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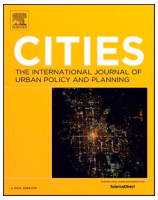

LiFE in the city: Behavioural changes can drive urban sustainability goals

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ABSTRACT

This paper explores the Lifestyle for Environment (LiFE) initiative, a pioneering approach initiated by India to propel sustainable urban development through targeted behavioural change. Positioned at the nexus of individual action and urban sustainability, LiFE underscores the potential of integrating lifestyle adjustments into the broader urban planning and policy-making framework. By examining the initiative's evolution from a grassroots movement to a key element of government policy, this paper highlights its innovative strategies aimed at promoting eco-friendly living and its significant impact on urban environments. Through case studies and an analysis of the initiative's alignment with global sustainability goals, we reveal how LiFE complements existing urban agendas by focusing on the micro-level actions of individuals and communities. This paper contributes to the discourse on sustainable urbanization by showcasing the critical role of behavioural change in achieving urban sustainability goals, thereby offering insights into the formulation of more holistic and effective urban policies. Significantly the paper articulates how LiFE's principles, through enhancing global policies and harnessing the power of technological advancements within the Smart Cities agenda, herald a new paradigm in urban sustainability efforts.

1. Introduction

The Lifestyle for Environment (LiFE) initiative, championed by India and embraced at the United Nations Environment Assembly's (UNEA) Sixth Session from the 26th February to 1st March 2024 (Ministry of Environment, 2024; Ravindra et al., 2023), injects a novel dimension into the urban sustainability narrative. With a goal to incorporate sustainable lifestyle changes into national decisions to reduce the effects of climate change, LiFE promotes an ecofriendly lifestyle that emphasizes mindful consumption and zero waste, to render making 80 % of India's villages and towns eco-friendly by 2028 (Ravindra et al., 2023). Additionally, the LiFE initiative not only pioneers in promoting sustainable urban lifestyles but does so using innovative tools such as digital engagement platforms and community workshops (Yuvamanthan, 2024). These tools are crucial for scaling the initiative's reach and ensuring its integration into policy-making processes. LiFE's novel contribution lies in its focus on behavioural change as a fundamental pillar of urban sustainability, a dimension that remains underexplored in the current discourse dominated by structural and infrastructural solutions. By positioning individual and community behaviours at the heart of its strategy, the initiative offers a fresh perspective, illustrating how sustainable urban development can be achieved through the cumulative effect of localized actions. This approach not only complements but also significantly extends the reach and effectiveness of existing frameworks such as the Sustainable Development Goal 11 (SDG 11) and the New Urban Agenda. Sustainable Development Goal 11 (SDG 11) aims to make cities inclusive, safe, resilient, and sustainable, focusing on significant aspects such as affordable housing, sustainable transport systems, and green public spaces, and the New Urban Agenda is a global strategy endorsed by the United Nations in 2016 to guide urban development worldwide, emphasizing the need for cities to provide equal access to all public services and environmental sustainability (Vaidya & Chatterji, 2020). While the LiFE initiative aligns well with the objectives of SDG 11 and the New Urban Agenda, it is designed to function both independently and in conjunction with these global frameworks. This flexibility allows for its adaptation and implementation in diverse urban settings, regardless of the existing engagement with these broader agendas.

The introduction of the LiFE initiative into the urban sustainability narrative represents a paradigm shift, challenging conventional

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methodologies that prioritize top-down infrastructural and policy interventions. Instead, LiFE champions a bottom-up approach, where the empowerment and active participation of individuals and communities serve as the driving force for achieving urban sustainability goals. The LiFE initiative uniquely emphasizes individual behaviour changes over infrastructural modifications. While infrastructure involves physical changes to urban environments, individual behaviour focuses on altering daily practices and decisions of city dwellers to foster sustainability. This paper argues that the success of urban sustainability efforts hinges on this critical integration of behavioural change, offering novel insights into how cities can evolve to meet the challenges of the 21st century while fostering a sustainable and inclusive urban environment. This paper employs a qualitative research framework, focusing on in-depth case studies and evaluations of the implementation of the Lifestyle for Environment (LiFE) initiative. This method is chosen over conventional bibliometric analyses due to the novel nature of the initiative and the lack of extensive academic resources on the subject. While this approach provides valuable insights into the practical application and effects of the initiative, it is important to acknowledge the current absence of comprehensive quantitative assessments. Future research could greatly benefit from detailed quantitative analyses, as the initiative gains global adoption, such as sustainability metrics, behavioural data, and economic models, to robustly measure the initiative's efficacy and impact on sustainability goals.

2. The LiFE initiative

The Lifestyle for Environment (LiFE) initiative matured from a grassroots movement to a sophisticated government policy through strategic and collaborative efforts. First spotlighted at a pre-UNEA forum in 2023, its innovative fusion of environmental advocacy with policy development caught the Indian government's attention, leading to its proposal as a global initiative at the UNEA session. This formalization aligned with India's increased participation in global environmental dialogues, including hosting COP28 and leading the G20, significantly bolstering LiFE's international promotion. Central to LiFE is the "People for the Earth" consortium, dedicated to fostering environmental awareness and sustainable practices worldwide. The initiative's cornerstone, the "LiFE 21 Day Challenge," encourages individuals to adopt sustainable lifestyles, guided by the principles of Rethink, Recycle, and Recreate, emphasizing a comprehensive approach to environmental stewardship (Ravindra et al., 2023). Central to the approach are tools like the 'LiFE 21 Day Challenge' app (21day-schallengeapp, 2024), which not only motivates individuals to adopt sustainable habits but also gathers data to support urban sustainability policies. By merging the principles of sustainable living with urban development, the initiative extends beyond environmental advocacy by infusing itself with operational and strategic planning. This initiative complements both the Sustainable Development Goal 11 (SDG 11) and the New Urban Agenda, while building on the discourse of urban sustainability, by addressing both individual and collective behaviours. A schematic diagram of the LiFE initiative is represented in Fig. 1 below, showcasing its 3 main themes, including Individual Behaviours, Global Co-Creation, and leveraging local cultures, with 7 overarching principles, relating to: (i) Saving Energy, (ii) Saving Water, (iii) Adopting Sustainable Food Systems, (iv) Eliminating Single Use Plastics, (v) Reducing E-Waste, (vi) Reducing Waste, and (vii) Adopting Healthy Lifestyles.

While the Sustainable Development Goal 11 (SDG 11) and the New Urban Agenda provide foundational knowledge for sustainable urban development, focusing on infrastructure, inclusivity, and resilience, the LiFE initiative introduces a unique, yet complementary, perspective centered on the power of individual and collective behavioural change. Unlike SDG 11 and the New Urban Agenda, which primarily target systemic and structural changes within urban environments, LiFE emphasizes the critical role of lifestyle adjustments in driving sustainable development. This focus on the micro-level actions of individuals – ranging from conservation efforts and sustainable consumption to the adoption of green mobility - serves to bridge the gap between policy intentions and tangible outcomes. By fostering a culture of responsibility

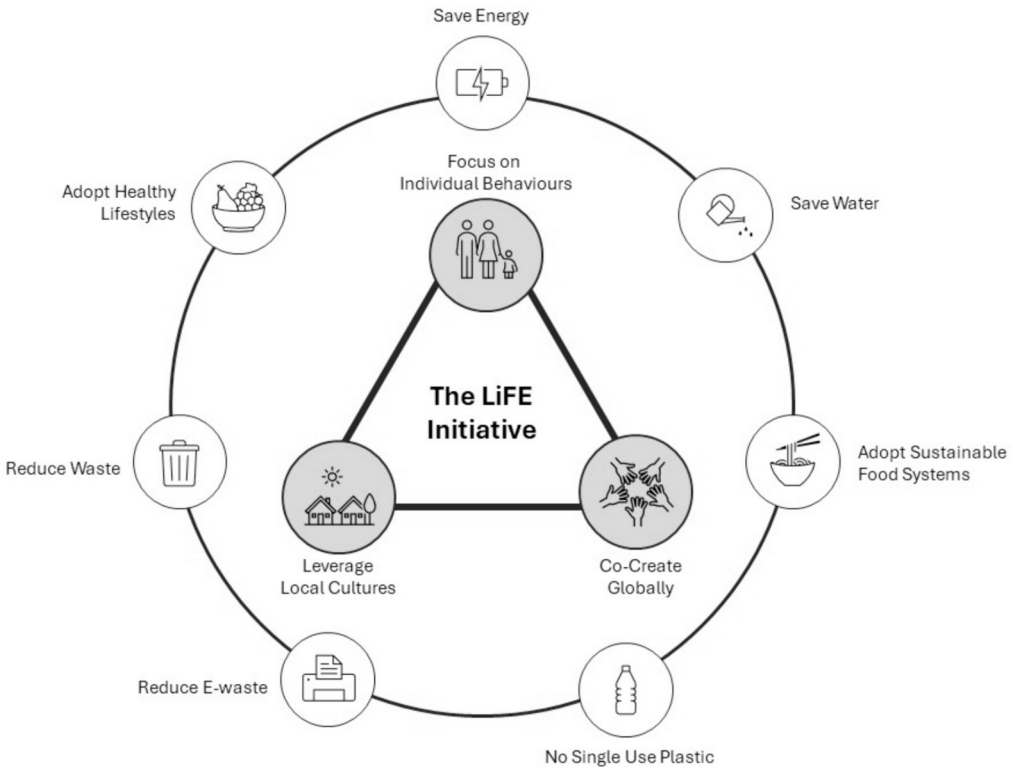

Fig. 1. Schematic diagram of the LiFE initiative. Illustration by authors, and adapted from (NITI, 2024) and (LiFE, 2024).

and sustainability among urban populations, LiFE enriches the broader goals of SDG 11 and the New Urban Agenda, ensuring their successful implementation through grassroots engagement and the active participation of city dwellers. Thus, while SDG 11 and the new Urban Agenda provide the skeleton for sustainable urbanization, LiFE adds the vital flesh of human behaviour and cultural transformation, creating a more holistic approach to urban sustainability.

3. Case studies from India's urban initiatives

The case studies presented are derived from qualitative evaluations, providing insights into the practical application and effectiveness of the LiFE initiative's strategies.

The eco-village of Piplantri in Rajasthan, India, serves as a case study of the LiFE initiative's potential impact on urban environments, where the community's adoption of environmental stewardship practices-ranging from afforestation to water conservation-illustrates how localized actions can cumulatively contribute to broader urban sustainability objectives (Kalra, 2024). Community workshops and digital tracking tools have also been instrumental in achieving and measuring the community's sustainability goals in the village. Piplantri's example highlights that sustainable urban development is not solely contingent on large-scale infrastructural renovations or policy reforms but is instead rooted in everyday choices and practices of individuals and communities. Acknowledging the diversity of growing cities, this community-driven model of sustainability can be scaled and adapted to urban contexts, offering a blueprint for cities worldwide to foster environments that promote sustainable living.

The urgency of integrating sustainable lifestyles within urban planning and policy-making frameworks has never been more apparent. Urban centres, with their dense populations and significant environmental footprints, are both the primary contributors to and the most affected by the environmental crises facing our planet. The LiFE initiative's emphasis on demand-side mitigation strategies-such as energy conservation, sustainable mobility, and waste reduction - directly addresses these urban challenges. For example, the promotion of cycling and electric vehicle use, inspired by the urban transformations in various cities, demonstrates how urban planning can facilitate a shift towards more sustainable transportation modes, thereby reducing carbon emissions and improving air quality (Cleland et al., 2023). Interestingly better understanding behavioural change and addressing individual and collective behaviours can lead to a more rapid adoption of models such as the 15-Minute city, aiming to increase proximity of residents to the city's basic services (Allam, Bibri, et al., 2022; Allam, Nieuwenhuijsen, et al., 2022). Urban design that encourages walking and cycling, for example, not only promotes physical health but also contributes to the reduction of greenhouse gas emissions (Nieuwenhuijsen, 2024). In the presented case studies above, such as those promoting cycling and electric vehicle use, the focus is on individual choices supported by infrastructure rather than the infrastructure itself. For instance, while the availability of bike lanes (infrastructure) is crucial, the decision to cycle instead of driving (individual behaviour) is the focus of the LiFE initiative.

Similarly, urban agriculture and green spaces, which enhance biodiversity and provide recreational areas, can be nurtured through community engagement and participation, aligning with LiFE's principles of collective action for environmental sustainability. The initiative's comprehensive approach—encompassing individual actions, industry responses, and policy support-provides a multifaceted framework for cities to implement sustainable practices. This approach not only aids in achieving the environmental objectives outlined in SDG 11 and the New Urban Agenda but also addresses the socio-economic dimensions of sustainability, ensuring that urban development is inclusive and equitable.

Additionally, projects such as Auroville in southern India are making a paradigm shift in exploration for alternative models of living in harmony with Nature. Nevertheless, an in-depth analysis of the Auroville's experiences (Koduvayur Venkitaraman & Joshi, 2022) reveal that the path to create an ecovillage is confronted with challenges such as, scalability, transferability, and the complexities of operating within a capitalist system. As a pioneering eco-village, Auroville introduced grassroot, low-cost and unique ecological solutions, but as the project tries to expand and develop, it faces employment and security challenges, offering insights into the complexities of urban governance structures for achieving community sustainability.

4. Enhancing global policies with LiFE's sustainable behaviour principles

The LiFE initiative's principles of sustainable behaviour possess the transformative potential to significantly impact existing policies, instigating deeper and more meaningful changes across various regions. By embedding these principles into current frameworks, LiFE can enhance the efficacy of policies aimed at reducing environmental footprints and promoting sustainable development.

In the realm of the circular economy, particularly within the European Union, the LiFE initiative can complement the EU's Circular Economy Action Plan. This plan, with its focus on reducing consumption footprints and enhancing resource efficiency, aligns with LiFE's emphasis on mindful consumption and waste reduction. By incorporating LiFE's behavioural change strategies, the plan could further reduce waste generation and increase recycling rates across member states. For instance, the action plan's goal to halve municipal waste by 2030 could be bolstered by initiatives that encourage consumers to adopt more sustainable consumption patterns, potentially amplifying the plan's impact (Spani, 2020).

Urban sustainability policies, especially those related to transportation and building codes, stand to benefit significantly from the integration of LiFE principles. Cities like Amsterdam and Copenhagen have shown that promoting cycling and other forms of green mobility can lead to a marked reduction in carbon emissions. Amsterdam's comprehensive cycling infrastructure, for example, supports over 400 km of bike paths (Macioszek & Jurdana, 2022), contributing to a reduction in car usage and associated emissions. By adopting LiFE's behavioural change models, urban policies can further encourage residents to choose sustainable mobility options, enhancing efforts to create low-carbon urban environments. Furthermore, the LiFE initiative can influence policies related to energy consumption and green building practices. Regions like California, with its Title 24 Building Energy Efficiency Standards (Commission, 2005), provide a framework for integrating LiFE's principles. These standards aim for a significant reduction in energy use in residential and commercial buildings, aligning with LiFE's goals of promoting energy efficiency and sustainable living practices. By encouraging behaviours that support energy conservation, such as the adoption of energy-efficient appliances and systems, the initiative can help deepen the impact of these policies, contributing to broader goals of reducing energy consumption and mitigating climate change.

Policies aimed at integrating sustainability into educational curricula, similar to UNESCO's Education for Sustainable Development program (Fien, 2006), can be enhanced by LiFE's focus on cultivating sustainable behaviours from an early age. This can lead to a generational shift in attitudes towards consumption and environmental stewardship, reinforcing the long-term goals of existing urban sustainability policies.

5. On the need for indicator-based approaches for assessing urban sustainability

Evaluating urban sustainability via quantifiable indicators is crucial for measuring progress and making informed decisions (Hiremath et al., 2013). Because urban areas are complex, measuring and reporting sustainability is critical to monitoring progress. In the context of India's

LiFE initiative, the integration of sustainable lifestyles and guidelines for assessing impacts on urban consumption practices is also important (Hiremath et al., 2013). Addressing specific urban challenges and enhancing urban health to advance environmental, social, and economic development objectives necessitates an initial analysis of local difficulties. Subsequently, formulating strategic interventions informed by pertinent indicators and emphasizing the integration of these indicators with local determinants is critical throughout the implementation and surveillance of LiFE (Hiremath et al., 2013). In fact, incorporating sustainable lifestyles into the urban agenda necessitates a holistic understanding of the interconnections between human behaviour, urban ecosystems, and global environmental challenges (Karvonen et al., 2021). If properly structured and made present at both policy and legislative level, the LiFE initiative, can be made to permeate through all levels of urban life, offering a pathway to urban resilience and vibrancy. It is a call to action for urban planners, policymakers, and citizens alike to rethink the essence of urban living, embracing sustainable lifestyles as the cornerstone of urban development, merging both the physical with the human needs.

6. Role of urban policy initiatives in advancing urban sustainability

Integrating the LiFE initiative with India's ambitious Smart Cities Mission could significantly amplify the impact of both programs, as India's Smart Cities Mission, aiming to develop 100 smart cities across the country, focuses on leveraging technology to enhance urban livability, sustainability, and governance (Praharaj & Han, 2019). Extending the integration of LiFE's principles beyond India, to smart cities internationally, has the potential to globally enhance urban sustainability. By embedding LiFE's principles within this framework, smart cities can incorporate sustainable lifestyle changes into their core operational strategies, ensuring that technological advancements are harmoniously aligned with environmental and social sustainability. Such international pilot implementations could serve as global models, showcasing how digital innovations and infrastructural developments can be seamlessly combined with behavioural change initiatives to foster urban environments that are not only technologically advanced but also environmentally conscious and socially inclusive. This complementary approach underscores the potential of smart cities as platforms for promoting sustainable living, aligning with both the principles of 'People-Centered Smart Cities' initiative by UN HABITAT (Calzada et al., 2023) and Nature-based solutions, as advocated by the United Nations Environment Programme (UNEP) (UNEP, 2022).

On the global front, the UNEA's endorsement of the LiFE initiative could catalyse the creation of concrete urban policies aimed at fostering sustainable habits. This might include tax incentives for utilizing green energy, zoning laws designed to favour mixed-use developments to cut down on commuting times, and the broadening of pedestrian zones and cycling lanes to encourage non-motorized transportation. Moreover, these policies could mandate the integration of green spaces into all new urban developments, not only to boost biodiversity but also to offer community spaces that foster a direct connection with nature in urban environments. By translating the LiFE initiative into actionable policies and programs, cities can create a framework that not only supports but actively promotes a shift towards more sustainable living practices among their populations. If this new policy gains ground, it can be expected that the next wave of global developmental agendas includes a more cohesive vision for urban sustainability where it is not only viewed as a pathway to mitigating the environmental challenges, but also a blueprint for creating cities that offer a harmonious and sustainable coexistence between humans and nature.

7. Conclusions

The LiFE initiative, by championing the integration of sustainable lifestyles and behavioural change into the fabric of urban development and policymaking, presents a transformative approach towards achieving urban sustainability. Through its emphasis on individual and community actions, LiFE not only complements existing sustainability frameworks like SDG 11 and the New Urban Agenda but also significantly expands their scope and impact. It is essential to distinguish between the infrastructural support and the individual behavioural changes advocated by LiFE. While infrastructure sets the stage, the initiative's success critically depends on individuals choosing to engage in sustainable practices. This emphasis on behaviour marks a significant shift from traditional urban sustainability strategies. By foregrounding the role of human behaviour in the sustainability equation, the initiative offers a comprehensive strategy that bridges the gap between high-level policy intentions and ground-level outcomes.

This paper has explored the multifaceted ways in which the LiFE initiative can enhance global policies, from circular economy models in the European Union to sustainable urban planning practices in cities like Amsterdam and Copenhagen, and even educational policies aligned with UNESCO's Education for Sustainable Development program. Each of these areas benefits from the infusion of LiFE's principles, showcasing the initiative's potential to render existing policies more effective and meaningful. Furthermore, the integration of LiFE with India's Smart Cities Mission underscores the initiative's adaptability and relevance to contemporary urban development strategies, emphasizing the synergy between technological advancements and sustainable living practices.

Evaluating urban sustainability through the lens of the LiFE initiative necessitates a nuanced understanding of the interconnections between human behaviour, urban ecosystems, and global environmental challenges. This approach underscores the importance of quantifiable indicators for measuring progress and tailoring interventions that reflect the unique contexts of different urban areas. Through the strategic use of both digital and interpersonal engagement tools, the LiFE initiative not only promotes sustainable urban living but ensures that these practices are grounded in policy and capable of wide-reaching impact. The initiative's alignment with the UNEA's global environmental goals further highlights its potential as a model for fostering sustainable habits across urban landscapes worldwide.

CRediT authorship contribution statement

Zaheer Allam: Writing – original draft. **Ashish Sharma:** Writing – original draft. **Ali Cheshmehzangi:** Writing – original draft.

Declaration of competing interest

We declare no conflicts of interest.

Data availability

No data was used for the research described in the article.

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