

Transforming the vision of Kigali

The economic case for investing in public parks



In brief

- Major public green spaces define the vision and lifestyle of great cities. Several great African cities have their own major central parks but, as of 2020, Kigali does not. Investing in a system of public parks would transform the vision of the city.
- Rwanda has a laudable set of policies and plans for public green spaces, but political will and funding are needed to implement them. A case thus needs to be made for investing in parks. In this brief we lay out arguments for their economic, health and social benefits.
- Parks are an essential public health resource that provide a wide range of restorative physical and mental health benefits which have real economic value in terms of extended life years and reduced health care costs. Parks also support families and inclusion when equipped with playgrounds and free internet.
- Parks can increase residential and commercial property values and attract investment in attractive localities, as well as help market and brand Kigali abroad as a green, liveable city.
- Parks are not a luxury; they provide a range of vital ecosystem services such as flood protection and contribute to mitigation and adaptation to climate change.

*This project was
funded by IGC
Rwanda.*

Introduction

Major public green spaces define the vision of great cities: Fort Canning Park in Singapore, the famous Central Park in New York, Hyde Park and Regents Park in London, and the Jardins du Trocadéro below Eiffel Tower in Paris, are international icons of these cities – and indeed of the countries in which they are located. Several great African cities such as Lagos, Accra, Nairobi, and Durban also have their own major central parks. However, even with a rapidly growing population of 1.6 million, as of 2020 Kigali does not have its own large, centrally located park. In this brief we make the case for investing in one. In addition to major parks, smaller parks are also important to the economy and welfare of the citizens of any city; indeed, there is an accessibility case for a spread of public parks across the city.

Whilst Kigali lacks an adequate system of green public parks^{1,2}, and most of its green spaces are out of bounds to the public^{3,4}, the Government of Rwanda is working to change this. The City of Kigali launched an updated Master Plan in September 2020, which contains a plan for public green spaces to be distributed across the city. These were identified in a participatory process as part of the City for Citizens pillar of the plan⁵. In June 2020 the City of Kigali, with Global Green Growth Institute, also published a mapping of public spaces in the city, as a baseline for an initiative called “Kigali Yacu: Activating Public Outdoor Space One Bench at a Time”. And in 2020 the Ministry of Infrastructure commissioned a report on the available public open spaces in Rwanda in order to raise the profile of this issue at the national level.

“In addition to major parks, smaller parks are also important to the economy and welfare of the citizens of any city; indeed, there is an accessibility case for a spread of public parks across the city.”

The Government is also developing a range of recreational spaces. It has opened Meranzeza recreational space on Mount Kigali, and is working on a number of new spaces, including Kigali Cultural Village in Rebero, Nyandungu Ecotourism Park and Rwandex Park at Gikondo⁶. Whilst these developments are laudable, Meranzeza and Kigali Cultural Village are high up on Mount Kigali and Mount Rebero respectively, both of which are on the very edges of the built up area of the city and thus not optimally available inaccessible to most of the city population. Whilst Nyandungu Ecotourism Park will be more accessible, it is close to the airport and thus not centrally located; it will also charge a fee to enter⁷, limiting its benefits to the general population. The greatest promise lies with a potential central wetland park provided for in the Kigali Master Plan, planned for the wetland running approximately from University of Rwanda’s main campus to Nyabugogo; opening a number of other areas of centrally located government-owned green spaces to the public also holds promise.

1. <https://www.newtimes.co.rw/section/read/53607>

2. <https://www.livinginkigali.com/information/spare-time/parks-grassy-spots-in-kigali/>

3. <https://www.livinginkigali.com/information/spare-time/parks-grassy-spots-in-kigali/>

4. <https://www.newtimes.co.rw/section/read/75432>

5. https://gggi.org/site/assets/uploads/2020/07/Kigali_PS2-8MB-FINAL.pdf

6. <https://www.newtimes.co.rw/news/govt-woos-investors-kigali-recreational-zones>

7. <http://www.fonerwa.org/sites/default/files/NYANDUNGU%20URBAN%20WETLAND%20.pdf>

National policy also supports the creation of public green space, and is part of Programme 10 of the National Strategy for Climate Change and Low Carbon Development. Sustainable Development Goal 11.7 aims to “provide universal access to safe, inclusive and accessible, green and public spaces” by 2030, and the Nationally Determined Contribution’s mitigation strategy references the need to plan and invest for public parks through high density development and unplanned settlement upgrading⁸. Ministry of Environment is also working with City of Kigali to encourage investors to upgrade wetlands into recreational parks.⁹

However, in spite of the government policies and actions taken so far, creating public open spaces requires the political will to find financial sources to invest in these planned parks, and the support of central government – and perhaps also international donors - is required. This requires justification, which we aim to provide in this brief; we focus on the economic case, but also touch on important social and environmental factors.

Major parks in other African cities

Whilst maintaining and increasing public green space is an ongoing financial and institutional challenge for rapidly developing African cities, many do have large, centrally located parks. Nairobi has Uhuru Park and Central Park, Accra contains Efua Sutherland Children’s Park and Legon Botanical Gardens. Abidjan has Banco National Park and Johannesburg has a range of parks including Johannesburg Botanical Gardens. All of these are in central locations and play a prominent role in city recreational life. Figures 1-4 show a range of examples.

Figure 1: Central Park, Nairobi



Source: <https://www.tuko.co.ke/262763-central-park-nairobi-directions-rates-helpful-contacts.html>

8. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Rwanda%20First/Rwanda_Updated_NDC_May_2020.pdf

9. <https://www.newtimes.co.rw/news/govt-woos-investors-kigali-recreational-zones>

Figure 2: Legon Botanical Gardens, Accra



Source: www.legonbotanicalgardens.com

Figure 3: Millennium Park, Abuja



Source: <https://hotels.ng/guides/destinations/millennium-park-abuja/>

Figure 4: Botanical Gardens, Maputo



Source: https://spguia.melhoresdestinos.com.br/system/fotos_local/fotos/38308/show/jardim-botanico-tunduru.jpg

“Public green spaces provide a range of benefits that support economic, social and environmental policy goals.”

The Lagos State Parks and Gardens Agency (LASPARK) represents an interesting case of institutional leadership on public parks. It was established in 2011 with the mandate of “making Lagos greener and healthier through the creation and maintenance of functional and operational parks and gardens, planting and maintenance of trees.”¹⁰ The agency has created and maintained 327 parks and gardens since it was created. Moreover, according to the Ministry of Environment, over 6 million trees have been planted across Lagos since 2008.

The case for investing in public parks

Public green spaces provide a range of benefits that support economic, social and environmental policy goals. In Sheffield, United Kingdom, a Vivid Economics study showed that the benefits of park services outweighed their costs 36 times. Whilst the ratio would be different for developing countries, with different establishment costs, running costs, and differently valued benefits, the weight of evidence on these benefits seems compelling. But parks are a classic public good: the benefits do not necessarily accrue to the institution that pays for them but to a wide range of stakeholders. They thus require economic justification. We thus use examples and evidence from a range of countries to argue the case for investment in public green space in Kigali.

1. “Green city branding” could attract investment and tourism, and increase the overall international attractiveness of Kigali

Whilst Kigali’s 2007 and 2013 Master Plans were criticised for attempting to emulate Singapore’s skyscrapers, Rwanda would do well to learn from Singapore’s highly successful experience of “green city branding”. Under Singapore’s green city vision, “City in a Garden”, 600 gardens were established in the city since 2005. The city’s green identity has attracted international acclaim and a great deal of foreign investment by those impressed by the city (Gulsrud, 2013).

Thus, implementing the award-winning 2020 Master Plan by building a large central wetland park, and a network of smaller parks and pathways that together facilitate non-motorised transport, along with measures such as the introduction of electric motorbikes and Bus Rapid Transit, would transform the vision of Kigali City to be a regional and continental leader in “green city branding”. This would be in line with the Government’s vision for a modern, green, attractive investment destination for the city. It would also be likely to increase tourism revenue; whilst people may not usually travel to Rwanda simply to visit its urban parks, their existence may increase spend per person and length of stay in the country.

10. <https://laspark.lagosstate.gov.ng/>

2. Public green spaces are restorative and improve physical health

Most of the economic benefits of green parks spring from the psychological and physical health benefits that such spaces promote. There is a large body of literature that assesses the impact of green space on physical and mental health outcomes, and this is sufficiently established that the World Health Organisation has emphasised the importance of public green space stating that “urban green space is an important investment that local authorities can make on behalf of citizens and their well-being”.¹¹

WHO (2020) review a range of international evidence and find a consistently strong relationship between access to green space and a range of health outcomes including reduced cardiovascular morbidity, reduced prevalence of diabetes, improved pregnancy outcomes, reduced general mortality, improved immune system functioning and improved fitness. This is the case for both the Global North and the Global South including China, Pakistan and India (Rigolon et al., 2017). Crouse et al. (2017) find that increased residential greenness was associated with reduced risks from several common causes of death among urban Canadians. Almanza et al. (2012), Moore et al. (2014), Oreskovic et al. (2015) and Rodriguez et al (2012) find that green space increases physical activity and therefore health in children, adolescents and adults.

The magnitude of benefits of parks to physical health may be large compared to other benefits: Vivid Economics calculates that 43% of the benefits from green spaces come from physical health improvements.

3. Public green spaces improve mental health, cognitive development and social cohesion, and reduce crime

Parks are also good for both psychological wellbeing in both children and adults (Barton et al., 2012, Gidlow et al. 2016), and cognitive development and discipline in children (Dadvand et al., 2015; Taylor et al., 2002). In their review of evidence, WHO (2020) find that green spaces improve relaxation, improve performance in cognitively demanding tasks, improve social capital and improve mental health and cognitive function.

In Rwanda, reconciliation and social cohesion is an explicit goal of government policy including the National Policy on Unity and Reconciliation (2020) and Vision 2020 (2012). A number of studies show that green space facilitates social cohesion. Kingsley and Townsend (2006) find that a community garden in Melbourne enhances social capital; Peters et al. (2010) find that urban parks in the Netherlands facilitate different ethnic groups to interact and can stimulate social cohesion through informal social interactions. Hartig et al. (2014) also find that green spaces promote social

11. https://www.euro.who.int/__data/assets/pdf_file/0010/342289/Urban-Green-Spaces_EN_WHO_web3.pdf%3Fua=1

cohesion. Shepley et al (2019) review 45 studies and find that urban green spaces reduce violent crime through a number of channels.

4. Public green spaces extend working life and reduce healthcare costs

The powerful health benefits of public green space will logically have a number of economic benefits, although these will be hard to measure. First, these health benefits entail longer lifespans, longer careers and fewer days of sick leave through a higher number of Disability Adjusted Life Years added every year. Second, these benefits are likely to mean lower health expenditures; for example, Groundwork (2011) estimated that increased use of green spaces in the UK had the potential to reduce costs of treating obesity by more than £2 billion. Whilst obesity is not yet the primary health concern in the Rwandan context, it will increase in importance; in any case, the health benefits of green space and increased exercise are extremely wide ranging so are likely to apply in this context.

5. Public green spaces increase business activity around them and can attract real estate investment

Attractive public green spaces can attract business activity on and around them. The Gyeongui Line Forest Park in Seoul saw a doubling of adjacent local businesses between 2015 and 2017, and the average monthly revenue per shop increased by over 150% (Kaw et al., 2020). Whilst poorly conceived public spaces can devalue places if they hinder city liveability and productivity and are designed in a top down, insensitive way, well-designed parks can provide opportunities for local businesses to operate. According to Kaw et al. (2020) well-designed public spaces are “vibrant, full of people, support the local economy, and help to build inclusive communities. They accommodate multiple uses and are well managed and maintained throughout their life cycles. Often, these public spaces involve public and private collaboration during the process of their creation and management”. Green space can also stimulate residential and commercial property development (Kastelic, 2014).

6. Public green spaces can increase residential and commercial property values especially in central built-up areas

Public green spaces, when well-managed, tend to increase residential property values, because people prefer views and proximity to parks; this preference likely stems from the wellbeing benefits already noted. A paper called “the Central Park effect” calculated that in 2014 proximity to Central Park in New York contributed around 26 billion USD in additional market value to the properties next to the park (Appleseed 2015). In Seoul, within a year of project completion, the increase in property values around Gyeongui Line Forest Park was twice the average increase in other neighbourhoods in Seoul; this was partly driven by an increase in commercial business activity (Kaw et al. 2020).

This effect will be most pronounced in the most central, built-up areas. In a Kigali property valuation exercise, Brimble et al. (2020) found that the presence of areas of green vegetation close to Kigali properties actually correlates to lower values; but the authors believe this may be because this variable captures proximity to agricultural land on the edges of the city, rather than access to public parks in built up areas, which are scarce in Kigali. As the city develops, any parks are increasingly likely to increase nearby property values especially in built-up central locations.

If increased property values are to feed into increased property tax revenues for local government, then the official or accepted valuation of the property needs to take the increase in value from newly opened public green space into account, and then this increased valuation needs to feed into a higher tax rate charged on the relevant property. However, since Rwanda Revenue Authority charges a fixed tax rate on rental income, an increase in property value can translate into increased revenue from tax on rent income alone.

7. Public green spaces provide valuable ecosystem services and contribute to climate change mitigation and adaptation; this would contribute to Rwanda's Nationally Determined Contribution on Climate Change

Public green spaces and greenery provide an important ecological role, which has both an environmental and an economic value. A 2010 study of Beddagana Wetland Park in Colombo, Sri Lanka found that ecosystem services from the park, such as in flood protection, city temperature regulation, carbon storage, and wastewater treatment, were worth 66 million USD per year (Rozenberg, 2015). Public green spaces contribute to both climate adaptation, for example through flood protection, water storage, and climate mitigation through greenery being a carbon sink that draws greenhouse gases from the atmosphere. These spaces can mitigate urban heat island effects and improve urban air quality in localised areas; they can also protect biodiversity and local species.

8. Public parks can have gender equality and digital inclusion benefits when equipped with children's play areas and free internet; this would contribute to the Smart City Rwanda Masterplan

Rwanda's Smart City Master Plan (Government of Rwanda and UN Habitat, 2017) plans for the availability of free wifi in public places, noting that free wifi has been provided on public buses. Kigali's City Hall garden was equipped with free wifi from July 2020¹². A continuation of this policy would promote digital inclusion for youth.

Moreover, where public spaces are designed to include seating areas and children's play areas, parks may contribute to gender-sensitive urban planning

12. <https://twitter.com/cityofkigali/status/1280762971837382656?lang=en>

by providing safe social meeting places for women and youth; a UK Aid funded women's economic empowerment programme called MUVA in Maputo, Mozambique found that some of the only public spaces available to people in peri-urban areas of the city were in the street, around markets or bars, which were male-dominated spaces. The participatory design process of the green spaces implemented under MUVA, found that green spaces in which children were able to play and be safe, provided spaces for women to meet outside the home; lighting and accessibility are also important factors.¹³ Combining safe children's play areas with free wifi in public green spaces would also promote digital inclusion for women and youth.

Four considerations for ensuring parks are of net economic benefit

Four points are worth noting to ensure that the benefits of parks are not exceeded by the costs. **First**, if parks are to be of net benefit, their establishment costs cannot be allowed to escalate too much. This means—especially in the case of larger parks on centrally located land—that park planning would ideally minimise relocation of residential and commercial buildings. They would also not reduce the supply of centrally located developable land and thereby increase the price¹⁴. Fortunately, the centrally located park planned for Kigali, is located in a wetland area, and thus does not count as developable land. The establishment cost of the small, if beautiful and much used, ~800 square metre¹⁵ garden outside City Hall was reported by the New Times newspaper to be Rwf226 million¹⁶, which, if true, seems excessively high; a simpler design would be much cheaper to implement and possibly to maintain.

Second, running costs need to be factored into cost estimates and management decisions around any specific park that is planned¹⁷, and park design should minimise these costs. This may tilt the balance of policy preference towards slightly smaller, and simpler parks.

Third, land use planning for parks should factor in the idea of hierarchy in city coverage—for example whether the parks are intended to serve neighbourhoods or city-wide populations; this will affect the size, functions and accessibility of each park¹⁸. For Kigali, the authors are confident the 2020 update of the Master Plan has incorporated these concepts, but they should continue to be considered during more detailed planning and implementation.

13. <https://muvamoz.co.mz/muva-green/> And pers. comm. with Maria Ybarra-Enguix, January 2021

14. This consideration was raised in an email exchange between Jonathan Bower and Robert Buckley in January 2021

15. Author's calculation based on measurement tool on Google Maps

16. <https://www.newtimes.co.rw/news/photo-story-kigali-gets-rwf226-million-public-garden>

17. This consideration was raised in an email exchange between Jonathan Bower and Robert Buckley in January 2021

18. This consideration was raised in an email exchange between Jonathan Bower and Jit Bajpai in January 2021

Fourth, when specific parks are being planned, especially costlier parks, attempts could be made by economists to estimate the benefit-cost ratio, including who will capture the benefits, as well as the costs of establishment and maintenance. This process would make decision-makers aware of where park designs become too costly and could help improve park design.

References

Almanza, Estela, Michael Jerrett, Genevieve Dunton, Edmund Seto, Mary Ann Pentz (2012). "A study of community design, greenness, and physical activity in children using satellite, GPS and accelerometer data". *Health & Place*, Volume 18, Issue 1, 46-54

Appleseed (2015). "The Central Park Effect: Assessing the value of Central Park's contribution to New York City's Economy". Appleseed, New York. Available at https://assets.centralparknyc.org/pdfs/about/The_Central_Park_Effect.pdf

Barton, Jo & Griffin, Murray & Pretty, Jules. (2012). "Exercise-, nature- and socially interactive-based initiatives improve mood and self-esteem in the clinical population". *Perspectives in public health*. 132. 89-96.

Brimble, P., Bower, J., McSharry, P., Bachofer, F., & Braun, A. (2020). "Using machine learning and remote sensing to value property in Rwanda". Working paper, International Growth Centre. Available at <https://www.theigc.org/wp-content/uploads/2020/02/Brimble-et-al-2020-Working-Paper.pdf>

Crouse, D., Pinault, L., Balram, A., Hystad, P., Peters P. A., Chen H., van Donkelaar A., Martin R. V., Ménard R., Robichaud A., Villeneuve P. J., (2017), "Urban greenness and mortality in Canada's largest cities: a national cohort study", *The Lancet Planetary Health*, Volume 1, Issue 7, 2017, Pages e289-e297, ISSN 2542-5196, [https://doi.org/10.1016/S2542-5196\(17\)30118-3](https://doi.org/10.1016/S2542-5196(17)30118-3).

Dadvand, Payam & Nieuwenhuijsen, Mark & Esnaola, Mikel & Forns Guzman, Joan & Basagaña, Xavier & Alvarez-Pedrerol, Mar & Rivas, Ioar & López-Vicente, Mónica & Castro Pascual, Montserrat & Su, Jason & Jerrett, Michael & Querol, Xavier & Sunyer, Jordi. (2015). "Green spaces and cognitive development in primary schoolchildren". *Proceedings of the National Academy of Sciences of the United States of America*. DOI: 10.1073/pnas.1503402112

Gidlow, Christopher J., Marc V. Jones, Gemma Hurst, Daniel Masterson, David Clark-Carter, Mika P. Tarvainen, Graham Smith, Mark Nieuwenhuijsen (2016). "Where to put your best foot forward: Psycho-physiological responses to walking in natural and urban environments". *Journal of Environmental Psychology*, Volume 45, 22-29.

Global Green Growth Institute and City of Kigali (2020). "Mapping of Public Spaces in Kigali: Towards City-Wide Public Space Strategy". Report – Global Green Growth Institute and City of Kigali. Available at https://ggi.org/site/assets/uploads/2020/07/Kigali_PS2-8MB-FINAL.pdf

Government of Rwanda and UN Habitat (2017) "Rwanda Smart City Master Plan". Policy document. Government of Rwanda and UN Habitat, 2017. Available at https://www.minict.gov.rw/fileadmin/user_upload/minict_user_upload/Documents/Policies/Rwanda_SmartCity_MasterPlan.pdf

Groundwork (2011). "Green Spaces – What are they worth?" Report.

Gulsrud, Natalie Marie (2013), "Lessons from Singapore and beyond: Green city branding in perspective". CITYGREEN #8. A Centre for Urban Greenery and Ecology Publication. Available at https://www.nparks.gov.sg/-/media/cuge/ebook/citygreen/cg8/cg8_branding.pdf?la=en&hash=C02F5865990993A8025F3ED41C381AA4E6A07B4D

Hartig T, Mitchell R, de Vries S, Frumkin H. (2014) "Nature and health". Annual Review of Public Health. 2014;35:207-28. doi: 10.1146/annurev-publhealth-032013-182443. Epub 2014 Jan 2. PMID: 24387090.

Kastelic. J., (2014) "The economic benefits of greenspace". Presentation at Ohio Land Bank Conference, The Trust for Public Land. Available at https://www.wrlandconservancy.org/documents/conference2014/Economic_Benefits_of_Greenspace.pdf

Kaw, Jon Kher, Hyunji Lee, and Sameh Wahba, editors. (2020). "The Hidden Wealth of Cities: Creating, Financing, and Managing Public Spaces". Washington, DC: World Bank. Available at <https://openknowledge.worldbank.org/bitstream/handle/10986/33186/9781464814495.pdf>

Kingsley, Jonathan & Townsend, Mardie. (2006). "'Dig In' to Social Capital: Community Gardens as Mechanisms for Growing Urban Social Connectedness". Urban Policy and Research. 24. 525-537. 10.1080/08111140601035200.

Lagos State Parks and Gardens Agency (no date) Home page. Available at <https://laspark.lagosstate.gov.ng/>

Living in Kigali (2012) "Parks & Grassy Spots in Kigali" Available at <https://www.livinginkigali.com/information/spare-time/parks-grassy-spots-in-kigali/>

Ministry of Infrastructure. (2020) "Nyandungu Urban Wetland Eco-Tourism Park project to be launched in 2021". News article. Available at <https://www.mininfra.gov.rw/updates/news-details/default-e723d6c847>

Moore, Helen & Nixon, Catherine & Lake, Amelia & Douthwaite, Wayne & O'Malley, Claire & Pedley, Claire & Summerbell, C. & Routen, Ash. (2014). "The Environment Can Explain Differences in Adolescents' Daily Physical Activity Levels Living in a Deprived Urban Area: Cross-Sectional Study Using Accelerometry", GPS, and Focus Groups. Journal of Physical Activity and Health. 11. 1517 -1524. 10.1123/jpah.2012-0420.

National Unity and Reconciliation Commission (2020). "National policy of unity and reconciliation" Available at https://nurc.gov.rw/fileadmin/Documents/Others/National_Policy_of_Unity_and_Reconciliation.pdf

New Times (2012) "Kigali – The green city without any public parks". 4 June 2012. Available at <https://www.newtimes.co.rw/section/read/53607>

New Times (2014). "Police move to protect 'urban green space'" 21 May 2014. Available at <https://www.newtimes.co.rw/section/read/75432>

New Times (2020) "Govt woos investors for Kigali recreational zones". 11 September 2020. Available at <https://www.newtimes.co.rw/news/govt-woos-investors-kigali-recreational-zones>

Oreskovic, N.M., Perrin, J.M., Robinson, A.I. et al. (2015). "Adolescents' use of the built environment for physical activity". *BMC Public Health* 15, 251.

Peters, Karin, Birgit Elands, Arjen Buijs (2010). "Social interactions in urban parks: Stimulating social cohesion?" *Urban Forestry & Urban Greening*, Volume 9, Issue 2, 93-100.

Republic of Rwanda (2020). "Updated Nationally Determined Contribution" May 2020. Available at https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Rwanda%20First/Rwanda_Updated_NDC_May_2020.pdf

Rodríguez, Daniel A., Gi-Hyoung Cho, Kelly R. Evenson, Terry L. Conway, Deborah Cohen, Bonnie Ghosh-Dastidar, Julie L. Pickrel, Sara Veblen-Mortenson, Leslie A. Lytle (2012). "Out and about: Association of the built environment with physical activity behaviors of adolescent females". *Health & Place*, Volume 18, Issue 1, 55-62.

Rozenberg, J. (2015). "Long-Term Strategic Planning for a Resilient Metro Colombo: An Economic case for wetland conservation and management", *American Geophysical Union*, Fall Meeting 2015, abstract id. PA13A-2188

Shepley M, Sachs N, Sadatsafavi H, Fournier C, Peditto K. (2019) "The Impact of Green Space on Violent Crime in Urban Environments: An Evidence Synthesis". *Int J Environ Res Public Health*. Dec 14;16(24):5119. doi: 10.3390/ijerph16245119. PMID: 31847399; PMCID: PMC6950486.

Taylor A.F., Kuo F.E., Sullivan W.C (2002). "Views of nature and self-discipline: Evidence from inner city children". *Journal of Environmental Psychology*, 22 (1–2), 49-63

Vivid Economics (2016). "The economics of urban parks". Presentation, Prosperous Cities Conference, London 27 September 2016.

World Health Organisation (2016). "Urban green spaces and health". Copenhagen: World Health Organisation Regional Office for Europe.

World Health Organisation (2017). "Urban green spaces: a brief for action". World Health Organisation Regional Office for Europe. Available at https://www.euro.who.int/__data/assets/pdf_file/0010/342289/Urban-Green-Spaces_EN_WHO_web3.pdf%3Fua=1