

Developing Public Space and Land Values in Cities and Neighbourhoods



Guadalajara, Mexico @ Flickr, Carlos Rivera

CONTENTS

Urbanization Changes Public Space	1
The State of Measures in Practice	2
Findings on Social Value	4
Findings on Economic Value	4
Public Space and Land Value Finance	5
Developing Cities with Public Space (BOX)	7
Key Messages	8

**Public spaces are all places
publicly owned or of public use,
accessible and enjoyable by
all for free and without a profit
motive** ””

Alexander Ståhle, PhD and CEO Spacescape (Leading author)¹

180412

¹ Reviewed by Urban Economy and Finance Branch, Marco Kamiya, Gabriela Aguinaga, Yoel Siegel, Ananda Weliwita; and Public Space Unit team, Cecilia Anderson, Laura Petrella, Jose Chong, Pontus Westerberg.

Urbanization Changes Public Space

Cities all over the world are growing and transforming through processes of densification and sprawl. Open spaces, private and public, are being turned into buildings, infrastructure and new landscapes of public spaces, parks, plazas, playgrounds and natural areas are emerging. These spatial structures define the cultural, social, economic and political functions of cities. In the processes of urbanization, public space plays a crucial role in the creation of social and economic value for neighbourhoods, cities and regions. Planning and design of public space is critical to sustainable urban development.²

The absence of social and economic opportunities of slums and un-planned sprawling settlements is often due to a lack of well distributed high quality public spaces. Similarly, quality of life in high density mixed-use areas, is often dependent on the existence of inclusive and accessible public places. Urbanization is both a threat and an opportunity for the creation, protection and management of urban public spaces. In times of urbanization the existence of public space depends on our ability to see its value.³

The question is: How does urbanization change public space, and how are social and economic value of places, neighbourhoods and regions affected by different forms and distributions of public space? To answer this, all stakeholders of the urban development process, especially urban planners, policy makers, developers and property owners, need effective and accurate measures of public space.

Public space is in economic terms a public good. This means the use should be free for all (non-excludable) and not create conflict between users (non-rivalrous). This definition is a framework, not exact, since all urban space are influenced by various social, economic and legal networks that differ between regional and cultural contexts. For example, public spaces should be owned by public authorities, however privately-owned spaces (POPS) can be used and experienced as public. Roads and streets are often considered public spaces, however vehicular traffic is both dangerous and excluding other uses, and road use is normally highly regulated because of rivalry and congestion. Sidewalks are more obvious as public spaces. UN Habitat suggest the following definition. “Public spaces are all places publicly owned or of public use, accessible and enjoyable by all for free and without a profit motive.”⁴

This paper focuses on public open spaces, such as parks, plazas, pedestrian spaces, nature areas, playgrounds, waterfronts, public sport facilities and other public outdoor spaces. Public open spaces usually take 15-30% of a city’s land cover, but in some cases up to 50%, with major impacts on land value and the urban economy. Privately or publicly owned, the cost of open un-built spaces must be balanced with revenues from the social and economic values of these spaces. Hence, quantifying value is just as important as quantifying costs, for both municipalities and property owners. Good public space is accessible and open, is meaningful in its design and the activities it supports, provides a sense of safety, physical and environmental comfort and convenience, a sense of control, and sensory pleasure.



Uhuru Park - Nairobi, Kenya © Flickr/Harry Purwanto

² UN Habitat, 2017, The Sustainable Development Goals Report

³ OECD, 2017, Demystifying Compact Urban Growth: Evidence From 300 Studies from Across the World, Working Paper

⁴ UN Habitat, 2015, Global Public Space Toolkit: From Global Principles to Local Policies

The State of Measures in Practice

“The value of public spaces is often overlooked or underestimated by policy makers, leaders and developers. There are a number of reasons for this, such as the lack of resources, understanding or capacity to use the possibilities of public space as a complete, multi-functional urban system.”

Dr Joan Clos foreword in UN Habitat’s Global Public Space Toolkit (2015).



Sustainable Development Goal 11.7 states that;

“By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.”

The proposed indicator (11.7.1) is “Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities”. Geometrically this is similar to the ‘openness index’ (average share of open space pixels within the walking distance circle) used in the Atlas of Urban Expansion (2016). UN Habitat suggests that 15-20% of urban land should be dedicated to public open spaces, and 30-35% should be dedicated to streets and roads. The evidences supporting these numbers, their effects on social and economic value from public spaces in different urban settings and geographies, are scarce.

In policy and planning practices, the concept ‘open space’ is often replaced, or confused, by the concept of ‘green space’. The World Health Organization uses ‘urban green space’ which refers to public green areas. WHO have proposed ‘square meters of green space per capita’ as a health indicator of sustainable cities and recommends at least 9 sqm green space per capita within 15 minutes walking distance.⁵ WHO Europe have proposed an ‘urban green space indicator’ which measures the share of a population that reaches a green space with a minimum size of 0,5 ha within 300 meters. The indicator is grounded on European research on green spaces and health outcomes.⁶ This is basically the same indicator as The European Common Indicator “The percentage of citizens living within 300 m from a public open area of minimum size 0.5 hectares”. The US Environmental Protection Agency also uses green space per capita and population within walking distance (500 meters) as indicators. In a European-North American context, large portions of public open space are often green, but in other parts of the world green space is not directly interchangeable with open space. The differences in greenness between open spaces and the effect on values and planning is yet to be studied.

Three distinct types of measures are commonly used in urban policy:

- % public space
- public space per capita
- distance to public space

The first measure is an easy and straightforward land cover measure to apply in planning and design, yet it is seldom used in local planning. The second, open space per capita or open space ratio (open space area per floor area), is more complex to plan for since it relates to density. A limit in open space per capita, will practically limit density because of limitations in building heights and geometry. There is lack of evidence of the effects of different levels of open space per capita. Hypothetically it captures the supply of accessible space, the possible rivalry of use or congestion in public spaces. On the other hand, the more people that share a public space the more social and economic values it ought to produce.

⁵ World Health Organization, 2012, Health Indicators of sustainable cities in the Context of the Rio+20 UN Conference on Sustainable Development. WHO/HSE/PHE/7.6.2012f

⁶ WHO Regional Office for Europe, 2016, Urban Green Spaces and Health

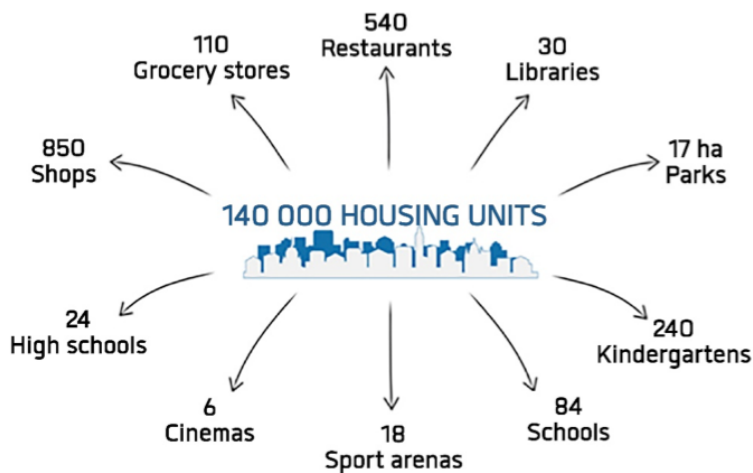


Fig. 1: Housing development potential in Stockholm City until 2030, and the need for new services. New parks areas have been estimated in districts with a low supply of public green space.

Many cities, especially high-density ones, still use open space ratios. New York City uses incentive zoning, a “plaza bonus”, which means providing public space when adding floor area to a property. Singapore requires 1 sqm public space for every 50 sqm floor area. New York City also recommends approximately 10 sqm per resident, similar to the WHO recommendation of 9 sqm. However, an analysis of the city shows that most neighbourhoods do not meet this recommendation. The City of Bogota refers to the WHO recommendation in its Technical Indicators for Public Space and concludes that average public green space per capita in the city is 10 sqm, but public space per capita is over 20 sqm in average. Bogota includes sidewalks in public space. Hong Kong on the other hand recommends at least 2 sqm open space per inhabitant. The City of Johannesburg recommends 24 sqm per inhabitant, more than ten times the recommendation of Hong Kong. The social and economic implications of this have not been studied.

The third type of measure is distance to public space. Types of public spaces can include large parks, district parks, pocket parks, plazas etcetera. Some cities just have one measure. Singapore, with the vision “City in a Garden” aims for 85 % of residents to live within 400 meters of a park by 2030, Sydney aims at 400 meters maximum walking distance of a local park and Vancouver a maximum five-minute walk to a green space. The Greater London Authority has proximity measures for seven different types of public open spaces, where one is 400 meters to a local park larger than 2 ha. The City of Stockholm has historically used all types of measures, where one is 200 meters to a public space with green and play value. Analyses show that 90 % of Stockholmers live within 300 meters of a public green space, and 71 % live within 200 meters. Measures are generally applied from a practical planning experience and common-sense point of view and only rarely from a land value development perspective.

City	% of open space	Open space per capita	Distance to open space
Bogota	international in-migration.	10 sqm	
Hongkong		2 sqm	
Johannesburg		24 sqm	
London			400 m
New York		10 sqm	
Singapore			400 m
Sydney			400 m
Stockholm			200 m
Vancouver			5 min
UN Habitat	15%		400 m
WHO		9 sqm	300 m
ECI			300 m
US EPA			500 m

Fig.2: Public space policy recommendations in nine world cities and four global organizations.

Findings on Social Value

Public spaces in cities produce a wide range of social value, improving health, safety, equity, inclusion and social capital. WHO concludes that urban green spaces have substantial effects on human health. Contact with green space can reduce stress, restore effects of stress, improve social capital, improve the immune system, enhance physical activity, reduce obesity, cardiovascular illness, and diabetes, reduce air pollution, mitigate urban heat island effect, increase sunlight exposure and improve sleep. The influence of open space size is not clarified by current research. Accessibility research indicates that 300 meters is a limit for everyday green space use and 1-1,5 km is a maximum distance for an effective use of larger natural areas.⁷ An important finding is that “people living in the inner city do not differ from people living in suburban areas as concerns their interest in, or need for, use of urban open green spaces”, which indicates that general measures can be used in different parts of a city.



Smaller public open spaces, such as plazas and sidewalks, have been known to produce a wide range of social values, facilitating civic engagement and community interaction. The better a place, the more optional activity occurs and the longer necessary activity lasts. Public places become meaningful and attractive when all activities of all types occur in combination and feed off each other.

Social value or use value of public spaces can be mapped and measured in different ways. The City of Stockholm has developed the sociotope mapping methodology that has been applied in many cities in Sweden. It collects use values from surveys and observations and combines surveys into a map. Research from Stockholm showed that the size of public open spaces, the number of use values (sociotope), the walking distance and route complexity explain how people experience accessibility. The research implies that density has little to do with the experienced supply of public open space.⁸ Yet, the number of use values in a public space is probably dependent on density. Also, public space per capita can theoretically be seen as a measure of how many people share a space, hence the less space per capita the higher social value. Yet, planning policy often aims to keep public space per capita as high as possible. Maybe this could be explained by a possible relation between compactness, congestion and maintenance costs. There is very little evidence on the relations between density, public space and social or economic value.

Findings on Economic Value

The economic value, or exchange value, of public space, possible connected to social use value, can be estimated from various perspectives. Most common is its quantitative effects on land value, property value, housing prices and the like. Not many studies have been made, and they are not distributed evenly globally. Hedonic studies in Germany, Malaysia, Spain and USA show that proximity to public open space or green space have significant positive effects on housing prices. These studies only indicate distance as a factor, not sizes of spaces or surrounding densities. Other studies indicate that size matters. A study of London finds that for each hectare of green space located within a 1 km radius, average house prices are 0.08 percent higher.⁹ Two large housing market analyses of Stockholm and Gothenburg in Sweden show that the area of park space within 1km explain a significant part of housing prices in these regions.¹⁰ Effects of new public spaces have been observed as well. Property values in Chelsea are among the highest in New York City and since the High Line park opened in 2009, the average price of a condominium in the district has risen 85 percent. Bryant Park is estimated to increase the value of nearby properties by 20% to 25% on average. Planning regulation could also affect land values. In one study in Maryland, USA legally protected open space increased near-by residential land values over three times as much as an equivalent amount of less protected “developable” open space.

7 Grahn, P & Stigsdotter, U 2003, 'Landscape planning and stress', Urban Forestry & Urban Greening, vol. 2, pp 1-18.

8 Ståhle, A, 2010, More green space in a denser city: Critical relations between user experience and urban form, Urban Design International, Vol 15, Issue 1

9 Smith, D, 2010, Valuing housing and green spaces: Understanding local amenities, the built environment and house prices in London (GLA Working Paper 42).

10 Stockholms Läns Landsting, 2014, Värdering av stadskvalitet; Göteborgs stad et al, 2016, Värdeskapande stadsutveckling

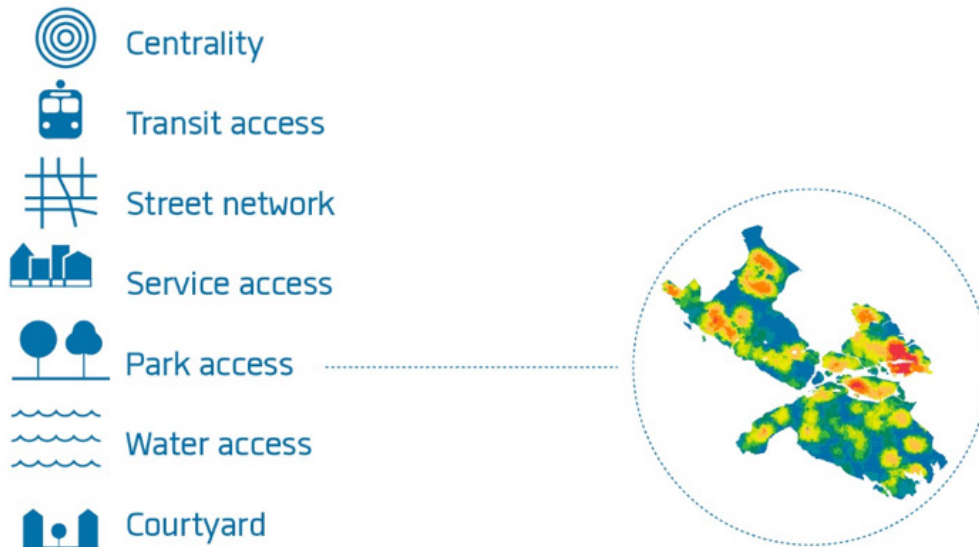


Fig. 3: Seven spatial variables that explain housing prices in Stockholm and Gothenburg by 90 %. Public park space within 1 km is one significant variable.

A recent study of the economic value of London parks also show benefits beyond property values.¹¹ The total value of avoided healthcare costs provided by London’s green space is estimated at £950 million per year. This figure is based on estimates of reduced physical inactivity, avoided mental illness, increased recreation and park use, carbon storage, and temperature regulation (cooling). London’s public parks have a gross asset value in excess of £91 billion. The study concludes that for each £1 spent by local authorities and their partners on public parks, Londoners get at least £27 in value. An economic value study of San Francisco’s parks and recreation system estimated its annual value at \$959 million, based on tax receipts from properties, tourism income, direct use, health, community cohesion, clean water and clean air. The market property value of parks within 150 meters was estimated to \$40 billion.¹² A study of Philadelphia show that the value outweighs the cost of maintaining the parks, with nearly \$100 generated in economic value for every \$1 spent on maintenance.

Public Space and Land Value Finance

Financing public space can be compared with land value capture finance to fund other types of public good such as public transit. Interpreted from the National Bank of Canada statement for value capture in transit development: *“There is significant evidence to show that the improved [liveability] supplied by [public space] generates increased land and development value. It therefore seems fair and equitable that a proportion of this additional wealth, generated by [public space], should go to funding the [construction and maintenance of these places].”* Public space is a public good that is well suited for value capturing finance and there are many ways of doing it.¹³

- **Land Value Tax** or property tax is a recurring tax based on an estimate of the value of land or on building attributes. Seattle, Chicago and Minneapolis are cities in the US with local taxes dedicated to parks.¹⁴ 58% of the Seattle Park District’s 2015 budget came from property taxes.¹⁵ The High Line park is set to generate about \$1 billion in tax revenues to the city over a 20-year period. Bryant Park is estimated to add an additional \$33 million annually in real estate tax revenue for the city of New York. A city can use revenue generated from the sale of general obligation bonds, backed by property tax revenues, to fund a park project and repay the bonds and interest with property tax revenue.
- **Land Value Increment Tax** or Tax Increment Financing (TIF) is assessed as a percentage of the increase in land value due to public actions or general market trends. It captures increases in property tax revenue within

11 Vivid Economics, 2017, Natural capital accounts for public green space in London

12 The Trust for Public Land, 2014, The Economic Benefits of San Francisco’s Park and Recreation System

13 UN Habitat, 2017, Finance for City Leaders; Urban Land Institute, 2009, Value Capture Finance: Making urban development pay its way

14 Kitchen, H, 2017, Financing City Parks in Canada

15 City Parks Alliance, 2015, Closing the Gap: Public and Private Funding Strategies for Neighborhood Parks

a designated geographic area and allocates it for a specific public improvement purpose. Millennium Park in Chicago received revenue from the Central Loop TIF and Portland, Oregon used a TIF to fund Pioneer Courthouse Square and Jamison Square.

- **Special assessments** and betterment levies are specific charges or levies added to the general property tax on residential or commercial properties to pay for new and improved local public spaces. Assessment district programs can provide communities with many important and desirable outcomes, such as cleaner, safer and more attractive and lively public spaces above and beyond baseline city services.
- **Developer exactions** or Development Impact Fees (DIF) are one-time fees assessed on residential or commercial development based on the theory that growth pays for growth. Revenue garnered from DIFs are allocated towards public infrastructure or public space. The Portland Parks and Recreation Department established such development fees in 1998.
- **Sale of development rights** is payment received in exchange for permission to develop or redevelop land at higher density or changed land use. Zoning incentive programs or density bonuses offer developers and property owners incentives to either incorporate certain public amenities into their development plan or contribute to a special place endowment or public improvement fund. The urban development area 22@Barcelona increased density rights and uses and used land transfer and fees to fund land clearance, infrastructure, social housing and 114,000 square meters of green spaces and 145,000 square meters of public facilities in the area. In Mumbai, developers can purchase additional Floor Area Ratio from the government which provides public revenues to help maintain urban infrastructure under pressure from intensive development. Transfer of development rights allows property owners in designated areas to sell the development rights from their land (sending site) for use on another site (the receiving site). The sending site is then protected as an open space under a conservation easement and can be used as a public space.
- **Recurring Lease Payments** from private actors can be received when they agree to priorities of the local community for access to new facilities or manage public space. The BID Bryant Park Corporation has a long-term lease with the City of New York and has successfully developed and maintained the park since 1988.
- **Business Improvement Districts (BID)** are public-private partnerships that collect additional taxes from businesses within a designated area, generally in downtown areas. The fees are used for public improvement projects, based on the notion that a well maintained public space will increase commerce for local businesses. BID funding is managed by a non-profit corporation created through the District. BIDs that have a role in park management have been successful in Philadelphia's Center City, Washington, DC's Downtown and in Bryant Park in New York City.
- **Building Value Tax** is recurring tax based on the value of immovable improvements or on the attributes of the improvements.
- **Sale of Public Land** is the payment received in exchange for freehold title to public land. Public land assets are sold, with proceeds used to finance infrastructure investment like developing public spaces.
- **Transfer Taxes and Stamp Duties** are charges assessed for recording the transfer of a land title from one private party to another. It can be either a fixed fee or a percentage of the value of the property being transferred.
- **Philanthropy** and contributions from donors and private entities can play a role in funding city parks and plazas. Fundraising and the management of funds is generally undertaken by non-profit organizations such as conservancies, foundations and friends-of-parks groups. The High Line in New York City relies heavily on private donations raised by Friends of the High Line. Voluntary contributions to Central Park Conservancy accounts for 85 percent of maintenance and development costs of Central Park.

Effective land value sharing and land-based finance systems for the development of public spaces require political leadership and good property tax law. The effectiveness is greatly improved if it is embedded in an urban planning system and land use management. Since efficient, accurate and timely land valuation is essential to planning and land-based finance systems, there is need for evidence-based measures of public space and its contribution to land value. Especially the relations between density and public space must should be studied further.

Developing Cities with Public Space (BOX)

Studies so far indicate that public spaces, plazas, pedestrian spaces, parks and natural areas create substantial social and economic value in cities, districts and places, and that different types of land finance systems can be used to capture land value in urban development. More evidence-based analysis and valuation of public space is needed in urban planning, policy and property development all over the world, especially in cities in developing countries.

A public space valuation and finance study should comprise some basic steps.

1. **Mapping** – A city’s different types of public (open and green) spaces are mapped. Geographic background data on street networks, properties, densities, land uses, housing prices, property values, health status, demographics and neighbourhoods are collected.
2. **Analysis** – The spatial distribution of public spaces is analysed with different measures such as % public space, public space per capita, distance to different types of public (open and green) spaces.
3. **Valuation** – To identify the effect of public space, the different public space measures are correlated with different variables on social and economic value, such as property and land value. Measures of density, demographics etc are controlled for in regression analysis. The total (land) value of public spaces in a city or in neighbourhoods can now be estimated.
4. **Policy** – When the effect of public space has been identified policy and guidelines for urban planning and land value finance can be set for the city or parts of the city. A model for estimating land value tax can be defined.
5. **Planning** – Based on the valuation guidelines for urban land use planning can be set, how to estimate values and fees in zoning incentive (density bonus) programs as well as how to control land transfers. The amount of new public space needed for new development in the city or in districts, based on policies, can be estimated.
6. **Project** – In an urban development the valuation can be used to estimate developer exactions or development impact fees. Also, when constructing or improving a public space the valuation can be used to estimate special assessments and betterment levies.
7. **Management** – When determining lease payments from a private actor to a city authority or deciding management and maintenance finances with Business Improvement Districts, a public space valuation is very useful.



Fig. 4: Principal diagram for a public space valuation study (step 3).

This kind of study can reveal how general patterns of public space create value, how they differ or correlate in a city and provide comparisons between cities globally, to show how to better plan and finance urban development with public space.

Key Messages

- **Rapid global urbanization, densification and sprawl puts pressure on a city's public spaces, parks and open spaces. Lack of public space limits social and economic development. Hence, quantifying the value of open spaces is just as important as quantifying costs, for both public authorities and property owners.**
- **Quantitative measures of public space are rare and diverse in urban planning policy and property development globally. The most common measure used in planning is 'public space per capita' which is closely connected to density but has limited evidence from research.**
- **Scientific studies in different urban contexts show significant effects of public space on land value and health. Measures that correlate with value are distance to and size of public (open or green) space. Global and regional differences have not been studied or compared.**
- **There are many examples of financing public space by land value sharing and land-based finance systems, although unevenly spread globally. These systems need efficient and accurate measures of public space.**
- **Analysing cities and neighbourhoods can reveal how general patterns of public space create social and economic value. Especially, relations between public space and density (urbanization) should be studied further. This would improve planning and financing urban development with public space.**
- **Decisions regarding the creation, the management and the enjoyment of public space should be subjected to clear and transparent participatory processes with all interested stakeholders. Such processes, be they institutionalized, regulated or spontaneous, are to be regarded as a right of urban residents and not as unilateral initiatives of government.**
- **Eliminating and/or overcoming the physical barriers that impede or limit access to certain categories of users is therefore a priority goal to pursue both in the design of new public spaces and in the adaptation of existing ones. The creation, improvement and management of public spaces can provide an opportunity for new job creation and private investment.**

Lack of public space limits social and economic development