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Research Paper

Sustainable development of low-income low-rise housing in Sri Lanka: Issues and challenges

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Abstract

This study examines sustainability challenges in low-income, low-rise housing projects in Colombo, Sri Lanka, amid a severe housing crisis. Using a qualitative explorative approach, it investigates projects over 20 years old, including Gunasinghapura in Premchandra Mawatha, Mihindu Mawatha, and Torrington. Data were gathered through observations and semi-structured interviews, focusing on technical, management, legal, and social issues, and analyzed using 21 indicators of economic, social, and environmental sustainability. Participants included two housing experts from Urban Development Auhtority (UDA), one professional from National Housing Development Authority, Narahenpita Police Crime Branch official, and three household per project, selected via judgmental sampling. Descriptive and thematic methods were used for data analysis. The findings reveal that technical issues like physical defects, accessibility barriers, and inadequate infrastructure pose safety risks and degrade residents' quality of life, increasing repair costs, reducing property values, and causing environmental problems. Management challenges, such as lack of awareness, ineffective governance, and poor maintenance strategies, lead to resident dissatisfaction and hinder sustainable development. Legal complexities and unauthorized constructions exacerbate these issues, correlating with economic impacts from legal disputes and compliance costs, and highlighting environmental challenges in land use and urban planning. Concerns about privacy and mental health have been heightened by social issues like crime, substance misuse, vandalism, and the inappropriate use of communal areas. These problems lead to increased healthcare expenses, decreased productivity, and a negative public image, which ultimately threaten the sustainability of low-income housing initiatives. Thus, Study emphasizes the need to invest in infrastructure upgrades, community education, improved accessibility, enhanced security, and robust legal frameworks. Future studies should focus on developing evaluation frameworks and tackling similar challenges in housing projects for higher-income groups.

Keywords: Low-income, low-rise housing, urban development, sustainability, well-being

1. Introduction

The scarcity of housing presents a significant challenge in cities worldwide, with the World Bank projecting that the housing crisis will impact 1.6 billion people by 2025 (Caliyurt, 2022). This issue is particularly acute in major urban centers where demand surpasses the supply. Despite efforts outlined in the Eleventh Sustainable Development Goal to create inclusive, safe, resilient, and sustainable cities, the reality remains grim. According to Mathur (2014), developing regions house 862.6 million slum-dwellers, with Asia hosting 60%, Africa 26.2%, and the Americas 13.1%, including Latin America and the Caribbean. The United Nations forecasts that 1.6 billion currently lack access to adequate housing and this number is expected to grow by 3 billion by 2030 (Kawamura & Brady, 2023). This projection suggests that two out of every six people will be reside in slums, potentially transforming Earth into a planet dominated by informal settlements (Bhalla, 2023; UN-HABITAT, 2007).

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Sri Lanka, like many developing nations, faces a severe housing crisis amid population growth. Sri Lanka is currently at a critical turning point characterized by a growing crisis in housing affordability that necessitates immediate and thorough attention. The challenge at hand is intricate, highlighted by the stark disparities between the rising demand for housing and the sluggish rate at which housing supply is increasing. Data obtained from the 2012 Census of Population and Housing Survey reveals a stark reality: housing demand has surged by 11.9%, totalling 5,875,009 units between 2012 and 2022. In comparison, housing supply has fallen behind, with a mere 9.5% increase to 5,685,151 units (Advocata Institute, 2024; Department of Census and Statistics, 2014). Due to this demand–supply imbalance has triggered various economic repercussions, such as escalating housing prices and an affordability crisis, which are expected to further exacerbate the gap in the future (Jenner & Tulip, 2020; Myers et al., 2025).

Approximately one half of the country's housing stock consists of low-income settlements, with around 58% classified as slums and shanties. In Colombo, this issue is exacerbated by high level of poverty, unemployment, and increased land cost results with an estimated 68,812 households living in 1,499 underserved areas, including slums and shanties, accounting for half of the city's population (Niriella, 2021). In 2001, 77,612 families were living in 1,614 low-income settlements in the city. To tackle this challenge, authorities have proposed low-rise housing as part of the city beautification project by the government (Samaratunga and O'Hare, 2014; De Silva, 2015).

Studies by Niriella (2012), Samaratunga and O' Hare (2013), and De Silva (2015), highlight issues surrounding condominium living, raising questions about its suitability for low-income communities in Colombo, Sri Lanka. There are not any in-depth recent studies done to identify these issues and how those challenge the sustainability aspect of low-income low-rise housing schemes in Sri Lanka. Thus, purpose of this study is to investigate the issues and challenges associated with sustainability of low-income low-rise housing in Colombo, Sri Lanka, by selecting three major low-income housing schemes.

2. Literature Review

2.1. Low-income Low-Rise Housing in Colombo: A Historical Overview

Low-income housing projects are vital in developing countries, addressing the housing needs of a significant segment of the population (Marzouk and Azab, 2017). In Sri Lanka, the evolution of housing policies from the 1950s to the 1980s highlights substantial shifts in government strategies, ranging from subsidized housing for public servants to socialist policies and, eventually, liberalization. In the 1950s and 1960s, the government prioritized providing urban flats through various schemes. By the 1970s, socialist policies led to the nationalization of urban management and housing efforts aimed at boosting owner-occupied housing through government initiatives. Despite these efforts, by the late 1970s, Colombo's inner city had a significant number of slums.

The economic reforms and liberalization of 1977 resulted in the formation of the National Housing Development Authority (NHDA) and the launch of the Hundred Thousand Houses Programme. This program aimed to improve housing through community-centered, participatory approaches, significantly enhancing housing conditions, especially in urban slums. The subsequent Million Houses Programme (MHP) built on these efforts and gained international recognition for improving access to basic services and empowering beneficiaries. These housing policies collectively mark a shift from government-led initiatives to more community-centered strategies to address housing needs and improve living conditions for underserved populations (Samaratunga, 2013).

During the 1990s, there was an increased focus on urban housing issues, particularly in Colombo, driven by concerns over land values and the city's beautification efforts (Niriella, 2011; Niriella, 2017). Various government administrations launched multiple housing initiatives targeting low-income individuals and those living in slums and shanties. The "Sustainable Townships Program" (STP) introduced a novel initiative to create low-rise, mixed-income compact townships in strategic growth areas outlined by the Colombo Metropolitan Regional Structure Plan (1998). The STP offered slum dwellers the option to trade the value of their vacated land for ownership stakes in new condominiums, aiming to reduce reliance on government support by empowering them as property owners. Financing for condominium construction was intended to come from the sale and redevelopment of vacated government land to private developers. The STP also aimed to establish secondary markets to facilitate the transition of these properties into the private real estate market and encourage residents' participation in the free marketplace. The overarching goal of the STP was to provide housing for underprivileged individuals while promoting urban development through land allocation.

The Sahaspura low-income housing project was the pilot initiative under the STP, accommodating 671 households. It aimed to improve housing and amenities for underserved residents, fostering a sense of progress and self-sufficiency. The relocation of 66,000 low-income individuals into housing in 2010 marked a significant government policy move to enhance living conditions and promote urban development. Furthermore, the Janasevana National Housing Programme, running from 2010 to 2015, aimed to construct one million houses to address housing shortages and provide affordable options. The ongoing Colombo Urban Regeneration Project also seeks to revitalize urban areas by constructing 30,000 low-cost housing units in the next three years, followed by an additional 40,000 units, aiming to improve living standards and accommodate population growth. These initiatives collectively reflect the government's dedication to addressing housing needs and fostering sustainable urban development (Karunanayake, 2020).

Despite substantial investments from the National Housing Development Authority, the Colombo Municipal Council, and various local and international funding agencies, past housing initiatives in Sri Lanka have not fully met their urban and social development goals, as highlighted by UN-Habitat in 2003. While programs like the Hundred Thousand Houses Programme and the Million Houses Program were lauded as global best practices by UN

Habitat, approximately 51% of Colombo's population still resides in underserved settlements (Samaratunga and O'Hare, 2014). Persistent poverty, land fragmentation, and the deterioration of common amenities in Colombo's slums and shanties have led to significant economic and environmental challenges, threatening the city's social fabric and long-term sustainability (Samaratunga and O'Hare, 2014).

The National Housing Policy of the Ministry of Housing has a goal of "Shelter for All by the Year 2025" (Ministry of Housing and Construction, 2017). Agencies like the National Housing Development Authority, Urban Development Authority, and Urban Settlements Development Authority are central in providing housing for low-income groups. Financial programs like (Janasaviya and Aswasuma (Previously known as Samurdhi) help low-income families access housing finance and improve their creditworthiness (Centre for Public Impact, 2017). Urban regeneration initiatives, such as Colombo's Urban Regeneration Programme, aim to renew urban areas, improve housing for low-income families, prevent informal settlements, and develop an inclusive housing market. These efforts include easing land supply and housing finance constraints to make formal housing accessible. The policy also focuses on sustainable housing that considers environmental factors, cultural compatibility, and the needs of vulnerable groups, with the aim of improving housing quality, ensuring tenure security, and providing affordable access to public services. Through these measures, Sri Lanka seeks to enhance housing accessibility, promote sustainable urban development, and raise living standards nationwide.

2.2. Sustainable Housing

The World Commission on Environment and Development defines sustainable development as meeting current needs while preserving the ability of future generations to meet theirs (United Nations, 1987). This involves balancing environmental, social, and economic factors to ensure long-term well-being (Smets & Van Lindert, 2016). The housing sector is decisive for sustainable development, aiming to improve quality of life through stability, safety, and access to essential services. Sustainable housing provides high-quality, affordable residences that meet both immediate and long-term needs by integrating environmental, social, and economic considerations throughout its lifecycle (Kawamura & Brady, 2023; Moore & Doyon, 2023). Key aspects include:

1. **Supporting the Underprivileged:** Prioritizing marginalized communities to promote social equity and inclusion through adequate housing and related services (Singh et al., 2024).
2. **Cost-Effective Development:** Ensuring long-term productivity without sacrificing environmental health for short-term gains, promoting economic growth and stability (Chhabra & Grover, 2024).
3. **Food Security and Disease Control:** Enhancing access to nutritious food, clean water, and sanitation facilities to create healthier living environments and reduce disease risks (Decorme et al., 2020).

Holistic assessment of housing projects involves indicators across environmental, economic, social, and institutional dimensions, including energy and water usage, green spaces, business activity, housing affordability, community dynamics, crime rates, safety measures, and effective governance (Dezhi et al., 2016). Similarly, Kowaltowski et al. (2006) found that sustainable practices, such as energy and water conservation, enhance residents' quality of life by lowering utility costs and improving environmental conditions.

According to a study conducted by Smets & Van Lindert (2016), there exists a relationship between the environmental, social, and economic dimensions of sustainable housing for urban poor. In terms of the environment, sustainable housing includes the use of energy-efficient designs, environmentally friendly building materials, and proper waste management practices to reduce harm to natural resources and utility costs. In terms of social factors, sustainable housing involves community planning and ensuring that residents have access to essential services such as healthcare and education to improve their quality of life. In terms of economics, sustainable housing focuses on fiscal responsibility and job accessibility to ensure that residents maintain financial security.

Low-income housing, offering affordable units for lower-income households, operates in a segmented market. A study on the indirect impact of new high-quality housing construction revealed a migration chain mechanism, where residents moving to new units create vacancies in cheaper units, potentially reducing demand and prices, thus increasing affordability for low-income households (Mast, 2019). In urbanizing cities like Colombo, low-income housing initiatives address disparities, but face challenges related to financial, social, environmental, and policy factors.

Low-income condominiums face a range of challenges, including technical issues like physical defects and poor spatial arrangements, as well as management issues such as low awareness and fee collection difficulties (Samaratunga & O' Hare, 2013). Legal and social complexities, including non-compliance with housing laws, along with financial constraints impacting construction quality, add to the complexity (De Silva et al., 2015). To sustain low-income housing, efforts must address financial challenges, promote community development, and overcome management complexities in low-rise structures.

Fernando & Coorey (2023) reported resident dissatisfaction with dwelling units and complexes, highlighting the need for additional provisions like space, balconies, communal areas, medical facilities, and safety measures to improve livability. Average (2019) identified inadequate infrastructure, health hazards, inefficient energy usage, poor waste management, climate vulnerability, limited community engagement, and the need for economically viable solutions as significant issues. Addressing these challenges involves providing essential utilities, using eco-friendly materials, integrating climate-resilient designs, promoting community involvement, and ensuring cost-effectiveness to enhance the sustainability of low-income housing initiatives.

Examining failed projects like Pruitt-Igoe reveals interconnected issues in social dynamics, architectural planning, finances, and management. Social problems like racial segregation hindered community cohesion, while architectural shortcomings such as high density and lack of open spaces led to dissatisfaction (Lawson, 2007). Financial challenges stemmed from declining occupancy rates and rent collection difficulties, impacting maintenance. To ensure sustainability, future projects must address social, architectural, financial, and management aspects (Samaratunga & O' Hare, 2013). Sustainability indicators encompass various aspects, providing a comprehensive overview of sustainability in low-income housing (Le et al., 2016; Purvis et al., 2019).

As per a study conducted by Hettiarachchi and Dhanji (2024), the country's adverse economic situation due to a large debt trap has resulted in the contraction of the construction industry. Nearly 75% of construction sites have been shut down due to factors such as the escalation of raw material prices, electricity crisis, etc. Additionally, job losses amounted to nearly 4.6% in 2022. Furthermore, the study revealed that the economic, financial, managerial, institutional, and resource-related challenges have collectively impacted the sustainable construction of affordable housing in Sri Lanka.

2.3. Social Housing Quality Indicators

A key indicator of sustainability is the ecological footprint of residential developments. Eco-friendly design must be a priority in sustainable housing for low-income populations to address challenges like inefficient resource use and environmental harm. As Rahman notes, incorporating green practices into housing design can substantially improve living standards for low-income residents through sustainable architecture (Rahman, 2010). Additionally, Mushanga points out that sustainable construction models can generate environmental, social, and economic sustainability benefits, thus enhancing the overall quality of life for households with low and middle incomes (Mushanga, 2024). This comprehensive approach is crucial, as it takes into account not only the building itself but also its environmental context and community interactions.

A key indicator of sustainability in housing projects is their capacity to promote social cohesion and enhance residents' quality of life. Okitasari et al., (2022), highlight that the acceptance of sustainable social housing by communities is often overlooked, despite its significance in bettering the living conditions of disadvantaged populations (Okitasari et al., 2022). Furthermore, research has shown that community-driven housing initiatives offer intangible advantages, such as boosted social capital and improved livelihoods, which are essential for the long-term viability of low-income housing developments (Smith & Brown, 2019). To effectively meet community needs, it is crucial to incorporate social aspects into housing policies.

Economic sustainability is another vital indicator, emphasizing the affordability and financial feasibility of housing solutions. Okereke & Okanya (2024), contends that sustainable housing should be affordable, safe, and conducive to healthy living, necessitating the use of cost-effective and innovative technologies. Adabre and Chan (2019), further underscore the

economic dimension by noting that the life cycle costs of housing can significantly impact its affordability and sustainability for low-income earners (Adabre & Chan, 2019). Additionally, the accessibility of housing for low-income households is directly influenced by the housing-price-to-income ratio, which affects overall affordability (Cong et al., 2021).

3. Methodology

The study adopts an exploratory qualitative approach to examine three low-income, low-rise housing projects in Colombo, all constructed over 20 years ago. These projects were selected from the National Housing Development Authority's list, chosen for their ability to represent diverse geographical and socio-economic contexts, which is essential for understanding sustainability failures in low-income housing. The research draws inspiration from the case studies of "Pruit-Igoe" and "Cabrini Green," focusing on similar issues observed in Colombo's housing projects. The age of the selected projects, being over 20 years old, makes them particularly suitable for this study.

Table 1: Selected housing projects that are over 20 years old

Name of the housing project	Building Age	Occupants Background
Gunasinghapura Housing Scheme	38	Low income - less educational background
Mihindu Mawatha Housing Complex	35	Low income - less educational background
Torrington Housing Scheme	68	Low to Lower Middle income – Medium educational background

Source: National Housing Development Authority (2023)

The Gunasinghapura and Mihindu Mawatha housing projects are both located in Pettah, Colombo's central business district. This area is characterized by a high-density population and significant commercial activity, with residents predominantly from low-income backgrounds and limited educational levels. In contrast, the Torrington housing project is in a quieter residential part of Colombo, surrounded by government and private institutions. This

project was designed for middle-income government employees, resulting in a more educated and economically better-off demographic compared to the other two projects.

Figure 1. Study Area. Source: Google Map, 2024

Interview and observation guides were developed based on four primary sustainability challenges identified from existing literature: technical, management, legal, and social aspects and indicators were derived from previous literature (Samaratunga and O' Hare, 2013; Dezhi et al., 2016; Niriella, 2021; Islam, 1996; Subasinghe, 2015; Average, 2019; Kowaltowski et al., 2006). The sample drawn using judgmental sampling technique includes two housing and urban planning experts from the Urban Development Authority, one planning and management professional from the NHDA, one Crime Branch representative from the Narahenpita Police Station, and three households (12 residents) from each selected low-rise housing project. The limited number of residents can be attributed to their hesitation in engaging in interviews, which stems from their less advanced educational backgrounds. To improve the validity of the data collected, interviewees were chosen based on their expertise and the extent of their involvement with support functions. The interview recordings were transcribed to create a readable version of the data. Thematic analysis was conducted to identify the main sustainability issues in these projects, and the findings were further validated through field observations. Photographs taken with the interviewee's permission were included in the study.

4. Results and Discussion

The study results highlighted various issues in Colombo's low-income low-rise housing complexes and those are discussed below under technical, management, legal, and social aspects (table 2).

Table 2. Applicability of the Sustainability Indicators in Selected Low-Income Housing

Key Challenge Areas	Indicators	Key Issues	Supported Literature in Similar Context
Technical	1. Physical defects	Structural issues, leakage, poor materials	Olanrewaju et al., 2022; Sulieman et al., 2014
	2. Deficiencies in accessibility	Lack of ramps/ elevators for elderly and disabled community	Niriella, 2021; Yakob et al., 2022
	3. Poor parking facilities	Inadequate and congested parking spaces	Dezhi et al., 2016; Sharma et al., 2017
	4. Poor spatial arrangements	Cramped units, inefficient layout	Hamad & Husein, 2023
	5. Safety and health issues	Inadequate fire resistance measures, ventilations and pests' infestations	Chohan et al., 2015
	6. Issues in electricity and water supply system	Service interruptions due to infrastructure and financial issues	Adams & Vásquez, 2022
	7. Issues in sewerage and wastewater system	Poor sanitation and health hazards	(Eko Prasetyo et al., 2020)
	8. Issues in solid waste disposal system	Poor recycling and disposal practices	Purvis et al., 2019
	9. Insufficient Security issues	Week security systems, increase crime risks	Shin, 2022; Vergara d´Alençon, 2018
	10. Lack of awareness condominium lifestyle	Residents unaware of rights and duties	Vergara d´Alençon, 2018)

Management	11. Lack of management strategies	ineffective coordination management activities	Marzouk & Azab, 2017
	12. Lack of actions against illegal works	Unregulated alterations by residents	Voskresenskaya & Zhilskiy, 2023
	13. Bad image of occupants about CMA	Lack of trust and dissatisfaction of CMA	De Silva et al., 2015
Legal	14. Unawareness about the Act	Poor awareness of housing laws and their implications	Samaratunga, 2012
	15. Lack of coverage for maintenance management in the Act	Legal provisions don't specify maintenance clearly	Subasinghe, 2015
	16. Lack of implementations of the Act	Modifications without approvals	De Silva et al., 2015
	17. Lack of procedures to eliminate unauthorized alterations	Poor oversight on unauthorized modifications	De Silva et al., 2015; Islam, 1996
Social	18. Lack of privacy and related issues	Lack of unit level privacy and safety	De Silva et al., 2015
	19. Unethical behaviours in common areas	Inappropriate social conduct	De Silva et al., 2015; Niriella, 2012
	20. Issues in sharing common facilities	Issues with shared space use	Purvis et al., 2019
	21. Social and mental stresses	Stress due to living conditions and conflict	De Silva et al., 2015; N. C. Niriella, 2012

Source: Authors, 2023

Low-income low-rise housing projects face numerous technical challenges affecting structural integrity, functionality, and safety. These issues include physical defects, inadequate infrastructure, and safety hazards, impacting affordability and sustainability for residents. Common problems are accessibility shortcomings, insufficient parking, poor building layouts, and unreliable utility services like water and electricity. Additionally, ineffective wastewater and solid waste management, along with inadequate security measures, are prevalent. These

indicators highlight the technical difficulties in such projects (De Silva et al., 2015). Structural issues such as wall cracks and water leaks further exacerbate safety and health concerns.

Figure 2. Water Leakage in a Communal Space (Left side) and Accumulation of Garbage in Common Areas (Right side) in Gunasinghapura, (Source: Authors, 2023)

4.1. Technical Issues

Poor building arrangements, along with unauthorized constructions, disrupt housing layouts and infrastructure systems. Safety and health issues stem from inadequate emergency exits, poor management of solid waste and wastewater, and insufficient security measures. Inconsistent water and electricity supplies, combined with ineffective wastewater management, further worsen living conditions. Figure 2 show evidence of water leakage in a communal space and accumulation of garbage in communal areas at Gunasinghapura housing scheme.

In addition, accessibility is impeded by stairs and the absence of facilities for disabled individuals, leading to inconvenience and safety hazards. The lack of adequate parking exacerbates incidents like vehicle theft and damage, as residents are forced to park on public roads. Figure 3 shows evidence of inadequate parking facilities available at Mihindu Mawatha and Gunasinghapura housing schemes.

Garbage accumulation in communal areas highlights flaws in the waste disposal system. Inadequate security measures increase safety risks, particularly for children, despite residents' attempts to improve security. Drug-related issues also persist, threatening community safety. Residents' feedback includes: *"Garbage collectors come once a week, but their schedule is often unclear, so residents must dispose of garbage on the road themselves"* (Resident of Torrington housing project) *and "Garbage collectors do not come here. We have to collect our garbage and take it to the main road for disposal, and sometimes we even have to pay an additional amount for it"* (A resident of Gunasinghapura housing project).

4.2. Management issues

4.2.1. Lack of awareness on adapting to condominium Lifestyle

Transitioning from single housing units to multi-storied living poses challenges for residents, particularly newcomers to this lifestyle. The government has the authority to offer pre-learning programs to assist in this adjustment, benefiting both management and residents. However, inadequate management and maintenance are common grievances among residents, persisting even for those living on a rental basis.

Some related responses from residents are *"We conducted awareness programs for them before placing them in housing projects. We educate them and raise awareness about what they can do and what should be avoided within the housing units using multimedia projects. We provide them with an idea that this is their place, so they should refrain from unnecessary actions. Additionally, we have posted notices to further inform them."* (UDA Representative), However, practically those are not applied properly as a resident of Gunasinghapura housing project highlighted *"Drainage is a major issue, and people throw garbage out of windows from upper floors, creating an overflow of water during rainy days. This water flows into shops because they are situated slightly below the road"*.

Residents still engage in old practices, such as improper waste disposal and toilet usage, indicating a need for more effective education and awareness efforts. Some commonly mentioned responses from residents are *"The drainage system is now in poor condition due to poor maintenance and irresponsible behavior of the residents"* (A resident of Gunasinghapura housing project). Most of the Residents mentioned about the parking issue *"There is no parking places vehicles will be parked in the road. But some people will break the parts like side mirror and battery even the seat and sell it" (*A resident of Mihindu Mawatha housing project)

Figure 3. Inadequate parking in Mihindu Mawatha (Left side) and Gunasingapura (Right side) housing schemes (Source: Authors, 2023)

4.2.3. Lack of Management Strategies

The physical conditions and practices within condominiums reflect the effectiveness of management strategies. Residents express dissatisfaction with management, citing issues like

poor waste disposal, drainage systems, and security measures. Despite the establishment of management committees, deficiencies persist, impacting the overall image of management in the eyes of residents. Some common responses from residents are "*No, I think there is an uncle*

Figure 4. Broken Drainage Door (Left side) in Mihidu Mawatha and Garbage on public Access Road (Right hand side) Gunasinghapura (Source: Authors, 2023)

in the corner house who is disabled. His wife faces a lot of trouble bringing him into the house through the steps. There is no special accommodation. We are doing business in this area, and I've bought a house in Kotahena because we cannot stay here" (A resident of Gunasinghapura housing project), *"There are some damages in the walls, especially from the top floors, where people throw pads and napkins into the drain lines, causing blockages, leaks, and wall cracks. The drainage system has been broken for five years and remains unrepaired due to a lack of maintenance" (*A resident of Gunasinghapura housing project). Figure 04 shows evidence of broken drainage door and garbage dump on public road available at Mihindu Mawatha and Gunasinghapura housing schemes.

Moreover, Residents hold a negative perception of management, believing that insufficient attention is given to maintenance and emergencies. Management committees exist, but the lack of regular maintenance contributes to the deteriorating conditions of housing projects. Residents often take matters into their own hands, reflecting a lack of confidence in management's ability to address their needs effectively.

4.3. Legal issues

Legal matters pertaining to low-income housing complexes involve the residents' understanding of Act No. 19 of 1979, which governs their rights and obligations. Majority of occupants, primarily engaged in low-income jobs, lack awareness of this act and its implications. Educational initiatives are needed to inform them about their rights, responsibilities, and the significance of the act, aiming to foster a cooperative community and improve living conditions. Despite efforts by the National Housing Development Authority (NHDA) to adhere to regulations, residents remain unaware of the act's details and their legal standing.

Maintenance issues within these complexes stem from a lack of explicit guidelines and coverage in the act regarding maintenance protocols and budgets. Despite the NHDA's efforts to appoint committees and collect maintenance fees, deficiencies persist, leading residents to undertake maintenance tasks themselves. Unauthorized constructions further exacerbate these problems, with residents undertaking alterations without proper permits or adherence to safety standards. The absence of procedures to address such alterations poses structural and safety concerns within the complexes. Some commonly mentioned responses from residents are **"***There are no emergency exits here, and it's not conducive to people with disabilities" (*A resident of Torrington housing project), *'It is difficult to bring a fire truck into these narrow spaces, and people can't easily run out during emergencies"* (A resident of Gunasinghapura housing project),*"No there are no emergency exits here. It is hard to exit from here in the emergency situations"* (A resident of Mihindu Mawatha housing project)

In addressing these challenges, there is a need for comprehensive legal education for residents, clearer guidelines within the act regarding maintenance, and stricter enforcement mechanisms to curb unauthorized constructions and alterations. This would promote better living standards and ensure the sustainability of low-income housing projects.

4.4. Social Issues

Social issues often contribute to the negative perception surrounding low-income housing complexes, with unauthorized activities and behaviors creating discomfort among residents and outsiders alike. A lack of privacy within communal areas leads to security concerns and conflicts, while unethical behaviors such as smoking in stairwells and drug-related gatherings tarnish the environment. The absence of essential resources and overcrowding exacerbate these challenges, impacting residents' overall well-being. Additionally, the strain of residing in these complexes takes a toll on mental health, with residents facing constant vigilance and challenges in maintaining peace within their communities. Addressing these social issues requires comprehensive strategies that prioritize residents' safety, well-being, and quality of life. Some related responses from occupiers in this respect are, *"Drug use is an issue here, making it challenging for children to grow up in this environment. Children can easily be exposed to these behaviors. However, it's hard to control the drug users in the area"* (A resident of Gunasinghapura housing project). *"These issues are a major concern. We are constantly vigilant, especially for the safety of our children. It's challenging, particularly given that my husband is disabled. We teach our children to stay away from such activities"* (A resident of Mihindu Mawatha housing project).

Low-income housing communities often face a negative reputation, with people viewing them unfavorably due to the perceived behavior of some residents. Unethical actions such as smoking, drinking alcohol, using drugs, and other inappropriate conduct contribute to this negative image. While shared spaces like elevators, stairwells, and hallways should be used responsibly, misconduct in these areas can result in damage and create an unwelcoming atmosphere for both inhabitants and visitors. As the responses from police officer regarding this is, "*numerous drug-related incidents have been documented, including possession and distribution of illegal substances, in low-income housing projects. We have also encountered cases of theft, property damage, and minor physical altercations within these residential complexes"*. Further "*certain areas*

*within low-income housing developments that experience higher crime rates. These crime hotspots typically correspond with overcrowded spaces, inadequately illuminated areas, or locations where residents face socioeconomic challenges, rendering them more susceptible to criminal activities" (*A police officer from Narahenpita, Colombo*).*

Moreover, the sharing of communal spaces in low-income housing developments presents a complex set of issues. A significant concern is the occurrence of drug-related gatherings in these areas, which not only causes overcrowding but also fosters criminal activities. The lack of necessary amenities in these shared facilities further exacerbates the situation, negatively impacting residents' quality of life. Notably, these problems affect both those involved in illicit activities and law-abiding tenants, creating an atmosphere of unease and danger. These findings are derived from a combination of direct observations and interviews, highlighting the multifaceted difficulties associated with shared facilities in low-income housing complexes. Some of relevant responses are *"Our jurisdiction shows disparities in crime rates between low-income housing areas and other residential zones. Low-income housing projects typically experience higher crime rates, particularly drug-related offenses, in comparison to more affluent neighborhoods" (*A police officer of Narahenpita*).* Further, absence of resources and proper management of shared space reflect the disregard of social values of safety, respect and cooperation. This is evident by the response "*The limited space makes it challenging for children to play, and parents often restrict outdoor activities due to concerns about others' behavior. Even the youth here use inappropriate language"* (A resident of Gunasinghapura housing project).

In addition, there is a substantial absence in social capital due to the prevalence of criminal and drug addicts as well as fear among law abiding residents erodes social capital. This relates to the response *"Drug use is prevalent here, making it difficult for children to grow up in this environment. They can easily be exposed to these behaviors. However, controlling drug users in the area is challenging. Police presence alone is insufficient to change people's lifestyles. It requires a shift in attitude and activities from the residents themselves; otherwise, control is difficult"* (A resident of Gunasinghapura housing project).

5. Conclusion

This study highlights key obstacles to sustainability in Sri Lanka's low-income, low-rise housing, which are rooted in interconnected technical, managerial, legal, and social issues. Technical shortcomings, such as insufficient parking, structural weaknesses, and inadequate waste management systems, are worsened by irregular maintenance and unclear accountability. Managerial challenges arise from a lack of governance awareness, financial constraints, and poor enforcement of regulations. Legal deficiencies, including non-compliance with housing laws and unauthorized alterations, lead to disputes and environmental stress. Socially, issues like overcrowding, antisocial behavior, and diminished privacy weaken community bonds.

Authorities, such as the UDA and NHDA, have implemented initiatives like waste management systems and disability accommodations, but progress is hindered by residents' non-compliance and ingrained behavioral patterns. To tackle these complex challenges, the study recommends integrated strategies: upgrading infrastructure, clarifying legal frameworks, launching resident education programs on sustainable practices, and promoting community-driven accountability to foster community well-being. These efforts necessitate collaboration among multiple stakeholders to align policy, practice, and resident involvement. Future research should focus on developing a context-specific sustainability assessment framework and conducting comparative studies across housing types to guide equitable, scalable solutions.

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