

Empowering the Youth to Transform the Urban Landscape Through Systems Thinking



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Urbanisation is reshaping human settlements at an unprecedented pace, creating a complex interplay of identities, cultural practices, resources, and values within urban spaces. As India progresses towards becoming a developed nation, it is vital to ensure that every citizen enjoys a dignified life amidst this transformation. Currently, Indian cities are under tremendous pressure to accommodate the growing demands of the urban population. Addressing the challenge of resources scarcity is critical, especially as housing shortages intensify. In 2018, India faced a housing deficit of 29 million units, according to the Indian Council for Research on International Economic Relations (Roy & ML, 2020). Thus, housing emerges as a crucial focus area for this decade, and how we tackle this crisis will shape the future of our urban environments.

Urban planning and sustainable cities

Cities are complex ecosystems where factors like resource availability, waste management, and infrastructural connectivity influ-

ence growth. While urban planning must take these into account, it is essential to position housing at the center of the urban system. Housing connects various sectors—from infrastructure to social well-being—and serves as the foundation for inclusive urban development. As migration to cities continues to rise, the strain on housing markets is mounting, leading to substandard housing conditions that increase vulnerabilities. Inadequate housing exposes residents to health risks and extreme weather, and diminishes the overall quality of life. Access to affordable and adequate housing is not only a basic need, but also a social right that indicates how inclusive and equitable a city is. Marginalised communities residing in urban areas usually bear the major brunt of social and economic inequalities, which are often reflected in stark housing disparities (gated communities and slums).

Towards addressing these issues, the Indian government launched the Pradhan Mantri Awas Yojana Urban (PMAY-U) in 2015, a scheme aimed at achieving the goal of 'housing for all'. The scheme

targets the urban poor and middle class by providing good quality, affordable housing, with a mission to build 1 crore houses in the next 5 years. By combining financial assistance with innovative technologies and building practices, PMAY-U aims to create inclusive and sustainable housing solutions for Indian cities (Press Information Bureau, 2024).

The United Nations Sustainable Development Goal (SDG) 11 identifies sustainable cities and communities as essential for ensuring a prosperous future (United Nations, n.d.). Youth must be at the forefront of this transformation, advocating for equitable, inclusive, and sustainable urban policies. Their activism on issues like climate change is already prompting shifts toward more sustainable urban development practices. While government-led urban development strategies such as the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and the Smart City Mission (SCM) are underway to modernise urban areas, they can be enhanced through the active engagement of local communities, especially the youth. Cities attract

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the youth by offering numerous employment opportunities. The significant concentration of youth in urban areas allows for engaging them deeply in redesigning cities. By harnessing the power of its youth, India can craft solutions to transform its cities into socially inclusive hubs of economic and environmental prosperity.

Youth as catalysts for urban transformation

With 66% of its total population under 35 years of age, India has one of the largest young population in the world today (Young Voices, 2023). India can leverage the potential of this valuable asset to build sustainable cities. The tech-savvy youth, with critical thinking skills and innovation potential, are well equipped to deal with the challenges of urban living and generate a new wave of sustainable practices.

The youth's potential to influence urban development can be further strengthened through policies and initiatives that foster skill development and entrepreneurial spirit. The support provided to the youth through initiatives like Startup India and Atal Innovation Mission (AIM) has resulted in social start-ups which are not just businesses, but can act as catalysts for social change, addressing some of the urgent social and environmental challenges in urban areas. Similarly, the Youth Co:Lab National Innovation Dialogue India is an annual flagship event that showcases and supports initiatives aimed at empowering the youth. It highlights the importance of investing in youth to help them lead and advance the Sustainable Development Goals (SDGs) by enhancing their leadership, social innovation, and entrepreneurship skills. Further, programmes like the Youth for Gov-

ernance (Y4G) Fellowship – Mysuru 2024, a collaboration between Grassroots Research and Advocacy Movement (GRAAM), Participatory Research in Asia (PRIA), and the Hanns Seidel Foundation (HSF) India, aim to empower Mysuru's youth to actively participate in governance (GRAAM India, 2023). Such programmes can provide capacity building for the youth to contribute to sustainable and inclusive urban development. Additionally, youth involvement in community development projects like the Swachh Bharat Mission and SCM, as well as in environmental conservation efforts under the Green India Mission, can enable them to drive positive change and create a more sustainable urban environment.

To effectively build skills, support businesses, and drive economic growth, youth need a thorough understanding of the urban landscape and its complex interlinkages. As urban challenges evolve and intensify, developing an integrated understanding of the urban ecosystem becomes increasingly vital. This presents both significant opportunities and formidable challenges for the youth. Systems thinking offers a valuable framework in this regard, providing a holistic approach to grasp the dynamics and interconnections between various sectors. By applying systems thinking, decision-makers can design more informed and sustainable solutions, considering a range of factors that impact urban outcomes. This method of problem-solving opens new possibilities for the youth to transform the ways for creating a resilient and sustainable urban environment.

Systems thinking as a tool for youth-driven decision-making

Involving the youth in decision-making processes is essential, as it is they who will experience the outcomes of today's choices. As an approach, systems thinking looks at systems holistically, capturing interlinkages and dynamics, and identifying feedback loops via causal loop diagrams, that enable us to model and analyse complex systems. It provides a robust framework for the youth to understand and influence complex urban systems, positioning them as key players in the sustainable development journey. By identifying the interlinkages and feedback loops, the youth can gain crucial insights into how various elements of urban ecosystems interact and evolve over time. This knowledge would empower them to shape decisions, advocate for impactful solutions, and contribute to building resilient and thriving communities.

Core Components of Systems Thinking

These collectively offer a comprehensive view of how different elements within a system interact and change over time.

Feedback and Causal Loops

Causal Loops: These are diagrams that present the cause-and-effect relationships within a system, illustrating how changes in one part of a system affects the others. They thus help to visualise how different system elements are interconnected and how they influence each other.

Feedback Loops: These are diagrammatic representations of how the output of a system influences its own input, creating cycles of reinforcement or balance. They

are of two types: positive feedback loops (reinforcing) and negative feedback loops (balancing).

Positive Feedback Loops: As more people move to suburban areas, demand for new housing and services there rises. This drives infrastructure development, which attracts more residents, continuing the cycle of growth. Such loops offer an understanding of how initial advantages or trends can create self-reinforcing cycles of expansion. By recognising and leveraging such dynamics, the youth can drive initiatives that build on initial successes to achieve greater impact.

Negative Feedback Loops: An increase in population raises the housing demand, leading to more construction activities. However, limited resources initially slow down construction. As the supply of resources increases, construction accelerates, catching up with demand. Due to this, eventually the market reaches a balance between the demand and supply of houses for the urban population (CSTEP, 2024). This demonstrates how systems self-regulate to maintain stability. The youth can incorporate this understanding to manage resources and advocate for strategies that balance growth with sustainability, preventing issues like overdevelopment or resource depletion.

A sound understanding of feedback and causal loops provides a holistic view of urban systems. Causal loops help to map out interactions and effects within a system, while feedback loops show how these interactions create cycles of change. Figure 1 shows a simplified causal loop diagram of an urban ecosystem, visually representing the key feedback loops and causal

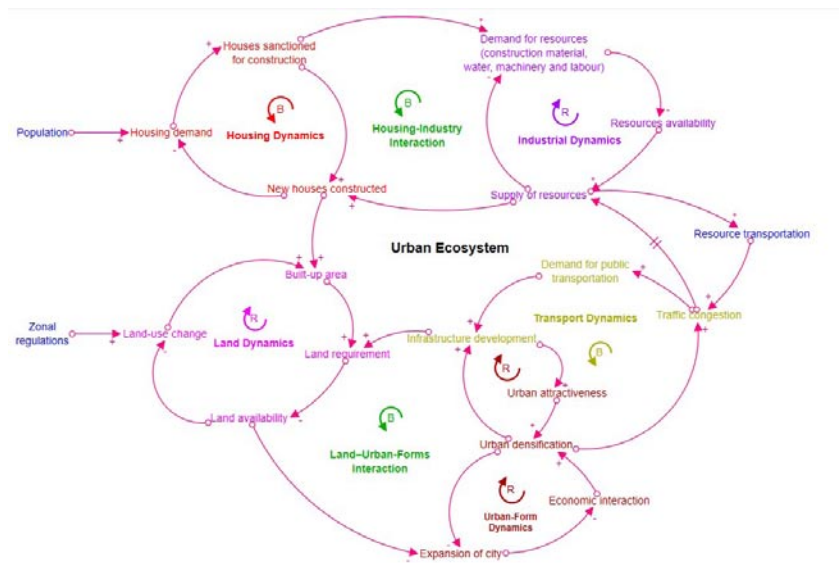


Figure 1 Simplified causal loop diagram of urban ecosystem dynamics

relationships that drive the dynamics of urban growth, infrastructure development, and land use.

By analysing the interdependent relationships between housing, transport, industry, land use, and public services, the youth can gain a holistic view of how changes in one aspect of the city ripple through other sectors, influencing everything from economic development to environmental sustainability. This knowledge equips them to actively engage in urban activism, advocating for sustainable solutions to pressing challenges. For instance, youth can promote the use of cycles and public transport, push for adopting alternative building material and technology choices that are less energy-intensive and provide better thermal comfort, and become more responsible with resource use, thus steering the cities away from unsustainable practices.

Systems thinking can empower the youth to participate in climate change conversations, enabling them to model the impacts of urban policies on carbon emissions and energy consumption, and eventually to push for low-

carbon, climate-resilient pathways. Through the comprehensive understanding provided by systems thinking, the youth can foster innovation, identifying key leverage points within urban systems where small interventions can lead to significant improvements in the quality of life and ultimately help in achieving sustainability. Their involvement in participatory urban planning can contribute to the formulation of balanced policies that enhance urban infrastructure, mitigate traffic congestion, and promote sustainable growth. Figure 2 illustrates the positive role youth can play in an urban ecosystem.

Challenges and opportunities in incorporating systems thinking

There are several challenges in incorporating systems thinking, the first one being a lack of awareness among the youth and the general public about this approach. Despite its effectiveness in addressing complex problems, systems thinking is relatively unknown and, thus, underutilised. Many educational systems do not

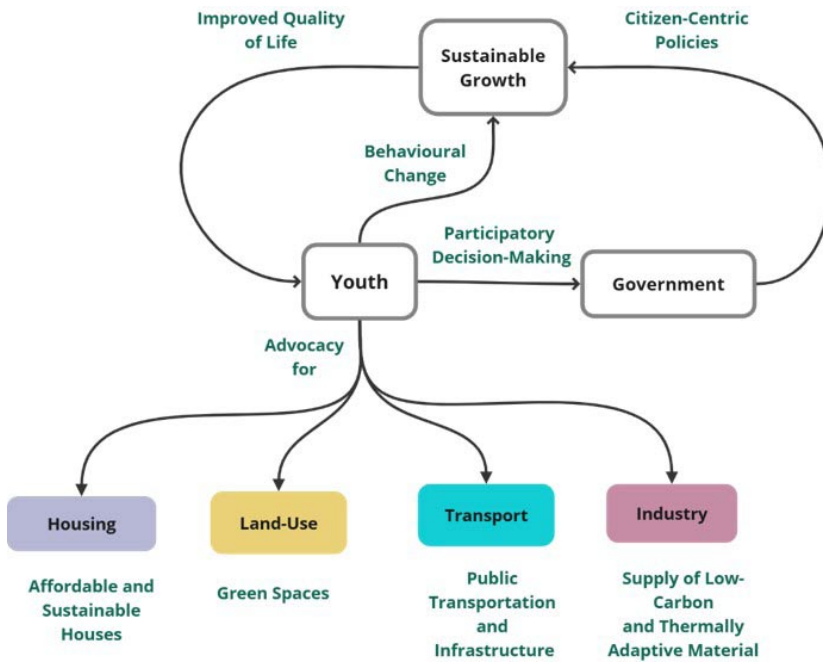


Figure 2: Youth participation in shaping the urban ecosystem

emphasise interdisciplinary approaches like systems thinking, resulting in limited awareness and inadequate training. Students may lack interest in pursuing systems thinking due to unclear academic rewards or career opportunities. So, without strong institutional or employer support, the youth are less likely to engage with it.

However, despite these challenges, the opportunities for incorporating systems thinking for deeper youth engagement and participative decision-making processes are significant. The knowledge gap can be addressed by introducing systems thinking into academic programmes across disciplines such as pure sciences, economics, and environmental sciences. Programmes/courses in systems thinking, such as those offered by the Massachusetts Institute of Technology’s (MIT) Sloan School of Management (MIT Management Sloan School, n.d.), can serve as models for other institutions globally. Further, short-term training programmes, certifica-

tions, and workshops—especially through online learning models like massive open online courses (MOOC)—can raise awareness and equip the youth with the essential skills.

A mindset shift towards systems thinking can also be fostered by highlighting success stories of using it effectively to address real-world challenges, and in climate action and urban planning. For instance, the United Kingdom (UK) government employed systems thinking to forecast the employment impacts of various economic policies (Swanson, 2020), allowing for more informed decision-making. Additionally, the UK’s use of systems thinking for its COVID-19 response planning showcases its relevance in tackling pressing global challenges (George et al., 2023). Governments can advance systems thinking by adopting it in policy formulation, setting a precedent for educational institutions and inspiring the youth to explore its potential.

Collaborations between think tanks and educational institutions

present another significant opportunity to boost systems thinking by equipping students with tools, models, and learning experiences. These partnerships can create a bridge between academic learning and practical policy work, allowing students to apply theoretical knowledge in addressing complex societal challenges like climate change, urban development, and sustainable resource management. For example, the Centre for Study of Science, Technology and Policy (CSTEP)—a think tank in India—has developed the Sustainable Alternatives Futures for India (SAFARI) model (CSTEP, 2020; Kumar et al., 2021), using systems thinking and integrating the key economic sectors to explore various low-carbon pathways to support India’s transition to a net-zero future. Through collaborations with educational institutions, think tanks can offer students hands-on training on such models, enabling them to simulate and analyse different interventions and their impact on the environment.

Conclusion

In today’s rapidly urbanising world, cities are at the forefront of both opportunities and challenges. Urban environments are evolving into complex ecosystems where issues like housing shortages, infrastructural pressure, resource scarcity, and environmental degradation are becoming increasingly intertwined. In India, where urbanisation is accelerating, the manner in which cities evolve will shape the quality of life for generations to come. This warrants actively involving the youth—the primary stakeholders who will inherit the future—in today’s decision-making process.

Systems thinking embodies a powerful approach for addressing the urban challenges. By providing a framework that allows for a deeper understanding of the interconnectedness within urban systems, and by modelling the cause-and-effect relationships that determine urban growth, resource management, and infrastructure development, it enables a holistic view of how cities function and evolve over time. For the youth, in particular, it can be a transformative tool as they will live through the outcomes of today's urban policies and planning. Systems thinking not only equips them with the ability to analyse these complex urban systems but also empowers them to actively participate in shaping the solutions.

Using the systems thinking framework/approach, the youth can advocate for balancing growth with environmental and social needs, and can inform and drive policies that promote long-term sustainability. As cities continue to grow and evolve, it is crucial to empower the youth with the skills and tools to navigate the complexities of urban living, while also equipping them with a comprehensive understanding of the intricacies of the various elements of an urban system, so that they can play an active role in reshaping the urban futures to make them both inclusive and sustainable.

It is evident that involving the youth as key participants in governance is crucial for bringing about a transformative impact. Given that systems thinking is a powerful tool for readying the youth to play this role well, it must be advanced within educational and policy frameworks. The median age of In-

dia's population is around 28 years, giving it a significant demographic advantage, which can be utilised to foster a sustainable and inclusive future. A strategic emphasis on systems thinking that equips and engages its large youth population meaningfully in participative decision-making and sustainable development efforts can enable India to become a global leader in these areas.

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