

# GREENING THE CITY

URBAN SPACES AND THEIR IMPACT  
ON HEALTH AND WELL-BEING

HIGHLIGHTS ON: BOGOTÁ, MADRID, MEXICO CITY AND ROME



**LET'S GREEN  
OUR CITIES**  
GREENPEACE

A woman with blonde hair, wearing a black bicycle helmet with a GoPro mounted on top and a light blue surgical face mask, stands outdoors. She is wearing a dark green t-shirt with the word "GREENPEACE" in yellow-green capital letters. She is holding a large white rectangular sign with both hands. The background shows lush green foliage, including a large tree and a palm-like plant, and a portion of a brick house with a white chimney. A red bicycle is partially visible at the bottom right.

GREENPEACE

**RESTART**  
**FROM GREEN**  
**SPACES**

GREENPEACE

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## URBAN SPACES AND THEIR IMPACT ON HEALTH AND WELL-BEING

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### INDEX

	<b>Executive Summary</b>
<b>1</b>	<b>Green and Civic Space in Cities</b>
1.1	Public Green Space
1.2	Public Civic Space
1.3	Standards for Living Green and Civic
1.4	Worldwide Data on Living Green and Civic
<b>2</b>	<b>Benefits of Living Green and Civic in Cities</b>
2.1	Living Green for Equal Health
2.2	Living Green for Additional Benefits
2.3	Living Civic for Health and Well-being
<b>3</b>	<b>Living Green in Bogotá, Mexico City, Madrid and Rome</b>
3.1	Bogotá
3.2	Mexico City
3.3	Madrid
3.4	Rome
<b>4</b>	<b>Living Green for Pandemic Recovery</b>
<b>5</b>	<b>Guidelines and Good practices</b>
5.1	3-30-300 Rule
<b>6</b>	<b>Conclusion and recommendations</b>
	<b>Bibliography</b>

## EXECUTIVE SUMMARY

During the worldwide Covid-19 lockdowns, the highlight for people who live in cities has been a walk in the park. The sound of the trees in the wind, the smell of nature, even rain on our faces — heading out for some physical exercise or simply a stroll has got us through living with restrictions. Those moments have made us realize how important green and public spaces are for our mental and physical well-being. We also realized how little access to good quality green and public space there is in most cities. Urban areas aren't always as pleasant as we would like them to be. Liveable and lovable are the two key traits of the city of the future. Imagine a city with few or even no cars; a city where every park, balcony and roof top is an urban garden where we can grow healthy food. Imagine a city with fewer shopping malls and more playgrounds and community centers for our kids to enjoy. A city where no one is left behind and everyone has access to essential services like housing, food, safe mobility, water, and sanitation.

More than half of the world's population — 4.2 billion people — live in cities. That number is set to increase to 70% by 2050. Cities are the centres of economic activity and account for over 70% of global greenhouse gas emissions<sup>1</sup>, which puts them on the frontline of combating climate change and epidemics. They provide access to hospital infrastructures, which cure and improve our lives, but on the other hand the urban environment poses many hazards that negatively impact citizens' health – things like air pollution, traffic, stress, loneliness and isolation.

Cities, and their citizens, must be at the forefront of delivering a safer climate by the middle of this century, as stated in the Paris Agreement<sup>2</sup>, to avert a catastrophic climate and future pandemics. Cities can sustain nature and help us mitigate and adapt to climate change.

Historically we have seen public and green spaces in cities as a mark of civilization as well as promoting health and well-being. Roman civilization was amongst the first to recognise the health benefits of having rural features within a city. They coined the phrase 'rus in urbe' and today this expression is shorthand to describe a desirable new green feature that is proposed or that needs protection in a city. That was a recurrent residential pattern in pre-modern cities. The Aztec, Maya and Incan civilizations structured their cities around houses surrounded by an open space to serve as a garden for relaxation or for growing food.

A green and walkable city isn't a new idea but the pandemic has made the need clearer than ever. We have seen that humans possess an innate tendency to seek a connection with nature, and feel better and healthier when living in natural environments, rather than in built settings (theory and practice of biophilia<sup>3</sup>).

The World Health Organization (WHO) considers health as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'. Such a definition acknowledges the subjective aspects of the idea of health and implicitly places power in the hands of the individual. In this sense, people assume some responsibility for their health: things such as diet, smoking, exercise, friends and family ties, as well as the physical environment e.g., housing and proximity to natural areas.

Of course, not all elements are under the control of the individual. Urban systems can be highly unequal, which is why many professionals working on disease prevention and health promotion focus their efforts on establishing and maintaining social and environmental preconditions for mental, social and physical well-being.



The availability of urban green spaces in the world's big cities increased by 4.11% in the last 15 years, and at the same time, the accessibility of urban green spaces has increased by 7.1%. Unfortunately, only a handful of cities fully met the WHO's standard on availability that sets a minimum of 9m<sup>2</sup> of green spaces per inhabitant, let alone the ideal value of 50m<sup>2</sup> per capita. Even in cities that do meet some of the standards, it doesn't necessarily translate into equal access to green space for all citizens. Adopting the WHO standard as a benchmark, our four cities rank in this order: Rome with 39m<sup>2</sup>/capita<sup>4</sup>, Madrid 21m<sup>2</sup>/capita<sup>5</sup>, Mexico City 6m<sup>2</sup>/capita<sup>6</sup> and Bogotá 5m<sup>2</sup>/capita<sup>7</sup>.

Cities worldwide are increasingly paying more attention to the creation and preservation of urban green spaces in their development planning, but social inequities on the availability, accessibility and quality of green space are present both in Global North as well as in Global South.

Besides the physical presence of urban green and civic spaces, it is the actual enjoyment of nature, green and civic environments that generate real benefits, and improve and preserve citizens' health and well-being.

**Spending at least 120 minutes a week in nature is associated with good health, well-being and quality of life.**

**While as a micro-restorative measure, spending at least 30 minutes in an urban square reduces stress, anxiety, anger and fatigue immediately, generates better cognitive performance, and increases happiness.**

With concrete health benefits, outcomes range from improved perception of general health and subjective well-being, better pregnancy outcomes (e.g., birth weight),

better cognitive function, improvement in behavioural development, improved mental health, lower risk of a number of chronic diseases (e.g. diabetes and cardiovascular conditions, obesity, asthma), accelerating recovery from surgery, reduced hospitalisation and premature mortality. By investing in urban public green spaces, additional economical, educational, environmental, and societal benefits are proven to make our city life better.

**New scientific discoveries have found that urban civic space has the restorative potential to improve human cognitive functioning.** As urban civic spaces such as squares, historical sites and panoramic points of view have a similar restorative value as urban green parks do, we should actively encourage the creation and improvement of civic space too.

Maintaining or increasing the provision of high-quality and accessible urban green and civic spaces, particularly for marginalised groups, is one of the UN Sustainable Development Goals and its importance has been amplified with the Covid-19 pandemic. In many countries, the recent lockdowns have resulted in the closure of urban parks and green spaces, worsening the living conditions of many people. Low socioeconomic status groups have suffered the most, due to low mobility and shrinkage in economic and social capital.

In conclusion, urban green space interventions need multi-disciplinary and cross-sectoral collaborations starting from the involvement of the local community and intended green space users. This will ensure benefits for residents and the city as a whole.

Cities should be designed and planned, taking into account the benefits of nature. Mayors, urban planners and public officials must share this same goal. Public



Credit : Greenpeace



Credit : Greenpeace

administrators should be made more aware of the psychological and physical benefits generated by living in public open spaces. Within the city, open public space is an important dimension. Green and civic space is a necessary component for delivering healthy, sustainable and livable cities. Local and national administrations should commit accordingly and create good quality open civic and green areas to enhance the prosperity of cities, the well-being of its citizens and adapt to climate change.

Civic and green space interventions need to be considered as long-term investments, they need to be integrated within local

development strategies and frameworks (e.g., urban master plans, housing regulations, transport policies, and sustainability and biodiversity strategies). This requires continued political support from within local governments as well as the general understanding that urban green spaces go beyond environmental or ecological objectives.

Such efforts will pay off by delivering social and health benefits that will increase the quality of life and well-being of all urban residents.

## GREENPEACE CALLS ON CITY MAYORS AND LOCAL AUTHORITIES AROUND THE WORLD TO:

- **Expand existing green and public areas and create new green infrastructures in all neighborhoods following sustainable urban planning and equity principles. This will tackle the climate and biodiversity crisis and drive community cohesion, and includes converting or rewilding urban greenspace into agroecology-based food production systems.**
- **Halt urbanisation and development plans that threaten the protection and conservation of green and public spaces, and local natural ecosystems, like forests, wetlands and mountains, within the surroundings of urban areas.**
- **Promote social connection and inclusion among communities by introducing policies on public goods, such as green and public spaces, which are based on the latest scientific evidence and promotion of people's well-being, rather than solely on efficiency or profitability.**





# 1. GREEN AND CIVIC SPACE IN CITIES

## 1.1. Public Green Space

**Green space** is open space that has some form of vegetation — either natural or artificial. It covers land that is made up mainly of unsealed and permeable surfaces such as soil, grass, shrubs, and trees. It is not only limited to **urban gardens and parks but also includes community gardens, private house yards**, water features (also referred to as blue spaces) and all different ranges of wild-natural environments.

## 1.2. Public Civic Space

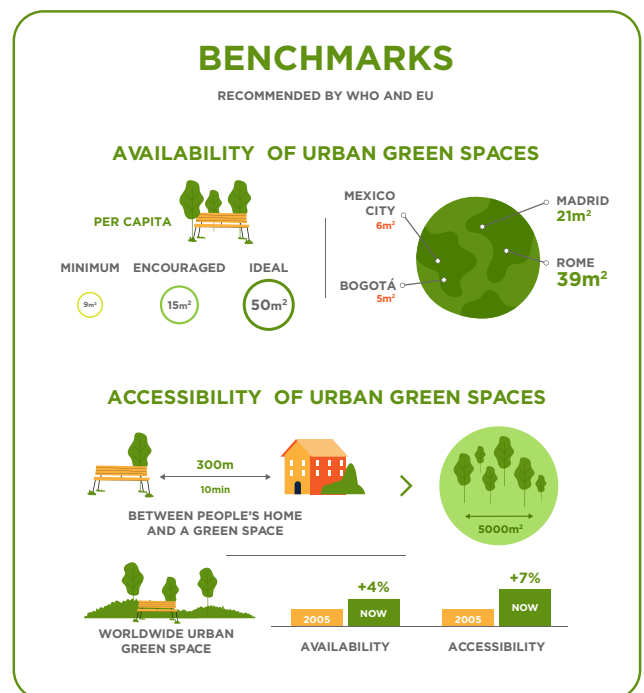
Grey space covers lands that are closed to a greater extent, usually impermeable and have 'hard' surfaces paving such as mosaic concrete, or asphalt.

**Civic space** consists of urban squares and recreation spaces characterized by being a grey open space such as town squares, walkways, and plazas. Civic space is publicly accessible, planned for public enjoyment and designed for **pedestrians and soft mobility**. These spaces also act as a forum for **community activities, social interactions** between private citizens, tourists, and businesses. Moreover, civic spaces provide **a sense of place** in the form of identity, meaning, memory, history, and links with the wider world.

## 1.3. Standards for Living Green and Civic

There are information gaps in measuring these types of green and civic spaces in cities using traditional land-use datasets, because data are not always comparable. What's more important than the physical presence of urban green and civic spaces, is the **real contact with nature and open environments**. Being outside and **living in the urban open space generates benefits** that can improve citizens' health and well-being.

The World Health Organization recommends the availability of a minimum of  $9\text{m}^2$  of green space per capita, encourages this to reach 10 to  $15\text{m}^2$  and defines as the ideal value of  $50\text{m}^2$  per capita<sup>8</sup> as a final goal. Together with the availability of green space per inhabitant, the WHO Urban Green Space Indicator considers the % of population living within 300m or less of urban green space that are larger than  $5.000\text{m}^2$ . In addition to availability parameters the European Commission added the concept 'within 15 minutes' walk from people's home<sup>9</sup> to define accessibility of green spaces<sup>10</sup>.



Graph 1: Benchmarks for urban green space, trends and the position of our four cities. Own elaboration



#### 1.4. Worldwide Data on Living Green & Civic

A worldwide overview on city performance in relation to urban green services is presented, assessing the change of health benefits generated by urban green spaces in 28 megacities worldwide between 2005 and 2015 by looking at the availability of green spaces and their accessibility.

**The availability of urban green spaces in these megacities increased by 4.11%.** from 27.63% in 2005 to 31.74% in 2015 <sup>11</sup>. For megacities with the same level of economic performance, climate conditions can significantly influence the availability of urban green spaces.

**The accessibility of urban green spaces increased by 7.1% from 65.76% in 2005 to 72.86% in 2015.**

However, only a few cities could fully meet the **WHO's standard we previously mentioned**.

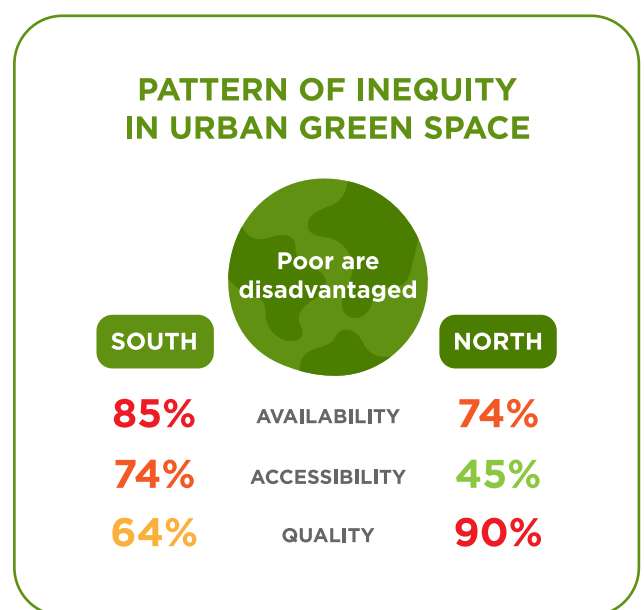
**To foster health benefits, cities must increase the amount and availability of urban green spaces. At the same time, accessibility can be improved by allocating small and medium-sized urban green spaces more evenly, rather than pouring all resources into building a few large and clustered green spaces.**

Cities in the Global South are experiencing many of the same **challenges faced by cities** in the Global North, including **climate change, growing inequality and gentrification, increasing health issues, and aging**. Yet some **Global South** cities also face several additional challenges such as the presence of large informal settlements (e.g., slums and favelas); **the legacies of colonialism and post-colonialism**; even larger **wealth inequalities** than Global North cities; higher levels of pollution due to rapidly

growing industries; and extremely **high rates of population and urban growth**. These specific challenges negatively impact the most vulnerable residents of Global South cities, raising environmental justice concerns related to access, quality, and availability of green space.

In Global South cities, people from low socioeconomic status groups live further away from green spaces than wealthy groups in 74% of cases. They have access to lower quantities of green spaces in 85% of cases and have lower quality green spaces in 64% of cases than people with high socioeconomic status <sup>12</sup>. Within the Global South, inequities for green space availability and accessibility do not significantly vary based on the continent.

If we compare this situation with the Global North, we see that most of these inequalities remain. A lot of work needs to be done to ensure equity in our societies.



Graph 2: Inequities in urban green space for low-income groups in Global North and South. Own elaboration







The inequalities about the availability of green space are consistent in both contexts. In the Global North, low socioeconomic status people have access to fewer parks in 74% of cases <sup>13</sup>.

Inequities about the accessibility of green areas are more common in the Global South however, where poor people are disadvantaged in 45% of cases.

Inequities about the quality of green spaces are more frequent in Global North than in Global South cities because in 90% of cases, the low socioeconomic status groups are disadvantaged (Graph 3)

The scarcity of quality urban open areas has, in some cases, resulted in a fear and distrust towards public areas. This has led to increasing transformation of commercial centres into the main venues for collective activities and socialising. Children's games, sports classes, religious services, cultural events and celebrations can now all be found in these enclosed, private spaces that emulate the offer of open public spaces while providing the appearance of security and a convenient opportunity to perpetuate consumerism <sup>14</sup>. Shopping malls are privatized spaces, which reduce and control diversity. This new type of physical space creates a discursive 'rupture' with older accounts of public spaces, which were based on equality and open access <sup>15</sup>. Spending leisure time in a shopping mall reinforces the idea that consumerism is a natural human tendency and a safer place than less maintained green and civic areas.









## 2. BENEFITS OF LIVING GREEN AND CIVIC IN CITIES



Graph 3: Benefit of Urban Green and Civic Spaces  
Source: Own elaboration

**Spending at least 120 minutes a week in nature is associated with good health, well-being, and quality of life** <sup>16</sup>. Let's have a look in detail at the most well-known association that links health benefits to nature, parks, and green areas <sup>17</sup>, such as:

### Mental Health

Contact with green spaces is associated with lower risks of psychological distress and psychiatric conditions such as depression and anxiety, plus less likelihood of use of psychiatric medicine across all socio economic strata and genders <sup>18</sup>. There is growing evidence for the beneficial effects of green space on mental health linked to improvements in behavioural development (reduced difficulties, emotional symptoms, and peer relationship problems) <sup>19</sup>.

### Brain Development & Cognitive Function

Long term exposure to green space can reduce the risk of behavioural and emotional problems and enhances cognitive development, including improved attention and working memory. Green space can play an especially crucial role in children's brain and cognitive development. Studies <sup>20</sup> have shown that playing in

green spaces can reduce the severity of symptoms and even improve attention in children with attention deficit/hyperactivity disorder (ADHD) in the short-term.

### Other Non-communicable Diseases

Contact with green spaces is associated with lowered risk of cardiovascular conditions <sup>21 - 22</sup>, diabetes, obesity and lower back pain. Considering that non-communicable diseases are responsible for the equivalent of 71% of all deaths globally, the global benefit of more accessible green spaces could be huge.

### Mortality

More green space in residential areas is associated with reduced all-cause premature mortality because of lower exposure to air pollution, people doing more physical activity, stronger perceived social engagement, and a reduced risk of depression <sup>23 - 24 - 25</sup>.

### Pregnancy Outcomes

Access to green space is positively associated with increased length of gestation, reducing the risk of preterm birth, infant mortality, and negative long-time outcomes during childhood and beyond <sup>26</sup>.

### Perceived General Health

More contact with green spaces has been consistently associated with an improved perception of general health and also subjective well-being — things like feeling more satisfied with life and happiness <sup>27</sup>.

### Reduced hospitalisation & recovery time

Exposure to green space helps to avoid hospitalization due to the development of healthier physical and psychological conditions, and reduces the recovery period after treatments and operations <sup>28</sup>.









Graph 3.1: Benefit of Urban Green and Civic Spaces  
Source: Own elaboration

### 2.1.1. Living Green for Equal Health

Many studies show interconnections between health outcomes and **socio-demographic factors**, including **age, ethnicity, and socioeconomic status**.

For **children and adolescents**, access to green space can stimulate the development of gross and fine motor skills as well as improve cognitive function<sup>29</sup>, emotional and social development<sup>30</sup>. All these lead to better health and healthier lifestyles in adulthood, lowering the risks of chronic diseases (obesity, myopia, diabetes<sup>31</sup>). Green spaces play an important role in children's and young people's social networks, including friendships across cultures and promoting social inclusion<sup>32-33</sup>. Opportunities to develop skills in risk management and coping with uncertainty are important attributes for adulthood, so easily accessible wild or natural environments that offer these challenges can help satisfy young people's need for risky and adventurous behaviour.

**Senior adults** have stated they have better health when there are plenty of green spaces in their neighbourhood due to this group's greater dependence on the local environment. Older adults living in inner-city neighbourhoods also benefit from the presence and use of green

spaces, which appears to promote social ties and a sense of community<sup>34</sup>. Social contact is known to be important for senior health and well-being as we know that social isolation is significantly associated with increased mortality.

Health benefits linked with access to green space are strongest among the lowest **socioeconomic groups**<sup>35</sup>. Groups with lower socio economic status (SES) generally have poorer health and reside in areas with greater environmental problems. This combination of factors could make them more likely to benefit from health promotion interventions — such as developing new green spaces in their neighbourhood.

Lower SES groups have limited mobility, so making green spaces close to their homes available can increase the likelihood that they will use these spaces. Higher SES groups are more likely to use green spaces farther away because of their increased mobility. A landmark study conducted in the UK has shown that income-related inequality in mortality is less evident in greener neighbourhoods in comparison with areas that have less green space<sup>36</sup>. In the United States, individuals of lower SES and minority groups in Phoenix, Arizona, were more likely to live in neighbourhoods with greater exposure to heat stress<sup>37</sup>. This is because lower income populations have less means to cope with extreme temperatures. Wealthier people are more likely to have access to air conditioning systems, while the low-income population relies on what is publicly available. Urban green areas and canopy coverage offer those in low socio economic groups a “natural based solutions”, improving the quality of their life<sup>38</sup>. The role of public administrations providing vegetation that will cool urban areas may be especially important for the urban poor.

According to a study in 34 European countries, socio economic inequalities were reduced in neighbourhoods with good access to green space <sup>39</sup>. In other words, accessible green spaces can help decrease the effects of multiple deprivation, can contribute to distributive justice, and reduce inequality in health <sup>40</sup>.

In general, urban open spaces provide critical venues for citizens, including **minority groups** with limited means and little of their own private space to perform many social, economic, and cultural activities.

It must be noted that several health hazards could also potentially be created with the introduction of green spaces: an increased risk of asthma and allergic conditions, enhanced exposure to herbicides and pesticides (when not managed free of chemicals with agroecology), reservoirs and vectors of infectious diseases in green spaces, and increased risk of accidental injuries. However, the evidence of these adverse effects of urban green space on health is much scarcer than the evidence of the benefits of them.

## 2.2. Living Green for Additional Benefits

Green and civic spaces are a means to overcome economic distress <sup>41</sup>, provide recreation <sup>42</sup>, tourism <sup>43</sup>, cultural heritage <sup>44</sup>, food <sup>45</sup>, drinking water <sup>46</sup>, jobs for the management and maintenance of the open spaces <sup>47</sup>.

Urban parks and gardens function as biodiversity hotspots, especially when they are designed following the principles of agroecology <sup>48</sup> (e.g. no chemical pesticides and fertilisers, soil sustainability etc.).

Well-designed urban green space can also benefit hydrological systems and enhance sustainable urban drainage, help prevent and mitigate flooding and plant

water-stress and create and enhance new habitats for plant and animal species. Addressing the loss of species, habitats, ecosystem health and genetic diversity — green space preserves biodiversity <sup>49</sup>.

Green spaces can improve urban ecosystem health by reducing the effects of weather extremes (both heat and cold waves), air pollution and noise reduction. Tackling the root causes and effects of climate change is a means to build more liveable and resilient cities <sup>50</sup>. Traditionally, urban planners and practitioners in land and resource management have relied on conventional engineering solutions to adapt to climate change, but this may not always be cost-effective, sufficient, or sustainable. “Nature based solutions”, as implementing new parks and green areas, can address societal challenges from climate change and urbanization in a sustainable way <sup>51</sup>.

Green spaces may also offer opportunities for environmental education and engagement with nature for all age categories. Urban green space can make active travel attractive, encouraging and supporting new, environmentally friendly behaviours.

Urban open space offers the chance to develop individual and community capital, which will foster belonging and trust, and creates inter-generational and cross-cultural relationships that will prevent exclusion, marginalisation and violence <sup>52 - 53 - 54</sup>.

Urban green and civic spaces play an important role in the development of social cohesion as a basis for public policies, especially in post-conflict situations, to restore social fabric and peace. Initiatives towards community building are a clear demonstration of the capacity of the society for resilience. For example, in Bogotá, civil organizations worked to reconstruct the social fabric for young,





vulnerable people through sport, recovering green spaces from drug users. The 'Memory and public space' ('Memoria y espacio público') project, for its part, aims at making emblematic spaces in the city significant again (i.e., renaming streets and places with names linked to memories, mapping historic routes in the city or involving cultural and artistic actors to restore the dignity of the victims of the conflict). The "Bogotá without Hunger" programme runs free urban agriculture classes two days a month, free of charge, while the gardeners of the Botanic Garden, José Celestino Mutis, create allotments in local areas where communities request it. In different (mostly economically deprived) neighbourhoods, urban gardeners share their knowledge and conserve the seeds of endangered plants to preserve a large number of native species. Urban gardens also keep senior citizens active, support stress relief, foster good health and create cultural and social interconnection between generations <sup>55</sup>.

### 2.3. Living Civic for Health and Well-being

Little attention has been paid to the potential health benefits of green and civic interventions in urban settings, as they have been expected not to be restorative, and even present elements that might imply negative health outcomes in the short and long term. Thanks to the research we mentioned earlier, it emerged that urban squares offer psychological benefits mainly in terms of restoration. Psychological restoration is the recovery of depleted resources such as attention and emotions, from stress and social pressure. Restoration happens when someone interacts with a particular environment that is able to change negative states to positive ones.

Field studies evaluated this **restoration process in urban squares** in San Sebastián (Spain) and found that participants who reported a better psychological state

after spending 30 mins in an urban square, had **better cognitive performance, reduced negative affect variables (tension-anxiety, anger-hostility, fatigue and stress) and reported an increase in levels of happiness** <sup>56</sup>.

Other studies <sup>57 - 58 - 59</sup> also revealed that spending just 30 mins contemplating and walking in an urban square led to significant improvements in emotional and attentional measures. Similarly, urban walks can provide an increase in happiness and stress reduction — particularly in adults with poor mental health.

Open urban squares certainly could be seen as providing the 'low end' of restorative experience, i.e., visits to such places stop the increase of negative feelings and even reduce some of them (depression and stress) <sup>60</sup>. Open urban places provide experiences that appear to block a buildup of attentional fatigue and negative mood. Findings <sup>61</sup> indicated that the experience of walking, sitting, and contemplating in these urban settings led to an increase in attentional performance and a decrease in experiences of depression-sadness and stress, with effect sizes that were moderate and comparable to previous studies <sup>62</sup>.

The result also showed that respondents could obtain better restoration of physiological stress when they closed their eyes to rest.

Plazas offer several benefits to the urban dweller, such as increased visual perspective and diversity of uses beyond urban transit. These squares are not merely places to pass through, but rather enclaves that encourage appropriation. **Historical and panoramic urban settings have a demonstrated restorative value similar to urban green parks** <sup>63</sup>.

Survey-based studies <sup>64</sup> have already shown the relevance of natural elements

such as grass, trees or water in the achievement of restoration in civic space. **Social landscape** also seems to play a role, with a study <sup>65</sup> showing that **reduced numbers of users** prompt more restoration rates than an absence or greater presence of them. On the contrary, external features such as noise coming from traffic were found to be negatively related to it.

**Place attachment** is a stronger predictor of restoration. A person's **favourite place** in nature has more restoration qualities than other natural landscapes <sup>66</sup>. The study of the restorative potential of urban squares reveals its importance for the **configuration of a network of small restorative places** along the urban matrix to provide citizens with **everyday micro-restorative experiences** <sup>67</sup>.

Micro-restorative experiences result from brief sensory contact with nature, like you might find in a square, through a window, in a book, on television or in a painting <sup>68</sup>. Accumulated over time, such micro-restorative experiences could significantly improve people's sense of well-being and provide a buffer against the negative impacts of stressful events <sup>69</sup>.

There is growing evidence to suggest that not only is there a need in contemporary urban regeneration for public open space provision to be reconceptualised in terms of networks of small spaces of various kinds, but that this kind of spatial arrangement may in itself have a restorative potential, arising mainly from its capacity to release cognitive fatigue <sup>70</sup>. As a side effect that could also facilitate social interaction and generate positive community development <sup>71</sup>. Planning good civic spaces will improve people's well-being and quality of life.





### 3. LIVING GREEN IN BOGOTÁ, MEXICO CITY, MADRID & ROME

Research on the relationships between urban green spaces and individual well-being are very consistent for European countries, while it is still limited in Latin America. A collection of outcomes is presented for each of the following four cities.

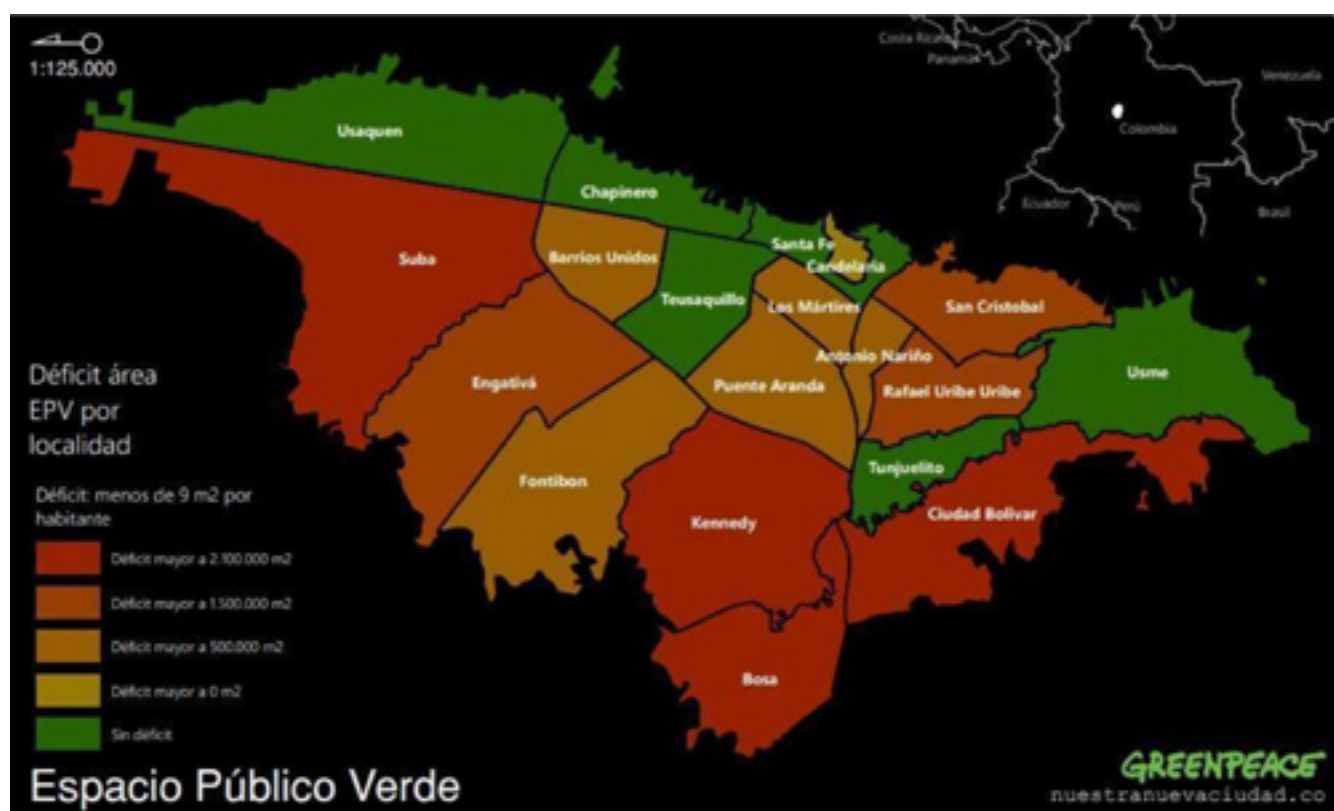
#### 3.1. Bogotá

Bogotá currently has a system of 5,134 regional, metropolitan, zonal and neighbourhood parks, located in 19 of the 20 districts in the city<sup>72</sup>. Since 2005, a master plan for effective public space was established, in which goals were set for 2019. These goals stipulated that by 2015 Bogotá would have had a per-capita public space of 6m<sup>2</sup>. By 2019, the effective public space of Bogotá (parks, squares, and green

areas) was 4,97m<sup>2</sup> / inhabitant<sup>73</sup>. An amount significantly below the minimum 9m<sup>2</sup> recommended by the WHO.

All of this implies that Bogotá is a very compact, high density city that has a lack of urban green space. This is an issue that can still be reversed through clear and concrete actions. It's crucial that the future city plan has a more sustainable approach (see Graphic 4). As in many cities in Latin America, the availability and accessibility of urban green space in Bogotá is related to major issues such as socio economic status, crime, climate and justice.

This confirms that the problems of poverty, environment and population combine,



Graphic 4. Map of Bogotá showing the deficit of green area (EPV) per district. Source: Greenpeace<sup>77</sup>



where the population increase leads to environmental deterioration, which in turn translates into greater demographic pressures <sup>74</sup> .

Middle-income groups experience better outcomes compared to the higher and lower-income groups. They reported higher levels of connectedness to nature, human-nature interdependence, positive, effective and restorative qualities attributed to the parks, positive emotions associated with their experience, and lower levels of negative emotions <sup>75</sup>. Nature and physical activities like walking or exercising are a significant predictor of well-being in the middle-income group. The lower level of well-being reported by people in the low SES group may be due to limitations in their natural experience and, consequently, prevent them from receiving greater benefits. There is a lack of public policies and programs that promote the conservation and expansion of green spaces in Bogotá. Urban policy makers and practitioners need to disseminate proper information to avoid misleading beliefs by the public. In 2020, the mayor declared a 'Climate Emergency' in a historic event and defined guidelines to fight climate change. Bogotá was the first city in Latin America to declare this, so its strategies in favor of the environment will set the standard for the whole region. In the specific case of Green Areas, the protection of the main ecological structure and biodiversity is sought. It aims to restore the main ecological structure with clearly defined sources of financing, responsible parties, and, as a permanent short, medium and long-term process, for the recovery of ecosystem services, protected areas of the Capital District and strengthening of territorial advantages in the face of climate change <sup>76</sup>.





### 3.2. Mexico City

The distribution of green public spaces in Mexico City is an urban environmental case of injustice. Using spatial and demographic data, a Park Need Index (PNI) was calculated for the 16 boroughs of the city <sup>78</sup>. Results show that distribution of green public space is directly correlated with demographic features (Graph 6).

The results reveal that a vast majority of green infrastructure is low quality, preventing the provision of the urban ecosystem services required for building Mexico City's resilience.

In Mexico City, the provision of urban public space is undermined by a commodification and privatization trend in favour of national and international corporations seeking financial profit. Consequently, companies take over urban spaces to commercialize them as a commodity to be bought and sold. This practice results in segregation of those individuals that cannot afford goods and services that are supposedly paid for with tax. Green public space deficit in marginal areas of Mexico City is the result of state institutions' incapacity to manage resources with a democratic social approach <sup>79</sup>.

There are 40 urban community gardens contributing to local sustainability and the livability of Mexico City, **by creating jobs, recovering connections with nature, knowledge transmission, experimental practices, recovery or appropriation of public spaces and offers of therapeutic benefits** <sup>80</sup>.

The local government (2018-2024) has set a series of goals to recover parks and other public spaces <sup>81</sup>. For 2020, the office in charge of these developments reports interventions in at least 11 public spaces, with actions related to reforestation and urban infrastructure development: for

example, the rehabilitation of jogging tracks and bike lanes <sup>82</sup>. More actions are needed to ensure equal access to public and green spaces for everyone.

### 3.3. Madrid

Few studies have been carried out in Madrid on the benefits and effects of green space on well-being.

One study focused on the relationship between the density of green spaces at different distances (300, 500, 1000 and 1500m) and cardiovascular risk factors (obesity, hypertension, high cholesterol, and diabetes) between women and men <sup>83</sup>. Results showed a correlation between the density of green spaces within 300 and 500m buffers with high cholesterol and diabetes, and an association between the density of green spaces within a 1500m buffer with hypertension. However, these associations were significant only in women. These study results, along with other evidence, could help policymakers create healthier environments that would reduce the cardiovascular disease burden and reduce gender health inequities.

Madrid has a Mediterranean climate with hot summer temperatures that easily go above 40°C during the day. As with many other cities in central latitudes, heatwaves represent a big problem for people's health and city liveability. A study on the cooling effect of parks in Madrid <sup>84</sup> showed that a green area larger than 10ha can lower the temperature by 2.5°C in the 600m area around the park. Maybe more important is that people felt this benefit even more, believing the temperature in the park was even lower. This proves how profound the cooling effect of a park is in citizens minds.

It is important to note that the park was attracting 80.9% of respondents at a distance of 445m away, 68% at a distance of 600m and 56.3% at 855m.



Large, urban parks play a major role in providing citizens with thermal comfort from both physiological and psychological perspectives, especially in areas with hot summers.

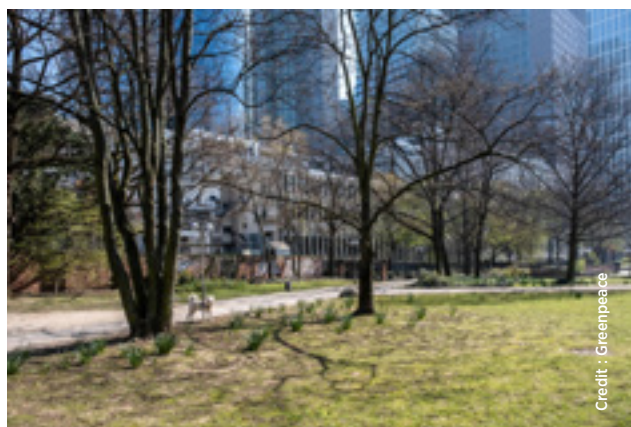
### 3.4. Rome

In the National Recovery and Resilience Plan that the Italian government presented to Europe in April 2021, biodiversity plays a very small role, but the planting of “at least 6.6 million trees (for 6,600 hectares of urban forests)” is planned in all 14 Italian metropolitan cities.

In Rome, only 57% of residential settlements have accessible urban green areas within their district, but the percentage is much lower (25%) if we consider those established between 2006 and 2012 <sup>85</sup>. Similarly, the share of population that cannot benefit from accessible urban green spaces is lower in the new settlements, notably in the more peripheral administrative units. The low accessibility and usability from new settlements indicate that Rome is still far from meeting required sustainability targets with regard to urban development and planning.

Like Madrid, few studies have been carried out on the benefit of green space on well-being in Rome. From an assessment of Urban Heat Island effect <sup>86</sup> in the city, it emerges that the cooling capacity differed between the different types of green elements <sup>87</sup>. Peri-urban forests show the highest temperature reduction and cooling distance, followed by urban forest, and then street trees. Residences that surround greenness, as indicated by two different exposure metrics within 300m and 1,000m buffer areas, is inversely associated with stroke incidence and with non-accidental, cardiovascular, and cerebrovascular mortality in a large study of adult residents of Rome <sup>88</sup>. These associations may be partly derived from

a reduced exposure to air pollution and noise. These results add to current evidence that supports the role of exposure to greenness in promoting better health.





## 4. LIVING GREEN FOR PANDEMIC RECOVERY

Maintaining or increasing accessible urban green spaces, particularly for marginalised groups, is reflected in the UN Sustainable Development Goals <sup>89</sup>, and its importance is amplified in the Covid-19 pandemic. Parks and urban greeneries are important for local populations, especially during the past 18 months. Although health agencies (World Health Organization and U.S. Centers for Disease Control and Prevention) recommended the use of parks during the pandemic for several health benefits, parks were often closed. Latin America's mobility restrictions and park closures have affected health-enhancing behaviours of the wealthy and poor differently <sup>90</sup>.

**Residents of affluent neighbourhoods** are likely to **have enough space at home to maintain exercise** routines, whereas in low-income neighbourhoods the limited and substandard indoor space turns public spaces are the only places to be active in.

People with greater **socioeconomic disadvantages**, such as those experiencing financial difficulty, **were less likely to visit green spaces** during the Covid-19 pandemic <sup>91</sup>. Even when they did, they were less likely to derive benefits from those visits. People who were able to **work from home** did **accrue benefits from contact with natural settings**, especially in terms of respite and exercise <sup>92</sup>.

As well as the socioeconomic status, educational level also played a role in the access to green space during Covid-19 measures <sup>93</sup>. People with university degrees compared to those with less than 12 years of education tended to report better access to green and/or blue spaces and were more likely to derive respite and social connection when visiting them <sup>94</sup>.

**These inequalities are especially concerning**, considering the reported **decreases in physical activity** since the outbreak of Covid-19 — especially among vulnerable populations, children and older adults <sup>95</sup>. In Mexico, children's daily **screen time doubled**, while physical activity and **sleep time decreased** significantly during the pandemic. In Chile, children's physical activity decreased by one third, screen time doubled, and sleep quality worsened. In Brazil, residents of lower quality neighbourhoods and the unemployed presented reduced physical activity during this pandemic.

Banning the use of public spaces during the lockdown deprives opportunities for activity and restoration in a way that punishes the poor to a greater extent than other groups and makes them pay an additional 'health fee' for complying with the lockdown. Imposing strict homogeneous lockdown policies may not only adversely affect the most vulnerable, but also increase pre-existing health inequalities related to precarious conditions of underserved territories <sup>96</sup>.

The re-opening of parks and the provision of new spaces for recreation, especially in underserved neighbourhoods, should not be postponed. In post-pandemic life, the revaluation of green spaces in cities and their respective benefits should be a priority. This will allow the government to improve environmental management, and for people to quantify the benefits and costs associated with forests, moors, hills and mountains. Support for improving public green space requires advocacy for its conservation, care, sustainable use, promotion of nature-based recreation and protection of natural parks.







## 5. GUIDELINES AND GOOD PRACTICES

National and local governments have the most power to improve urban ecosystem services, but international organizations, programs and projects along with local communities have shown the potential of making the transition possible and guiding the authorities.

Urban greening policies are important for revitalizing communities, reducing financial burdens of healthcare, and increasing quality of life.

Most policies focus on community benefits, and reducing negative effects of urban development, such as surface runoff and the Urban Heat Island effect. Historically, access to green space has favoured wealthier, and more privileged communities, and the recent focus in urban greening has increasingly addressed environmental justice concerns, and community engagement in the greening process. In cities with an economic decline, urban greening has had a broad community revitalization impact. All urban green space interventions should apply a dual approach where physical changes (e.g., creating new or improving existing green space) are accompanied by social changes, activities, and programs to promote the green interventions.

Social activities can be diverse and may occur at all phases of the intervention (e.g., design, implementation, and evaluation phases). These include aspects such as: community participation in the design or implementation phase of the intervention or in the green space maintenance post- implementation; facilitated activities within the completed urban green space intervention, such as family days, festivals, markets, or smaller scale group activities such as guided walks, which can be particularly effective

for engaging with underrepresented user groups of green space; and promotion of completed urban green space interventions through park websites, onsite signs etc.

Every city is different, making it difficult to set transferable targets in urban green space across various contexts and settings. While situations will always be complex and different, and guidelines are not set in stone, there are practices that might serve as inspirational examples:

### 5.1. 3-30-300 Rule <sup>98</sup>

This rule focuses on the crucial contributions of urban forests and other urban nature to our health and well-being <sup>99</sup> (Graph 5).

#### Three trees from every home

The first rule is that every citizen should be able to see at least three trees (of a decent size) from their home. Research demonstrates the importance of nearby and visible green for mental health and well-being. The Danish municipality of Frederiksberg has a tree policy that calls for every citizen to see at least one tree from their house or apartment. We should take this one step further.

#### 30 percent tree canopy cover in every neighbourhood

By creating leafier neighbourhoods, we also encourage people to spend more time outdoors and to interact with where they live, which in turn promotes social health. Many of the most ambitious cities in the world in terms of greening, including Barcelona, Bristol, Canberra, Seattle, and Vancouver, have set a target of achieving 30% canopy cover. At the neighbourhood level, 30% should be a minimum, where cities should strive for even higher canopy cover when possible. Where it is difficult for trees to grow and thrive, e.g., in arid





Graph 5: The 3-30-300 Rule for Urban Forestry. Own elaboration

climates, the target should be 30% of vegetation.

### **300 metres from the nearest park or green space**

Many studies have highlighted the importance of easy access to high-quality green space that can be used for recreation. A safe five or 10-minute stroll is often mentioned. The European Regional Office of the World Health Organization recommends a maximum distance of 300 metres to the nearest green space (of at least 1 hectare). This encourages the recreational use of green space with impact on both physical and mental health. Of course, it will be important to work with local context, as the needs in lower-density suburban areas will be different from those in denser urban areas. In these places, efforts need to be made to provide access to high-quality urban green space, e.g., in the form of linear green spaces that double as cycle corridors and walking paths.

Applying the 3-30-300 rule will improve and expand the local urban forest in many cities, and with that promote health, well-being, and resilience.



## 6. CONCLUSION & RECOMMENDATIONS

Urban green and public space interventions need multi-disciplinary and cross-sectoral collaborations, starting from the involvement of the local community and the intended green space users. This will ensure the benefits will go to the residents and will aid the delivery of interventions that serve the needs of the community — especially in deprived areas. As green space interventions need to be considered as long-term investments, they need to be integrated within local development strategies and frameworks (e.g., urban master plans, housing regulations, transport policies, sustainability and biodiversity strategies). This requires continued political support from local government, where they acknowledge the general understanding that urban green and public spaces go beyond environmental or ecological objectives and deliver social and health benefits that increase the quality of life and well-being of all urban residents <sup>100</sup>.

While details of urban green and public space design and management must be sensitive to local geographical and cultural conditions, the need for green and public space and its value for health and well-being is universal. A city of well-connected, attractive green spaces that offer safe opportunities for urban residents to be active, as well as for stress recovery, recreation, and social contact, is likely to be more resilient to extreme environmental events, such as heatwaves (due to the mitigation of Urban Heat Island effect <sup>101</sup>) and extreme rainfall (due to reduced surface run-off). Such a city is also likely to have healthier citizens, reducing demands on health services and contributing to a stronger economy.

Greenpeace calls on city mayors and local authorities around the world to:

- Expand existing green and public areas and create new green infrastructures in all neighborhoods following sustainable urban planning and equity principles, to tackle the climate and biodiversity crisis and drive community cohesion. This includes converting or rewilding urban greenspace into basic food production systems.
- Halt urbanization and development plans that threaten the protection and conservation of green and public spaces, and local natural ecosystems, like forests, wetlands and mountains, within urban areas and their surroundings.
- Promote social connection and inclusion among communities, introducing policies on public goods, like green and public spaces, based on the latest science and promotion of people's well-being, rather than focusing solely on efficiency or profitability.







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- <sup>2</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
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