark" renovated

constructed in celebration of the greenbelt's first 100 years.

Small parks and green spaces have been constructed in the unused gaps between buildings and on vacant lots in the city since the 1980s. These so-called Baulückenparks are meant to alleviate the density of highly built-up city-centre areas by providing small natural spaces for respite. In 1990, the small Minna-Lachs-Park for children was created in the dense Mariahilf neighborhood, and was later enlarged with the demolition of an adjacent building. Several other such spaces, including the 2011 resident-inspired renovation of Siebensternpark, were constructed or expanded following the demolition of aging residential structures and have often been designated as spaces for children's play. The creation of these infill green patches has created stronger connections to existing green spaces – connections sought by the City, especially in these dense central areas.

A dozen or so parks have undergone restoration since 1990 with several supported by the European Union program, "Strengthening Regional Competitiveness and Integrative Urban Development in Vienna 2007-2013".[9] In the early 2000s the "50 Orte Programm" and "50 Orte+" established a focus on public space regeneration and enhancement, marking a turning point in the city's policies to focus on inner-city areas and their existing green spaces. Another dozen new city parks were constructed between 1990 and the early 2000s, oftentimes in conjunction with large infrastructure projects in transportation or social housing. For example, the underground construction of the U3 subway line was accompanied by the creation of four different parks between 1991 and 2003.[10] Some of these projects involved public participation, some co-designed spaces for a particular demographic such as children, youth or the elderly, while others made previously private parks public.[11]

Since the 2000s the greening of new city districts has been another key emphasis within greenspace construction. The southern part of the city and the area north of the Danube River are receiving a number of new green and leisure areas as part of development and redevelopment programmes. For example, in 2008 the Rudolf-Bednar Park opened in a new district which will continue adding housing and office space until 2025. The park is considered the "green heart" of the area and is the largest park built in Vienna since 1974.[12]

The city's tradition of allotments has in recent years expanded to include neighbourhood gardens. With the 2008 creation of the Heigerleingarten, community gardens that incorporate cultivation, education, and leisure started forming in several locations. Agreements between the City and residents are sometimes made for the temporary transformation of these previously underutilized sites. In other cases, the gardens operate as guerrilla gardening initiatives without formal permission.

*Author: Carmen Pérez del Pulgar*

## Notes

1) Vienna also forms one of the nine states of Austria. Its metropolitan area is home to approximately one third of Austria's population. As of 2016, out of the 1,840,226 residents in the city, more than 38 % had full or partial migrant background, mostly from Ex-Yugoslavia, Turkey, Germany, Poland, Ukraine, Romania and Hungary.  (Statistics Austria, 2016)

2) This conservation initiative came as a response to the period of rapid urban growth and densification associated with the Wiener Gründerzeit industrialization period of the mid-1800s.

3) For more information on the cooperative garden movement in Vienna, see: http://spatialagency.net/database/how/appropriation/viennese.cooperative.garden.city.movement

4) For information on the municipal purchase of a former brick factory and the subsequent creation of the Weinerberg recreational site and lake, see: https://www.wien.gv.at/umwelt/wald/erholung/wienerberg/

5) See the STEP 1984 plan for the city.

6) For more information on Eurogate and the low-energy standards for social housing, see: https://www.irishtimes.com/business/commercial-property/vienna-is-active-on-passive-public-housing-1.675473

7) Own translation. See the STEP 2025 Fachkonzept: Grün und Freiraum.

8) See: Pirhofer & Stimmer (2007) and the 1994 STEP urban development plan.

9) For example, the Helene-Deutsch-Park redevelopment was funded by the EU program: https://www.wien.gv.at/umwelt/parks/anlagen/deutsch.html

10) Rochuspark (1991), Kardinal-Nagl-Park (1991), Reithofferpark (1997) and Haugerpark (2003) were built alongside the U3 line.

11) Parks such as Parkanlage Krötzlergasse and the Schloss Neugebäude - Unterer Garten were renovated and opened up to the public in the 2000s. See https://www.wien.gv.at/umwelt/parks/anlagen/kroetzlergasse.html for more details.

12) See more at https://www.wien.gv.at/umwelt/parks/anlagen/rudolf-bednar-park.html

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# APPENDICES

# APPENDIX 1: Coding Strategy for City Scores

## 1.   POLICY INTEGRATION

Refers to the level to which greening is integrated across planning, policy and development programs throughout the city.

**5=HIGH: Greening has been robustly integrated across several policy domains throughout the city for at least 10 years**

EITHER

A. Greenspace fulfills many different goals (e.g. climate, sustainability, resilience, etc)

OR

B. Greenspace is always a required element in planning and development

AND

C. This high level of integration seems to have sustained since 1990

AND

D. This high level seems to occur across many areas of the city

**4=MEDIUM HIGH:  Greening has been robustly integrated across several policy domains but the robust integration has been temporally or spatially confined**

A OR B above is TRUE, but C AND/OR D is NOT TRUE

**3=MEDIUM: Greening is used as a targeted policy goal**

EITHER

E. Greening is used, but in a more targeted way than A and B above (e.g. it is not used to accomplish a wide and general set of goals and is not always required with development)

OR

F. A high level of greening activity took place prior to 1990 and this prior greening is expressed in city plans and policies, but little activity has occurred since then

**2=MEDIUM LOW: Greening is used as a targeted policy goal and has been temporally or spatially confined**

E OR F above are TRUE

AND

G. MEDIUM level greening is only present in recent (within the past 10 years) planning and policy initiatives (or there is not a high level of public information about greening available prior to the immediate period)

OR

H. MEDIUM level greening is spatially sparse

**1=LOW: Greening is not a primary policy goal**

I. Greening is a not a primary anchor for development (perhaps arts, transit or blue infrastructure are a focus, but greening plays a small role)

## 2. INTERNAL RHETORIC

Refers to the level of rhetoric used by the city to describe its own greening activities.

**5=HIGH: Rhetoric rises to extremes and has been as such since 1990**

A. The primary (easily identified) internal rhetoric used in city plans, policies, press releases, etc. predominantly describes the city goal in extremes, such as "becoming the greenest", "most sustainable" or "leader in green infrastructure"

AND

B. This high level of "leader, most, greenest" rhetoric has sustained since 1990

**4=MEDIUM HIGH: Rhetoric rises to extremes but only in more recent years (10 or less)**

A above is TRUE but B above is NOT TRUE

**3=MEDIUM: Rhetoric does not rise to extremes, but greening has been a component of the city's identity since 1990**

C. Rhetoric in city plans, policy, press releases does not rise to the level of being the best, most, or a leader (rather, there is talk of greening as a component in the way the city describes itself, but it does not raise to the extreme)

AND

D. This average level of rhetoric has sustained since 1990

**2=MEDIUM LOW: Rhetoric does not rise to extremes, and greening has only been a component of the city's identity in more recent years (10 or less)**

C above is TRUE but D above is NOT TRUE

**1=LOW: Greening plays a small or no role in way the city identifies itself**

E. Greening appears very little in the way the city describes its plans, policies, and identity

## 3. PHYSICAL IMPLEMENTATION

Refers to the extent to which greening and sustainability initiatives are expressed through spatially explicit projects.

**5=HIGH: A high number and at least one large scale green project has been built since 1990**

A. There are lots of greening projects (qualitatively assessed or as a percent of all public initiatives)

AND

B. There is at least one high impact greening initiative (large scale, lots of money invested, very visible)

**4=MEDIUM HIGH: Either a high number or at least one large scale green project has been built since 1990, but not both**

A or B above is TRUE but not both

**3=MEDIUM: While some greening projects have been built since 1990, the amount seems relatively low and there are no large scale green projects built since 1990**

B above is NOT TRUE

AND

C. There are some but not a lot of greening projects (qualitatively assessed or as a percent of all public initiatives)

**2=MEDIUM LOW: Few greening projects have been built since 1990**

D. There is a low number of greening projects, but they are visible (qualitatively assessed or as a percent of all public initiatives)

**1=LOW: there is little evidence that any greening projects have been built since 1990**

E. There are no (or practically no) greening projects visible

# 4. HEALTH FOCUS

Refers to the extent to which greening and sustainability initiatives are explicitly linked to health and wellbeing goals

**5=HIGH: Health is the main justification for greening projects that have been implemented and this has been the case for at least 14 years**

EITHER

A. Health is the main argument or justification for greening

OR

B. There is at least one large-scale initiative focused on health

AND

C. A or B above has sustained over the majority of the period since 1990

AND

D. There is evidence that at least a portion of the initiatives associated with health and greening have been implemented

**4=MEDIUM HIGH: Health is among several key justifications for greening projects**

E. Health is an important argument or justification for greening, but it is only one of several important justifications and thus not the main one

AND

B above is not true

AND

C AND/OR D is NOT TRUE

**3=MEDIUM: Health is a secondary or indirect justification for implemented greening projects**

EITHER

F. Health is part of the rhetoric around greening but is not among the main justifications

OR

G. Health is present, but indirectly given as a justification for greening (e.g. health is part of a sustainability plan, but not explicitly attached to greening)

OR

H. Health benefits are implied in the reasoning for greening, but are not explicitly spelled out (e.g. green space is discussed in terms of a more active lifestyle)

AND

I. There is evidence that the initiatives referred to in F,G, or H have been at least somewhat implemented, not just planned

**2=MEDIUM-LOW: Health is a minor justification for greening projects**

I above is not TRUE

OR

J. Health is only discussed in vague or general terms, thus it is hard know for sure if health is the motivation even indirectly, or it is a minor justification

AND

It is not clear that H above is TRUE

**1=LOW: Health plays almost no role as a justification for greening projects**

There is very little or no mention of health in relation to greenspace, either explicit or implied

# 5. PROCEDURAL PARTICIPATION

Refers to the extent to which citizens are involved with planning and directing greening initiatives in the city

**5=HIGH: There was a robust participatory planning process for at least 10 years**

A. There is a city sponsored participatory planning program that directs the outcomes of greening

AND

B. The participatory planning program involves consultation with residents about goals for greening outcomes

AND

C. The participatory planning program involves some form of direct control by citizens through citizen controlled greening initiatives, direct power given to citizens to decide greening outcomes, or the city works in a formal partnership with citizen groups to develop greening outcomes

AND

D. The participatory planning program was present for at least ten years during the period since 1990

**4=MEDIUM HIGH: There was a robust participatory planning process for less than 10 years**

A and B and C above are TRUE, but D is NOT TRUE

**3=MEDIUM: There was a consultation process for at least 10 years**

A and B and D above are TRUE, but C above is NOT TRUE

**2=MEDIUM LOW: There was a consultation process for less than 10 years**

A and B above are TRUE, but C and D above are NOT TRUE

**1=LOW: There was little or no participatory planning around greening**

A above is NOT TRUE (thus, all others are NOT TRUE)

# 6. EQUITY FLAG 1

Answer yes (1) or no (0) to the following question: Does the city currently have a program where greening is used as a revitalization strategy in socially vulnerable neighborhoods?

# 7. EQUITY FLAG 2

Answer yes (1) or no (0) to the following question: Does the city currently have a program for guaranteeing access to greenspace for all citizens (e.g. a park with a .25 mile walk)?

# APPENDIX 2: Greening Scores by City

| City | Region | Policy Integration | Green Rhetoric | Physical Implementation | Procedural Participation | Health Focus | Equal Access Standard |
|---|---|---|---|---|---|---|---|
| Albuquerque | US | 5 | 4 | 3 | 5 | 4 | 0 |
| Amsterdam | Europe | 5 | 3 | 4 | 2 | 4 | 1 |
| Antwerp | Europe | 4 | 4 | 4 | 2 | 2 | 1 |
| Atlanta | US | 4 | 4 | 5 | 5 | 3 | 0 |
| Austin | US | 5 | 5 | 5 | 3 | 3 | 1 |
| Baltimore | US | 3 | 4 | 4 | 5 | 2 | 1 |
| Barcelona | Europe | 4 | 4 | 4 | 3 | 3 | 0 |
| Birmingham | Europe | 3 | 4 | 3 | 3 | 3 | 1 |
| Boston, MA | US | 4 | 4 | 5 | 5 | 3 | 1 |
| Bradford | Europe | 3 | 2 | 2 | 1 | 2 | 0 |
| Brampton | Europe | 3 | 3 | 3 | 5 | 2 | 1 |
| Bremen | Europe | 3 | 3 | 4 | 1 | 1 | 0 |
| Bristol | Europe | 5 | 5 | 5 | 3 | 3 | 1 |
| Brussels | Europe | 5 | 5 | 5 | 4 | 3 | 1 |
| Calgary | Canada | 5 | 3 | 5 | 5 | 3 | 1 |
| Charlotte | US | 3 | 4 | 3 | 3 | 3 | 1 |
| Cleveland | US | 3 | 4 | 3 | 2 | 4 | 1 |
| Colorado Springs | US | 4 | 2 | 4 | 4 | 4 | 1 |
| Columbus | US | 5 | 5 | 5 | 4 | 1 | 1 |
| Copenhagen | Europe | 4 | 5 | 5 | 4 | 4 | 1 |
| Dallas | US | 3 | 4 | 4 | 2 | 3 | 1 |
| Denver | US | 5 | 3 | 5 | 2 | 5 | 1 |
| Detroit | US | 4 | 4 | 5 | 2 | 3 | 1 |
| Dortmund | Europe | 2 | 3 | 3 | 1 | 4 | 0 |
| Dresden | Europe | 2 | 2 | 2 | 1 | 2 | 0 |
| Dublin | Europe | 4 | 5 | 3 | 3 | 2 | 0 |
| Edinburgh | Europe | 4 | 3 | 3 | 2 | 3 | 0 |
| Edmonton | Canada | 5 | 3 | 5 | 3 | 4 | 1 |
| El Paso | US | 2 | 3 | 2 | 4 | 5 | 0 |
| Essen | Europe | 4 | 5 | 4 | 1 | 1 | 0 |
| Fort Worth | US | 3 | 3 | 3 | 3 | 4 | 0 |
| Fresno | US | 1 | 1 | 2 | 1 | 2 | 0 |
| Genoa | Europe | 2 | 3 | 3 | 3 | 1 | 1 |
| Glasgow | Europe | 4 | 5 | 4 | 3 | 4 | 0 |
| Hamburg | Europe | 4 | 3 | 4 | 1 | 4 | 1 |

| City | Region | | | | | | |
|---|---|---|---|---|---|---|---|
| Hamilton | Canada | 4 | 3 | 4 | 3 | 3 | 1 |
| Indianapolis | US | 5 | 5 | 5 | 5 | 5 | 1 |
| Jacksonville | US | 2 | 2 | 2 | 2 | 1 | 0 |
| Kansas City | US | 4 | 4 | 5 | 1 | 2 | 1 |
| Las Vegas | US | 1 | 1 | 1 | 2 | 1 | 0 |
| Leeds | Europe | 3 | 3 | 4 | 3 | 3 | 0 |
| Liverpool | Europe | 4 | 3 | 4 | 3 | 3 | 0 |
| Long Beach | US | 3 | 4 | 4 | 4 | 3 | 1 |
| Louisville | US | 4 | 5 | 5 | 3 | 4 | 0 |
| Lyon | Europe | 4 | 3 | 4 | 5 | 4 | 0 |
| Málaga | Europe | 3 | 4 | 5 | 1 | 1 | 1 |
| Manchester | Europe | 4 | 4 | 3 | 3 | 3 | 0 |
| Marseille | Europe | 2 | 2 | 4 | 5 | 1 | 0 |
| Memphis | US | 2 | 3 | 2 | 3 | 3 | 0 |
| Mesa, AZ | US | 1 | 1 | 3 | 1 | 2 | 1 |
| Miami, FL | US | 3 | 4 | 3 | 4 | 3 | 1 |
| Milan | Europe | 4 | 4 | 5 | 5 | 4 | 1 |
| Milwaukee | US | 4 | 4 | 5 | 5 | 4 | 0 |
| Minneapolis | US | 4 | 2 | 4 | 5 | 2 | 1 |
| Mississauga | Canada | 5 | 3 | 4 | 3 | 4 | 1 |
| Montreal | Canada | 4 | 3 | 4 | 4 | 3 | 0 |
| Munich | Europe | 4 | 3 | 4 | 2 | 5 | 1 |
| Murcia | Europe | 3 | 2 | 3 | 2 | 2 | 0 |
| Nantes | Europe | 4 | 5 | 4 | 3 | 3 | 0 |
| Naples | Europe | 1 | 1 | 4 | 1 | 1 | 1 |
| Nashville | US | 5 | 5 | 5 | 5 | 3 | 1 |
| New Orleans | US | 4 | 3 | 4 | 3 | 2 | 1 |
| Nice | Europe | 4 | 4 | 3 | 2 | 2 | 0 |
| Oakland | US | 5 | 5 | 5 | 5 | 3 | 1 |
| Oklahoma City | US | 3 | 3 | 3 | 1 | 4 | 0 |
| Omaha | US | 2 | 3 | 2 | 3 | 3 | 1 |
| Ottawa | Canada | 4 | 3 | 4 | 3 | 4 | 1 |
| Palermo | Europe | 3 | 3 | 4 | 5 | 1 | 1 |
| Palma | Europe | 2 | 2 | 3 | 1 | 1 | 0 |

| Philadelphia | US | 4 | 4 | 5 | 5 | 3 | 1 |
|---|---|---|---|---|---|---|---|
| Phoenix | US | 3 | 5 | 3 | 4 | 4 | 1 |
| Portland | US | 5 | 3 | 4 | 1 | 5 | 1 |
| Québec City | Canada | 2 | 2 | 4 | 2 | 4 | 0 |
| Raleigh | US | 3 | 3 | 2 | 3 | 3 | 1 |
| Rotterdam | Europe | 5 | 3 | 4 | 1 | 2 | 1 |
| Sacramento | US | 4 | 4 | 3 | 5 | 4 | 1 |
| San Antonio | US | 3 | 2 | 4 | 3 | 3 | 0 |
| San Diego | US | 3 | 4 | 3 | 3 | 2 | 1 |
| San Francisco | US | 5 | 5 | 5 | 4 | 3 | 1 |
| San Jose | US | 4 | 4 | 4 | 4 | 3 | 1 |
| Seattle | US | 5 | 4 | 4 | 3 | 3 | 1 |
| Sevilla | Europe | 3 | 3 | 5 | 1 | 1 | 1 |
| Sheffield | Europe | 5 | 4 | 4 | 3 | 3 | 0 |
| Stockholm | Europe | 5 | 5 | 5 | 3 | 3 | 1 |
| Stuttgart | Europe | 3 | 2 | 4 | 2 | 1 | 0 |
| The Hague | Europe | 5 | 3 | 3 | 2 | 5 | 1 |
| Toulouse | Europe | 4 | 3 | 4 | 5 | 2 | 0 |
| Tucson | US | 1 | 2 | 1 | 2 | 2 | 0 |
| Tulsa | US | 3 | 3 | 3 | 2 | 3 | 1 |
| Turin | Europe | 5 | 3 | 4 | 5 | 2 | 1 |
| Valencia | Europe | 3 | 3 | 4 | 1 | 1 | 1 |
| Vancouver | Canada | 5 | 5 | 5 | 5 | 4 | 1 |
| Vienna | Europe | 5 | 2 | 4 | 4 | 3 | 1 |
| Washington | US | 4 | 4 | 3 | 2 | 2 | 1 |
| Wichita | US | 1 | 1 | 5 | 4 | 3 | 1 |
| Winnipeg | Canada | 4 | 3 | 4 | 4 | 5 | 0 |
| Zaragoza | Europe | 3 | 3 | 3 | 1 | 1 | 1 |
| Zurich | Europe | 5 | 3 | 4 | 1 | 3 | 1 |

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This book examines the urban greening policy trajectories of 50 cities in Europe, Canada and the United States over the last 25 years. It identifies the main trends and strategies used and ranks cities along key criteria including the level of rhetoric, focus on health, and equitable access. The book is the result of the first stage of the GreenLULUs study, a 5-year research project examining the relationship between urban greening and social equity funded by the European Research Council and undertaken by the Barcelona Lab for Urban Environmental Justice and Sustainability (BCNUEJ) at the Institute of Environmental Science and Technology of the Autonomous University of Barcelona (ICTA-UAB). Providing a clearer picture of processes like gentrification, the research aims to inform a new direction for urban sustainability, in which social and racial equity are placed at the center of planning to produce green, healthy, and equitable communities.