

COMMENTARY

The Role of Green Urban Spaces in Enhancing Population Health and Achieving the Sustainable Development Goals

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ABSTRACT

As urban centres pursue localisation of the Sustainable Development Goals (SDGs), rapidly growing cities in low-and middle-income countries (LMICs), many of which are located in the Asia-Pacific region, are experiencing competing demands for limited resources. The protection and enhancement of Urban Green Spaces (UGS) is a practical, low-cost opportunity to produce multiple benefits across the SDGs, ranging from improving the health and wellbeing of city dwellers and reducing inequalities to protecting local flora and fauna and attracting economic investments for future generations. In developing a city-wide strategy for UGS that aligns with the New Urban Agenda, it is important to consider the coordination of efforts from multiple sectors through participatory decision-making mechanisms that engage the civil society and address the needs of the most vulnerable population groups regarding mobility (such as children, elderly, women and people with disabilities) to ensure *no one is left behind*.

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INTRODUCTION

Rapid population growth has been concentrated in urban centres, increasing the pressure on essential urban infrastructure, resources, services and natural ecosystems. Local and national governments face the important challenge of ensuring inclusivity as they pursue sustainable development. However, allocation of the limited land resources in urban settings from low-and middle-income countries (LMICs) is a significant obstacle to equitable development. A 2017 multi-country comparison of sustainability in urban settings ranked several cities in the Asia-Pacific region amongst the worst in terms of urban sustainability, accounting for both environmental (including ecological footprint) and human (socioeconomic) factors (1). This problem is exacerbated by spatial planning and urban zoning choices which favour the expansion of private urban development and private motor vehicle transportation over more environmentally sustainable dwellings, public transportation and spaces. The later minimises the impact on natural ecosystems and are conducive of health and wellbeing for urban residents (2).

Local governments are responsible for leading many of the 17 Sustainable Development Goals (SDGs), a

'blueprint for a better and more sustainable future for all' to accomplish by 2030, and urban centres play a key role in achieving several of the 169 SDG-related targets (3). As urban ecosystems are intrinsically interlinked across multiple SDGs, integrated strategic planning is required to ensure they are inclusive, safe and resilient to climate change (4). Therefore, cities would benefit from identifying key targets and actions that create co-benefits across the SDGs. In particular, SDG 11 *'Build cities and human settlements inclusive, safe, resilient and sustainable'* calls on cities and nations to take urgent action that reverses the problems of air pollution and limited access to public transport and open public spaces. The living conditions of most urban dwellers would be improved by ensuring inclusive access across population groups to safe dwellings, services and amenities, transport networks for active mobility and Urban Green Spaces (UGS) for active recreation and socialisation (5). UGS deliver multidimensional benefits, making the SDG 11.7 target to *'provide universal access to safe, inclusive and accessible, green and public spaces, particularly for women and children, older persons and persons with disabilities'* (6) a strategic goal toward achieving the 2030 Agenda.

Co-benefits of Urban Green Spaces

UGS are public resources that contribute to the achievement of the SDGs. The quantity and quality of natural environments enhances healthy communities, which can in turn support ongoing ecological sustainability (for instance, by engaging communities in

active transport such as walking and use of the public transportation networks which benefits local and global natural environments) (4). Evidence shows that UGS enhance the quality of life and health of city dwellers (SDG 3: Health for all) by facilitating opportunities for: physical activity and recreation through outdoors activities such as walking, jogging and bike riding (7); social interaction by offering places to meet for residents to initiate and sustain social ties (8); and contact with nature and release from stress, promoting mental health and wellbeing at minimal or no cost (7). UGS have been shown to increase attention, mood and physical activity, and reduce risk factors for morbidity and violence as well as mortality (all cause, cardiovascular and respiratory) (9).

UGS also provide local environmental benefits by improving the quality of air, reducing noise pollution, and encouraging liveable urban centres and landscapes (4). For instance, planting trees and other vegetation reduces surface and air temperatures and provides cooling shade for outdoor activities as well as protection from harmful UV radiation (6), enhancing the quality of life for urban dwellers (SDG 11: Sustainable cities and communities). Globally, UGS protect and improve the resilience of urban communities to global warming by reducing the Urban Heat Island effect, emissions of greenhouse gases and air pollutants, and risk of natural disasters by preventing soil erosion, drought and heat waves risk and decreasing flood duration and intensity (SDG 13: Climate action and SDG 6 – Clean water and sanitation) (6).

UGS provide habitats for local flora and fauna, increasing biodiversity and protecting endangered species and cleaning contaminants (SDG 15 – Life on land) (4,6). They also provide a setting for environmental education and awareness raising on the fragility of the natural ecosystems and the role of communities in protecting them (SDG 4: Quality education) (4).

Well-designed and maintained UGS can also drive social and economic development, as living near them becomes more desirable, increasing property values (2). They also attract tourism and other businesses, facilitating both public and private capital investments in future generations and living prospects for all (SDG 9 – Industry, innovation and infrastructure) (2). As multiple sectors are likely to benefit from quality UGS, it makes economic sense to collectively contribute to protecting and maintaining them.

Access and Inequalities

While UGS can potentially provide a range of benefits, the features, condition, accessibility and safety of UGS influences its use. For instance, living near UGS is associated with improved levels of physical activity, while the presence of barriers such as major roads is a significant deterrent (8). Poorly maintained UGS are less

likely to be utilised and might contribute to a perceived lack of safety (8). Demographic characteristics, such as gender, age and ethnicity can also be determinants of UGS usage (8,10). Vulnerable groups (such as children, elderly, women and people with disabilities) are more sensitive to their environments and require more environmental support to remain physically and socially active within their communities (10–12). For instance, greater public resource availability for physical activity differentially benefited women from low income backgrounds or poorer neighbourhoods (8).

Strategically-located UGS might mitigate socio-economic disparities in health, narrowing the health gaps (7). For instance, edible gardens in disadvantaged neighbourhoods are likely to improve food security as well as mental and physical health. However, access to UGS is often inequitably distributed (13,14), likely an outcome of reliance on market forces for land-use decisions. Assessments of geographical equity of access to UGS, innovative designs, and participatory decision-making can guide good urban design to reduce inequalities in access and promote healthy lifestyle choices for everyone regardless of where they live, mitigating the impact of life-style diseases on individuals and decreasing the economic burden on health care systems (2,4,7).

General recommendations

While the availability and quality of UGS can vary considerably between neighbourhoods in the same city, and there are no universal standards for the optimal number or characteristics of UGS (5,8), urban planners should consider the core components of a comprehensive strategy for sustainable urban development that promotes equity, welfare and shared prosperity. In particular, city planners should be guided by the principles, policies and standards required to achieve sustainable urban development noted in the *New Urban Agenda*. This Agenda is a global strategy adopted by countries participating in the 2016 United Nations Conference on Housing and Sustainable Urban Development (referred to as HABITAT III) (6,15) (SDG 16: Peace, Justice, and Strong Institutions).

Innovative design and management of UGS

UGS are mostly managed by local authorities and provide a unique opportunity to increase the quality of living of city dwellers, as their features (flora and amenities) are easier and cheaper to modify compared to other structural environmental features such as transportation networks (7). Cost of maintenance of formal UGS, such as parks, community gardens, schoolyards, playgrounds and public plazas might be an implementation barrier which could be easily overcome by integrating resources across relevant sectors (7). On the other hand, informal UGS (trails, nature reserves, urban forests) host a range of flora and fauna, and are likely to require minimal maintenance (14). Innovative ways to help urban

residents understand and navigate such green spaces may improve their accessibility. Creative design and innovations are important in incorporating vegetation to densely populated urban environments and include vertical and rooftop gardens. Proper planning, investment and management of existing UGS can ensure their use by a wide range of demographic groups and prevent negative environmental impacts, such as insecticide excess, siltation from over utilised hiking tracks, and damage of local ecosystems (2).

Ensuring accessibility by all demographic groups

Urban planners can potentially narrow gaps in health inequalities and ensure no one is left behind by designing UGS (parks, gardens, trails) that ensure equal accessibility, safety and inclusivity for all demographic groups, particularly vulnerable populations (e.g. children, elderly, women, those who are socioeconomically disadvantaged, people with disabilities) (7,16). This includes investing in environmental features that will enhance the quality of the user's experience and be conducive of regular physical activity and social participation for all demographic groups (7). The choice of features should be informed by community consultations to understand and address the needs of residents across the lifespan in designing UGS (3,7). These features include good lighting at night, working toilets, bins for waste management, well-maintained walking paths and accessible ramps, safety from motor vehicle traffic, viewing platforms, picnic tables and public exercise machines/outdoors gyms among others (8).

Building multisectoral collaboration for a city-wide strategy

Since the benefits of USG span across SGDs and sectors, it is important to build multidisciplinary partnerships that engage relevant sectors (policy makers, urban planners, academics, public health practitioners, civil society and the private sector) in participatory decision-making (SDG 17: Partnerships for the Goals). Informed by urban spatial data (Geographical Information Systems) and qualitative analyses of UGS at the city-level (3), such multidisciplinary mechanisms could facilitate the development of a city-wide strategy that creates and improves a network of quality UGS to protect biodiversity and enhance the health and wellbeing of urban populations while reducing inequalities in access (7). The development of urban environment indicators using readily available, standardised and consistent data to measure the impact of UGS activities aligned with the urban planning policy can greatly contribute to their maintenance, monitoring and improvement over time, facilitating more liveable and sustainable communities (4). These mechanisms could also oversee the integration of investment across sectors and within governance objectives at all levels, increasing the efficiency of interventions aimed at preserving green urban ecosystems (2) (SDG 16: Peace, Justice, and Strong Institutions).

CONCLUSION

UGS are practical environmental assets that produce multiple benefits across the SDGs such as promoting urban health and wellbeing; driving social and economic development; providing habitats for local flora and fauna; and reducing the negative environmental impacts of expanding human settlements. However, city-dwellers in urban settlements across LMICs are vulnerable to urban planning pressures which favour private development and transportation, contributing to the inequitable distribution of public access to green, open and safe spaces. Protecting and restoring urban greenery are not only a cost-effective measures in planning healthy, liveable, equitable and prosperous cities, but also an urgent priority in the current context of unprecedented urban development and its negative impact on climate change and biodiversity, which threatens our very survival.

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REFERENCES

1. Phillis YA, Kouikoglou VS, Verdugo C. Urban sustainability assessment and ranking of cities. *Computers, Environment and Urban Systems*. 2017 Jul 1;64:254–65.
2. Maes MJA, Jones KE, Toledano MB, Milligan B. Mapping synergies and trade-offs between urban ecosystems and the sustainable development goals. *Environmental Science & Policy*. 2019 Mar 1;93:181–8.
3. Corbett J, Mellouli S. Winning the SDG battle in cities: how an integrated information ecosystem can contribute to the achievement of the 2030 sustainable development goals. *Information Systems Journal*. 2017;27(4):427–61.
4. Lowe M, Whitzman C, Badland H, Davern M, Aye L, Hes D, et al. Planning Healthy, Liveable and Sustainable Cities: How Can Indicators Inform Policy? *Urban Policy and Research*. 2015 Apr 3;33(2):131–44.
5. Rozhenkova V, Allmang S, Ly S, Franken D, Heymann J. The role of comparative city policy data in assessing progress toward the urban SDG targets. *Cities*. 2019 Dec 1;95:102357.
6. Andersson C. Public Space and the New Urban Agenda [Internet]. *The Journal of Public Space*.

- 2016 [cited 2019 Aug 6]. Available from: <https://www.journalpublicspace.org/index.php/jps/article/view>
7. Sugiyama T, Carver A, Koohsari MJ, Veitch J. Advantages of public green spaces in enhancing population health. *Landscape and Urban Planning*. 2018 Oct 1;178:12–7.
 8. Lee ACK, Maheswaran R. The health benefits of urban green spaces: a review of the evidence. *J Public Health (Oxf)*. 2011 Jun;33(2):212–22.
 9. Kondo MC, Fluehr JM, McKeon T, Branas CC. Urban Green Space and Its Impact on Human Health. *International Journal of Environmental Research and Public Health*. 2018 Mar;15(3):445.
 10. Ghani F, Rachele JN, Washington S, Turrell G. Gender and age differences in walking for transport and recreation: Are the relationships the same in all neighborhoods? *Preventive Medicine Reports*. 2016 Dec 1;4:75–80.
 11. Beard JR, Bloom DE. Towards a Comprehensive Public Health Response to Population Ageing. *Lancet*. 2015 Feb 14;385(9968):658–61.
 12. Vrazel J, Saunders RP, Wilcox S. An Overview and Proposed Framework of Social-Environmental Influences on the Physical-Activity Behavior of Women. *Am J Health Promot*. 2008 Sep 1;23(1):2–12.
 13. Nesbitt L, Meitner MJ, Girling C, Sheppard SRJ, Lu Y. Who has access to urban vegetation? A spatial analysis of distributional green equity in 10 US cities. *Landscape and Urban Planning*. 2019 Jan 1;181:51–79.
 14. Rupprecht CDD, Byrne JA. Informal urban greenspace: A typology and trilingual systematic review of its role for urban residents and trends in the literature. *Urban Forestry & Urban Greening*. 2014 Jan 1;13(4):597–611.
 15. New Urban Agenda. 2017 Habitat III Secretariat, United Nations [Internet]. Available from: <http://habitat3.org/wp-content/uploads/NUA-English.pdf>
 16. Sallis JF, Cervero RB, Ascher W, Henderson KA, Kraft MK, Kerr J. An Ecological Approach to Creating Active Living Communities. *Annual Review of Public Health*. 2006;27(1):297–322.