

Reimagining Vertical Cities: Community Participation and the Future of Urban Green Spaces

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ABSTRACT

Infrastructure grows as the world grows, and cities grow to accommodate the growing population. The more people there are, the more houses cities need, but on what land? With restrictions on land usage, cities are now adapting the concept of vertical cities, expanding upwards instead of horizontally. Vertical cities are self-sustaining, high-rise buildings with in-built facilities, allowing residents to have everything they need in one area.

There is certainly the risk of isolation, however, as residents are isolated in their towers and have rare opportunities to interact. Urban green spaces are imperative to foster a sense of connection where residents can socialise, as well as reap the benefits of being around greenery. Community participation is key while designing vertical cities, to ensure that potential residents have green spaces, making the structure and its surroundings sustainable and livable. This paper attempts to discuss the importance of community participation in the construction of vertical cities and the future of urban green spaces.

Keywords: vertical cities, community participation, green spaces, sustainability, urban planning

Introduction

As the global population rises, the need to actively create solutions for it arises. Urban development is growing at a rapid rate, transforming and adapting to accommodate population density. With development comes the responsibility to be environmentally sustainable and contribute to a better quality of life. Urban planning must be done in tandem with community participation to develop more green spaces.

Edmund Burke defines the traditional approach to planning as a rational process to secure information and wisdom for decision-making. Planning over the decades has opened avenues for increased community participation, as citizens' experiences shape how a space is designed in

sustainable ways. Achieving sustainability in urban areas, both environmental and social, depends on the role of community participation. Urban sustainability can be categorised into 4 components: social, economic, environmental, and institutional (Panda et al., 2016). According to several researchers, the social component is the slowest developing dimension, which encompasses quality of life, social integration, social cohesion, equality, diversity, human rights, and governance (Basar, 2024).

Participatory urban planning has a threefold purpose—it recognises the emotional bonds between people and their neighbourhoods, people have a right to participate in decisions that affect their lives, and it appreciates the relationship between people and places through attachment and identity (Wong, 2023). People are essentially an extension of the place they inhabit, and are influenced by social and physical factors, which shape their sense of self and understanding of the world around them. Community participation is key to building and developing urban green spaces and newer concepts like vertical cities.

The concept of vertical cities, characterised by tall buildings that integrate residential, commercial, and recreational spaces, is on the rise. By 2050, India is projected to add over 300 million urban residents (Sood, 2024), making it imperative to adopt sustainable and efficient housing methods. India is a prime example of a country that has adopted vertical development to accommodate rising residential demand and limited land availability. Mumbai leads India's vertical urban growth with over 3,900 high-rises.

Urbanisation worldwide is growing, with more than 56% of the world's population living in urban areas. That figure is predicted to rise to 68% by 2050, according to a 2018 United Nations report. Encountering limited horizontal space and an ever-increasing population, many cities have turned to vertical growth (Parkash, 2025). These high-rise buildings, although convenient, contribute to adverse environmental implications, which can be regulated by increasing their green cover. Vertical cities also include green spaces, which enhance life expectancy and significantly improve the quality of life (Addas, 2023).

Green spaces play a crucial role in urban planning and must be paid more attention to. They are among the main contributors to heat reduction and other social, physical, and environmental benefits, such as providing clean air, conserving water and soil, and managing the city's overall natural environment. There is extensive documentation on how urban green spaces and people's well-being are interconnected (Anguluri & Narayanan, 2017). Unfortunately, owing to encroachments, green spaces are vulnerable, so extra effort must be put into improving their presence.

Background

Vertical cities are considered to be a comfortable urban environment, catering to the population explosion and limited land. Up until the 19th century, technological development was slow. Historically, factors like the high cost of land, new materials like glass and steel being acquired, elevators, and constructive solutions like thicker walls using metal frames and a stronger foundation (Akristiniy & Boriskina, 2018) can be identified as driving forces behind the evolution of cities. As cities and their populations grow, there is an urgency to further develop construction and architecture to suit the demands that crop up.

There are several forms of green spaces in high-density cities, such as rooftop gardens, sky parks, and vertical forests. A 2021 report identified the transition from horizontal urban planning to vertical, which minimises land use, and aids in sustainable environmental problems and de-urbanisation. The report says, “Vertical construction is a reality. Future vertical cities are utopia.” It defines a vertical city as a set of vertical buildings with a developed infrastructure, a self-contained ecosystem designed using a compact planning structure. Projects should ideally combine sustainability using green spaces and high-quality living standards to maximise their potential. The report uses examples of the Tower of Babel and Atlantis to explain that ancient thinkers and philosophers have, since the beginning of time, been trying to envision an ideal life (Novikov & Gimazutdinova).

Some of the most visionary examples of vertical gardens include Waldspirale in Germany, Bosco Verticale in Milan, and Gardens by the Bay in Singapore (Franks, 2024). Marina One in Singapore is an iconic sustainable vertical city, with four tall buildings, 1042 apartments in each, usable area of 175,000 m², and an internal tropical public access garden with an area of over 37,000 m² (Piętocha et al., 2025). In one of the most densely populated countries in the world, where the land area is only 660 km², the 2001 Concept Plan suggested taller buildings to accommodate the projected population of 5.5 million residents (Wong, 2004).

In Hong Kong, hyperdensity, vertical land use, multifunctional and integrated development, land preservation, and sustainability shape the city. Critics refer to it as ‘nothing but a concrete forest’, but in reality, Hong Kong is a city known for its sustainability and has preserved over 75% of its natural area. In the 1920s-1940s, there was a boom in residential and commercial mixed-use buildings. In the 1950s, following the influx of WWII immigrants, there was a call for a higher number of floors. In the 1960s-1990s, the city saw elevators, tower blocks, more solar exposure, and air conditioning. Post 2000, an integrated development approach was taken, and a ‘sky is the limit’ attitude was adopted (Lau & Zhang, 2015). Even though the city’s environmental footprint is incredible, it directly affects the residents’ livability.

India's most densely populated city, Mumbai, is racing upwards, but at what cost? Critics say it is doing so with no coherence, functionality, or basic livability. The city sees a bungalow next to a luxury tower, and no planning logic to bridge the urban landscape. Atul Kumar, founder trustee of the Art Deco Mumbai Trust, says, "Today, planning has been reduced to an arbitrary and ad hoc level with no correlation to infrastructure." Urban planners say that policy-making here allows profit to trump sound planning. Urban designer Harshad Bhatia presses, "Continuing this mindless building spree will be a self-induced disaster in the years ahead" (*Mumbai's Vertical Boom Runs Ahead of Infrastructure*, 2025). Government sustainability frameworks that influence urban planning are not set in stone; they change with the times and are adapted to suit the needs of urban development and its residents.

Discussion

Horizontal expansion of cities has led to multiple evacuations and a lack of free land. Vertical expansion is a concept that may accommodate the future needs of urbanised cities (Khalid, 2022). Sustainability is one of the primary goals of urban development, addressing environmental problems caused by urbanisation and the gradual but inevitable deterioration of the ecosystem. As a result, open and green spaces must be focused on, with appropriate practices to maintain a healthy ecosystem. Green spaces such as urban forests/parks/gardens cool the surrounding air, regulate the climate, and improve air quality. They also support biodiversity and preserve existing natural structures (AK & Gölbey, 2022).

Community-driven green spaces, albeit a recent development, are an important component of designing vertical cities. Vertical greenery is a term that encompasses a high-rise building with integrated green roofs, rooftop gardens, or built-in green walls. The choice of plants and their placement is decided by professional urban designers to maximise the harmony between nature and the built environment. Generally, however, residents have little to no input in the decision-making process (Oh et al., 2018).

There is a social role that is fulfilled through sharing green spaces, which strengthens community identity. The benefits of planned green spaces are widely documented and recognised today. They are one of the indicators of sustainability for maintaining residents' well-being, the concept of which is often ignored for economic and iconic value (Rao, 2021). Green spaces can cultivate social cohesion, positive health behaviour, and increased social engagement. Most people spend the majority of their time indoors and experience what Richard Louv calls a "nature-deficit" (2011). Limited exposure to community green spaces reduces opportunities for social engagement (Jennings & Bamkole, 2019).

While vertical cities and green spaces are on the rise, there are several challenges linked to them, such as funding, long-term maintenance, and designing appropriate technology and architectural blueprints. Vertical development is a direct result of land scarcity. 90% of urban growth is concentrated in Asia and Africa, making it a dire situation for land usage. Building tall is the most practical solution, but construction costs tend to significantly increase with each extra floor, and so do the land values (Luna, 2019).

Setting the practicality aside, the residents are isolated and rarely have the opportunity to connect and interact, owing to the massive towers and thousands of apartments. By elevating the public realm through green spaces in the upper levels, there might be a better connection between residents, creating a sense of community. The construction of these mega-tall buildings, being a modern 21st-century phenomenon, comes with a set of modern obstacles. The development and operation behind these structures are complicated by volatile market conditions, safety and precautionary methods, environmental sustainability, and monitoring structural health (Konar, 2025), all of which demand solutions that are both expensive and resourceful.

Beyond technical concerns and infrastructure, vertical cities are tied to society, culture, and community. Embedding a city's culture is a crucial factor in fostering successful spaces. Participatory planning in collaboration with cultural identity shapes urban environments that reflect the culture's values and traditions of the community, and evoke a sense of place and history. Place-making is another element of culture-centric urban design, where spaces are designed specifically for people to interact socially. These spaces must also be compatible with the local climate and existing urban design by optimising natural light, ventilation, and landscaping (Afify, 2024).

A 2019 journal article proposes that India requires better insights into urban green spaces and their planning. The growth of cities has historically always coincided with the collapse of the local environment, with land alteration and ecological stress. Urbanisation is considered progressive, undoubtedly, but the process causes long-lasting negative impacts on habitat loss (Singh, 2019). Ian McHarg, a landscape architect, urged urban planners to conform with ecology, instead of competing with it.

The future of vertical cities and integrated green spaces is one of hope. For a successful vertical city, Gregory Kovacs says, J G Ballard's dystopian vision must be avoided, where the isolated nature of each tower creates a dysfunctional social structure, completely shut off from the outside world. Designing self-sufficient, interconnected, flexible vertical cities that act as neighbourhoods within the broader city is the goal. They must serve a multitude of functions while seamlessly blending in with the wider cultural context and existing urban landscape.

Vertical gardens point towards a greener future, offering a unique opportunity to give back to the environment.

Conclusion

At the moment, vertical cities primarily cater to the affluent class of society, but a true vertical city should be able to serve a large section of society and be inclusive. Are vertical cities pertinent in today's rapidly urbanising world? Indeed. Do they come with their fair share of pros and cons? Most definitely. However, one thing is certain: it is inevitable. With an ever-growing population, constant widespread migration to cities and urban spaces, and a lack of usable land, constructing structures that go vertically rather than horizontally is of utmost importance. This must be done by involving the community, for it is their well-being that is a priority.

Community participatory planning is a great way to drive social cohesion and interpersonal connection. By involving the community in the planning process, the risk of isolation or poor surroundings is mitigated to an extent. Structures should be built by making use of existing urban landscapes, ventilation, and light sources.

Vertical cities should ideally be host to green spaces like rooftop gardens, sky parks, and vertical forests, to promote sustainability, especially in high-density cities. Green spaces are oftentimes overlooked while designing vertical cities, where the goal is more for monetary gain and less for livability. Green spaces integrated in vertical cities contribute to a positive quality of life. Vertical cities are going nowhere but up, though they should ideally be done with the residents and the environment in mind.

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