



Urban Midrise Residential Living in Pakistan: A Critical Review of Livability, Cultural Adaptation, and Environmental Performance

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ABSTRACT

Rapid urbanization, population growth, and diminishing land availability have accelerated the adoption of mid-rise residential buildings (4–12 storeys) as a primary response to Pakistan's urban housing deficit. While these developments offer an efficient strategy for accommodating growing populations in cities such as Karachi, Lahore, and Islamabad, their implications for environmental sustainability, social well-being, and residential quality of life remain insufficiently understood. Drawing on a comprehensive review of secondary sources, including peer-reviewed literature, government reports, policy documents, and credible institutional publications, this study critically examines the multidimensional impacts of mid-rise housing in Pakistan. The findings reveal persistent design and governance challenges, including inadequate natural ventilation and daylighting, weak waste management systems, inconsistent enforcement of building regulations, and insufficient urban infrastructure, all of which compromise environmental performance and occupant satisfaction. The review further demonstrates that the shift from traditional courtyard and extended-family housing to apartment living is reshaping social structures, reducing privacy, weakening intergenerational interaction, and diminishing informal support networks. Environmentally, although mid-rise development contributes to limiting urban sprawl, it has also intensified urban heat island effects, reduced accessible green spaces below recommended standards, and increased reliance on carbon-intensive construction materials and energy systems. The study concludes that improving the livability of Pakistan's mid-rise housing requires an integrated framework combining climate-responsive architectural design, stronger regulatory enforcement, sustainable planning practices, and culturally responsive housing policies that address both environmental performance and residents' evolving social needs.

Keywords: *Midrise Buildings, Quality of Life, Urbanization, Pakistan, Joint Family System, Urban Heat Island, Housing Policy, Livability.*

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1.1 Introduction

The growth rate of cities in Pakistan is outpacing nearly all efforts to plan for them. Almost 36% of the country's population already resides in urban areas and the United Nations Population Division estimates that by mid this decade nearly half of Pakistan's population will be living in cities. Karachi, the country's largest city, has grown from approximately 13 million to nearly 19 million residents, while Lahore has experienced a comparable growth, from about 3 million in 1984 to over 14 million by 2024 (NASA Earth Observatory, 2026; Zaidi, 2015). The 2023 census had the country's total population as 241.5 million, of which 93.8 million already resided in cities, representing an increase of almost 3.6 percent per year, which is nearly double the increase in rural population (Javed & Naqvi, 2022).

This level of development has met into an already desperate need for formal house. The national housing deficit is estimated to be around 10 million units with the shortfall in urban areas between 3.5 and 4 million units per year, the majority of which is in lower- and middle-income groups (Iqbal et al., 2023). The housing demand is always higher than supply: The State Bank of Pakistan (SBP) had previously stated that demand for urban housing is around 350,000 units a year and the supply is approximately 150,000, while nearly 50% of urban people currently live in informal settlements, or *katchi abadis*, which remain totally unconnected to the formal housing market (Malik & Nurunnabi, 2024).

Provincial government and even private enterprise have encouraged vertical expansion as the more viable route to go because city areas are becoming smaller and the political challenge of extending cities outwards into the farmland becomes increasingly difficult (Zulfiqar et al., 2025). The recent shift in Pakistan's policy focus on vertical housing is partly due to the fact that the urban sprawl has already encroached on large tracts of fertile farmlands around the cities, like Lahore and Karachi (Sadiq et al., 2010). There is also a certain middle-ground—the midrise building, or those that are four to twelve story's high—buildings that fit somewhere between the low-rise and true high-rise towers, somewhere in

between the density, structural complexity and professional level of facilities management that come with the latter. It is the midrise apartment block, and not the skyscraper, that has become the vertical home for a significant portion of Pakistan's middle class urbanites (Gul et al., 2019).

The idea of vertical housing on paper is simple: more homes in less space, less commute, and on paper a lessened environmental impact per home (Rehman et al., 2024). The question of whether this promise is being fulfilled in reality is much more difficult to answer and the focus of this article. Three aspects of that question are answered here. The first question is whether midrise buildings, as they are actually being built, financed, approved and maintained in Pakistani cities, offer a decent physical standard of living. The second is the impact on family life and cultural practice when families that have long lived in spacious, multi-generational homes on the ground floor are forced to live in few hundred square feet of apartment space. This third one is whether the environmental case for vertical density is actually being slowed as a result of actual energy consumption, building techniques, and urban heat profile. Secondary sources, in the shape of peer reviewed studies, government policy documents, reports from multilateral agencies and think tanks, and investigative journalism, were the sources of the information used in this article, although primary field work was not part of this project, wherever possible the secondary sources were triangulated to create a coherent and reasonably up-to-date picture of midrise living in Pakistan.

1.2 Problem Statement

Land is becoming scarce in the major cities of Pakistan, which are expanding at an even more rapid pace than in most other cities in South Asia, including Islamabad, Lahore and Karachi. As a result, planners and developers have increasingly turned to midrise apartment developments as a solution to the housing crisis. This seems like a sensible solution, more house on less land, on paper. In practice, the rise of buildings is frequently not truly livable. Many are poorly lit, poorly ventilated, thermally uncomfortable, and in need of heavy use of artificial cooling to survive the day. Building codes are not being

enforced, leading to unsafe and non-permit construction & sometimes even casualties & accidents. Concurrently, this change from the traditional multigenerational, ground-level dwelling is subtly influencing the way Pakistani families live together, use space and preserve privacy without much planning or development awareness. It has also resulted in a decline in environmental efficiency which vertical density should provide, and it has occurred at a time when urban heat has been rising, green space is being reduced, and carbon-intensive construction continues. In other words, there is a big disconnect between the way midrise housing is being built and what constitutes a livable home.

1.3 Significance of Research

The importance of this research is because at present midrise housing is no longer a niche housing option in Pakistan; it is becoming the blueprint for the majority of the urban population of Pakistan to live. But the debate about vertical housing in Pakistan continues with the figures: How many homes are getting constructed, how much land is being saved, how fast is the housing shortage closing. Less is paid to the quality life or the cultural and environmental losses or gains through these buildings.

This research provides a joined-up view of the interaction between physical design, family life and environmental performance within a single building type, by synthesizing the existing research, policy documents and on the ground reporting in one place that is not readily accessible for planners, developers and policy makers. That matters practically. When a building regulator is deciding how to make the code more robust, an architect is selecting wall materials for a new apartment block, and a housing policy-maker is developing the next housing policy, they are making decisions that will impact whether millions of families are living in a house that works for them or one that they are just forced to put in.

The study also offers insights on the sometimes-overlooked issues of housing quality, such as women and adolescents' feeling of being trapped in poor-quality housing due to restricted layouts, the gradual disappearance of the joint family support system, and the cumulative impact that urban heat has on households with limited or no

access to adequate cooling. The research will bring these threads together and promote a more comprehensive understanding of what housing success means in Pakistan, one that takes a deeper look at whether people are living well or not.

2.0 Literature Review and Theoretical Framework

2.1 Vertical Housing as a Planning Response to Urban Growth

The case for vertical housing in rapidly urbanizing developing countries is based on the concept of compact city theory, which suggests that the vertical integration of population and infrastructure is significantly more efficient than the horizontal sprawl of cities, in terms of land use, energy consumption and public services delivery (Ali et al., 2026). Closely connected to this is the idea of ecological modernization - that economic and urban development do not have to take their toll on the environment as it was thought they did, if the use of resources is done intelligently, if waste is minimized and re-used and if public transport takes the place of private cars (Khan et al., 2026). From this perspective, in theory midrise and high rise building in cities in Pakistan should be an environmental upgrade to ongoing horizontal sprawl (Sabir et al., 2025).

This theoretical description is far from what is found in Pakistani urban planning literature (Naveed et al., 2026). A review on urbanization and quality of life in Pakistan cited a lack of staff and institutional capacity in the building control authorities to review, let alone enforce, compliance with the zoning and construction regulations in the country's major cities, which is exacerbated by overlapping jurisdictions among the numerous federal, provincial and municipal entities that have an interest in urban land. The theoretical efficiency benefits of vertical construction rely on the assumption of a level of regulatory competence which much of the literature indicates is not the case in practice.

Livability as a Multidimensional Concept

Many empirical studies of housing quality in Pakistan have adopted international urban research's notion of the 'livable house' as a bundle of overlapping domains instead of a single parameter (Aleha et al., 2024). An influential

framework adopted in studies of neighborhoods in Pakistan segments livability into seven categories: housing, neighborhood quality, transportation, environment, health, civic engagement, and economic opportunity (Planning Malaysia Journal, 2020). For a planned residential development in the city of Lahore, researchers observed that environment and health indicators always got the lowest score among the seven, even in an otherwise formally planned but

informal housing development (Planning Malaysia Journal, 2020). A parallel study carried out in Hyderabad came to a similar conclusion: in Pakistani cities the lack of livability seems to be an inherent feature of the planning process, as it is reflected in the perception surveys of residents.

Figure 1: *Open to sky spaces in apartment buildings of Karachi (Husnain, 2019)*



Similar trends are found in international rankings. Several hundred cities worldwide were ranked on the Mercer Quality of Living Survey every year, placing Islamabad at 194th, Lahore at 202nd and Karachi at 204th, as widely reported in the Pakistani press to remind the world how poorly the three biggest cities in the country rank compared to international standards of urban living (Dawn, 2016; Planning Malaysia Journal, 2020). The same trend has been seen in the Economist Intelligence Unit's livability index which ranked Lahore 199th amongst the cities it surveyed in 2015. These rankings are general and are city-specific, and do not necessarily reflect the quality of individual midrise developments, but rather provide a wider urban context for assessing the quality of midrise developments.

Research Methodology

This article is a narrative secondary data review. The four themes of (a) housing policy, urbanization, and the demographic pressures for

vertical construction in Pakistan, (b) physical performance of midrise and high rise residential buildings including thermal comfort, ventilation, lighting and waste management, (c) the sociological/cultural literature on family structure, privacy and residential satisfaction among apartment dwellers, and (d) the environmental literature on urban heat islands, green space provision, energy consumption, and construction materials in the Pakistani built environment were chosen for a structured search of academic databases and web-indexed literature. Priority was accorded to peer-reviewed journal articles and case studies that were undertaken in the Pakistani cities; these were followed by reports from multilateral development agencies, government policy documents (including the draft National Housing Policy 2025) and investigative journalism that added otherwise unavailable, timely information on enforcement failures and building collapses in the Pakistani cities (NDMA, 2016). The sources

covered a range of years from 2009 to 2026, both as an indication of the scholarship in this field and the most recent reporting on building code enforcement and urban stress due to climate issues. Although the author was interested in conducting a statistical meta-analysis of the findings from the individual studies, the differences in the underlying studies precluded this option. Instead, the findings are summarized narratively under the three broad research questions that guided the writing of this article: physical and infrastructural quality, cultural and social impact, and environmental consequence.

Findings

Physical and Infrastructural Quality of Midrise Housing

It is observed that the physical performance of midrise buildings in Pakistan is not uniform, and that the lack of uniformity seems to be more likely to be found in those features that are relatively easy to install, like acoustic separation between units, or harder to achieve, like cross-ventilation and daylighting, which necessitate careful architectural planning from the beginning. The researchers concluded that occupants' thermal comfort and acoustics were satisfactory, but that the building did not provide adequate natural lighting or cross-ventilation and so indoor air quality was poor, and that this was compromising their quality of life as the building was a relatively new purpose-built apartment development rather than an informal conversion.

Thermal stress seems to be one of the most common, aggravating aspects of the life of people living in these buildings. In a study conducted in Lahore, Pakistan, among residents of a midrise apartment complex, the overwhelming observation was that they all experienced a thermal discomfort and that cooling was responsible for an estimated 55 to 60 percent of the total energy use by a household in a year. It is a significant cost, in addition to the physical discomfort, and it reflects a design failure: buildings that need so much man-made cooling to be habitable, weren't, in an important sense, designed for the climate they were built in. The same study was conducted and results indicated that there were no significant differences between floor-level or demographic variables including age and gender with regard to

thermal discomfort reported, suggesting that the issue is structural to the building envelope and not the location of the household within the building.

Another area where Pakistan's vertical housing structure has had to face problems that horizontal, single-family homes have not had to deal with is waste management. A study of 80 residents in a residential tower in Islamabad found that building management had not optimized the vertical garbage chute system and had made minimal planning for future capacity; that residents' own waste-segregation habits were not good and neither were their cooperation with the building staff regarding waste-segregation. Occupants' most widespread complaints were the lack of consistent waste transport, lack of meaningful recycling, high fees for waste services, lack of communication from building management, and ongoing issues with odors in the building. They are not unusual engineering problems, but, from a management or behavioral standpoint, are, for the most part, problems that a neighborhood of single houses, each with their own municipal collection, would not typically have all in one place.

In addition to these design and management deficiencies is another more basic issue, a sizeable percentage of the midrise construction occurring in Pakistani cities is being constructed without any approved plans. The Investigative reporting from Karachi has revealed the phenomenon of "portion mafia" that is the illegal construction of floors over small residential plots, usually about ninety square yards, thereby putting a lot of strain on water, sewerage and electrical systems that were never built to accommodate that many homes (Pakistan Today, 2026). The Sindh Building Control Authority (SBCA) claimed it had made 396 enforcement moves in Karachi between January and April this year, out of which 112 buildings were either demolished or sealed in buildings, but complaints of illegal housing construction had not stopped, with several officials of the authority also being investigated by the anti-corruption department of the Sindh government (Pakistan Today, 2026).

The toll of this enforcement shortfall is human, and it is no exception that it has been exposed on more than one occasion. A seven-storey building

built on a plot of just seventy-four square yards in Gulbahar, a locality in Karachi, collapsed in 2020, killing twenty-seven people, a case which was dubbed as a representative of the unsafe construction prevailing in the city by the Pakistani press (Express Tribune, 2024) and resulted in the conviction of the building owner and four family members of manslaughter in 2024. The acquittal of several officials of the SBCA involved in the Gulbahar case could have given a boost to the corrupt ties that prevail among builders, officials and enforcement officials that enable six-storey buildings to be constructed on plots of around ninety square yards in the slums like Liaquatabad, according to the reporting following the verdict (Express Tribune, 2025).

Governance and Regulatory Weaknesses

The root causes of unsafe or poorly performing buildings are a form of governance issue, rather than an incidental matter, which is explored in the literature. Karachi has been under judicial surveillance for a long time and from time to time buildings have been demolished due to violation of building and zoning bylaws, which have been a necessity in the reform of the city's building and zoning affairs, but also demonstrates the lack of capacity among municipal government to enforce its own laws. The administration of the city of Karachi has been subjected to judicial watch for long, and from time to time buildings have been demolished due to failure in complying with the building and zoning laws, which has been a necessity in the reform of the institution, yet has additionally revealed the lack of capacity among the municipality to enforce its own laws. The lack of any valid, up-to-date master plan for the city; the number of federal institutions and large developers that are not adhering to the prescriptions and requirements of municipal and provincial planning; and the fact that land-use information is so scanty that it cannot be relied upon as a basis for any regulatory initiative (Urban Resource Centre, 2025).

In some cases, regulatory change has proceeded in a direction that is actually detrimental to city planning. In 2025, the Sindh Building Control Authority changed provisions in the Karachi Building and Town Planning Regulations that

had previously been less distinct between residential, amenity and commercial uses, arguing that this was a step to "rectify" previous years' "unauthorized commercial use on residential land" rather than to prevent it (Dawn, 2025). Previously, the Sindh High Court ruled that while the population was at fault, it was also unfair to build high-rises when the plots were only meant for ground-plus-one structures, because they were built without taking into account the load they would place on water, electricity, gas and sewerage facilities, and roads (Dawn, 2025).

Lahore's story is a bit more planned out in written form. The Building and Zoning Regulations of the Lahore Development Authority (2007) define the various categories of construction, including low-rise, midrise, and others, and set up committees to monitor compliance of conforming with the regulations in the case of new multistory buildings (Lahore Development Authority, 2019). Since 2016 there has also been a national Building Code of Pakistan with a specific volume on Fire Safety that is based on United States National Fire Protection Association standards (Pakistan Engineering Council, 2016). But these formal documents have not led to consistently safe results on the ground: even very basic provisions of the existing code have not been reliably followed, and fire safety experts and industry bodies have been calling for them as recently as late 2025, when a retail outlet was allowed to open as a ground-floor tenant of a residential high-rise without suitable emergency exits (Business Recorder, 2025).

Cultural and Social Consequences of Vertical Living

If the physical and regulatory issues outlined above were all there were, midrise living in Pakistan would just be a housing-quality issue. Evidence indicates something more sweeping: apartment living is coming together with—and, in some ways, driving—a larger shift in Pakistan's family structure and family dynamics of obligation, intergenerational relations and privacy.

This is to be understood in the context of the historical role of the joint or extended family in Pakistan. The family is a unit of Pakistani social

and economic life and is described by cultural anthropologists as such, and not merely the individual; three, four or even five generations of the family often live together in a single household, not only sharing affection, but also, economic dependence, and a cultural expectation, based on religious teachings, that younger generations will provide care for their older ones, and not allow them to be cared for by others (Cultural Atlas, n.d.). Although the country is modernizing, researchers have blamed this trend on the fact that economic poverty and tradition made separate homes – which are also a luxury – almost inaccessible to many families in Pakistan compared to other similar societies (jsrd.org.pk, 2024).

This persistence seems to be coming to an end. The study by the Journal of Social Science Perspectives in 2025 showed that approximately 2/3 of the respondents were already living in nuclear families instead of joint family; there was a rising generation gap, the weakening of intergenerational bonds and an increase in intra-cultural conflicts between the older and younger members of the family. This transition has been documented in individual reports from Rawalpindi and Islamabad: young couples narrating how they have left a joint family system to look for privacy, autonomy and space, sometimes more because of the women's quest for independence and decision making than because of the hikes in living costs or job insecurity (Express Tribune, 2025).

When multi-generational families live together inside apartments, researchers say it is a two-way street. However, on the other side, shared living also delivers a support system, especially cherished within some ethnic communities, where cohesion and emotional strength in challenging times is an honour. At the same time, the same atmosphere creates conflict: the older generation has reported a feeling of restrictions from young ones and younger ones have complained that their values and conduct are being changed by the seniors they live with. The transformation of the Pakistani household has also been accompanied by lesser losses, such as a reduction in tolerance for family conflict, which was taught by the large extended households, and the lack of informal conflict resolution that other family members could offer

on family issues, which some commentators attribute to the increased divorce rate currently seen in Pakistan, though this last causal claim is based on informed commentaries and not on controlled research.

The study of privacy in the context of adolescents in Lahore's apartment complexes is a case in point of how these two aspects of apartment design and the Pakistani domestic culture are documented. Asian Journal for Public Opinion Research (2021) reported that both male and female adolescent residents claimed only three indoor spaces (bathroom, bedroom, living room) where they could exercise a sense of privacy, while other spaces (outside/ semi-outside areas including balconies, parking areas and stairwells) were felt to be fundamentally public and largely non-available. The size of these compromises is shocking: shared bathrooms of twenty-five to twenty-eight square feet (most of which were also used for laundry or storage), and apartments that rarely exceeded twelve people, and that were as small as 1,125 square feet, with most buildings surveyed being only three to four storeys high and some completely lacking elevators (Asian Journal for Public Opinion Research, 2021). Another intriguing discovery is that, whereas renters do not seem to have the option of turning their balcony into an extra bedroom to accommodate space constraints, homeowners do have this alternative, even if only on some occasions (Asian Journal for Public Opinion Research, 2021).

This same set of findings suggest a general ambivalence toward the concept of vertical living. When residents felt they had adequate satisfaction with a building's infrastructure, water supply, security and shared facilities among residents, they were not necessarily happy with the apartment environment compared to a traditional horizontal house, meaning that satisfaction with a specific building's amenities is not the same as a true cultural choice for that type of housing (Discovery, 2021). Another study of city dwellers' satisfaction in three different vertical housing developments in Lahore, Jallo Colony, Kausar Flats and Askari 11, also revealed relevant differences in residents' experience of this general type of vertical housing across these three geocodes, thereby confirming that vertical housing is not a uniform

experience but one that is significantly influenced by the specific building, developer, and neighborhood in which it is located (International Journal of Social Health, 2024).

What seems to be obvious to developers is that there are at least some of these “cultural clashes” (as one developer put it), though the responses vary from product to product. But with the new apartment developments, industry commentary has begun to explicitly reference design choices that had been made with regard to the Pakistani expectation of modesty and privacy: “The balconies and windows are designed to face away from neighboring units and the new construction is expected to feature denser wall construction to eliminate the transfer of sound between adjoining households, just as thinner walls in older or cheaper apartments had made normal domestic noise into a source of daily friction between owners and neighbors” (Al Fatah Builders, 2026). That this kind of design elements are not being viewed as a minimum standard, but as a premium selling point, is a fairly good barometer of how infrequently this is being offered in the wider midrise stock.

Environmental Consequences of Vertical Urban Growth

The environmental argument for midrise and high-rise construction is based on the idea that vertical clustering of households consumes less land, energy and infrastructure than horizontal sprawl (Ali et al., 2026). That assumption is rather complicated by the evidence in Pakistan, to the extent that the buildings being built are not being designed and regulated to a sensible level of energy and climate performance in practice (Nadeem et al., 2024).

Over the last 20 years, building industry has grown at an average rate of 12.3 per cent per year and accounts for nearly 23 per cent of the country's total energy consumption and around 54 per cent of its electricity consumption (Khan et al., 2026). This demand is largely met from non-renewable sources, and one study on the challenges facing green urbanization in Pakistan notes that the country's urban areas consume more than 70 per cent of its national energy usage – for the most part from fossil fuel sources – and other environmental systems are similarly under threat in Pakistan: urban water consumption

(around 150 liters per person per day) is also putting substantial pressure on environmental systems, evidenced by levels of biochemical oxygen demand (BOD) in urban rivers like the Ravi, which often exceed 50 milligrams per liters.

The results of econometric analysis of the relationship between carbon emissions and urbanization in Pakistan are truly counterintuitive: urbanization itself is not statistically significant in the context of CO₂ emissions and the explanation the researchers give for this is that Pakistan's urban infrastructure is relatively inefficient and environmentally harmful, not that urban density is in and of itself a boon to the climate. (Economies, 2026). What the cities of Pakistan are not achieving in environmental efficiency is the result of not keeping its infrastructure, energy grid, building materials, building codes, growing around this vertical and compact urban development.

This is reflected in building level research (Qureshi et al., 2025). In Pakistan the design practice at present uses normal water-intensive building fixtures throughout the building, and a life-cycle assessment of an institutional building has estimated that as much as 33.5% of the total water consumption could be saved by using the internationally recognized green building design and construction criteria, while water-reuse from greywater could further reduce the demand for freshwater by 25% to 42%. It also indicates that there is a substantial scope for improvement in the existing building stock in Pakistan and that buildings certified as green use approximately 25 percent less energy, 11 percent less water and 34 percent less greenhouse gas emissions than non-green buildings.

A few innovations are now starting to show promise in terms of what can be achieved with materials that are better suited to the climate of Pakistan (Waqas et al., 2024). The study on the so called climate smart housing materials, autoclaved aerated concrete blocks, interlocking bricks and rat trap bond masonry, has revealed that autoclaved aerated concrete walls reduced cooling loads by 22 percent as compared to the conventional fired clay brick walls, resulting in real household energy savings of eighty-five to one hundred and twenty kilowatt-hours per

month, corresponding to an estimated saving of 21,500 to 27,000 Pakistani rupees per month in terms of reduced electricity bills during peak summer months (MDPI, 2025). The same study determined that the adoption of all three materials is still limited, with financing constraints and the lack of supportive regulation being the main limiting factors, but not technical barriers, with interlocking bricks helping to cut construction costs by 26.6 percent and rat-trap bond masonry cutting electricity use by 12 to 16 percent (MDPI, 2025).

The phenomenon in which built infrastructure absorbs and re-radiates heat compared to the vegetated or agriculture land it replaces, is perhaps the most noticeable environmental impact of Pakistan's current urbanization trend in its larger cities, called the urban heat island effect. Urban satellite remote sensing has also been conducted in Lahore and recorded an inverse correlation between the land surface temperature (LST) and vegetation coverage throughout the 10 neighbourhoods examined where the highest urban densities are associated with the highest temperatures, reaching as high as 40 degrees Celsius in some areas of the Old City and Johar Town (Ideas Repec, 2025). The built-up area of Lahore has increased at a rate of 8.5 per cent annually between 1990 and 2020, both horizontally and vertically, which corresponds to an annual increase of 1.4 degrees Celsius in the maximum land surface temperature of the city between 1990 and 2020, according to another separate study conducted using remote sensing techniques (Frontiers, 2022), and the study found that Lahore's green cover has decreased to about 3 per cent of its urbanized area, which is lower than the minimum 25 to 30 per cent green cover appropriate internationally.

Karachi, as in Lahore, has experienced similar aspects in most fundamental ways. Karachi's existing green space is 4.17 SQM per capita, which is less than half the WHO-recommended minimum of 9 SQM, which the study found directly to be associated with adverse urban heat island (UHI) effects, lower air quality, and health inequities which have a disproportionate impact on poorer neighborhoods (Express Tribune, 2025). The study has been modeled using simulated meteorological data, which has

resulted in urban core temperatures as high as 13.5 to >50 °C higher than the surrounding rural temperatures under certain conditions, with the Karachi West and Malir districts showing the highest heat impacts, and the highest reported thermal discomfort among residents (EarthArxiv, 2024). This research also revealed that the cooling effect of the remaining green spaces including the Karachi Golf Club, Clifton urban forest and Safari Park was limited to about 250m beyond each park indicating how localized the cooling effect of green spaces is at the moment and hence low city wide impact of green spaces.

These heat and green-space results are directly related to the thermal-comfort issues reported previously for each of the midrise buildings. NASA-affiliated researchers who looked at night-time temperatures in Lahore found that the temperature of green spaces like Lahore Model Town Park was 2 to 3.7 degrees cooler than built-up areas on the same night – a significant difference in a city where, by the same researchers' estimates, only around 10 percent of the population has access to air conditioning at all (NASA Earth Observatory, 2026). The absence of green spaces and the density of heat retaining built mass is not a theoretical environmental equation in the city, but directly represents what people in Lahore's midrise apartments are already complaining about when it comes to thermal discomfort and their rising cooling bills within their own homes.

Discussion

Taken together, these three strands of evidence i.e. physical and infrastructural performance, cultural and social adaptation, and environmental consequence clearly point to a single underlying diagnosis: So far, Pakistan has been driven overwhelmingly by necessity and demographics, not design, to develop its midrise housing boom, and the buildings that have come from it are the product of necessity. Vertical construction is not the result of architects, developers and regulators setting standards for what a livable, climate-suitable and culturally sensitive midrise apartment looks like and then building to them, it's because there is less urban land available to build on, and more horizontal sprawl taking place to the detriment of the country's agricultural land.

The physical evidence, the lack of adequate

ventilation and daylighting in even purpose-built towers, the thermal discomfort experienced to the extent that more than half of household energy budgets is wasted, the lack of adequate planning and resident participation in waste-management systems, the illegal addition of entire extra floors onto structurally unsanctioned plots and the national building-approval and enforcement system's inability to act as a meaningful quality filter. Buildings are being constructed and inhabited, even if they do not comply with the standards that are formally laid out on paper, and this is happening both in the context of the building control system in Karachi, as well as, albeit less dramatically, in Lahore's relatively more developed building control system.

The cultural evidence makes it difficult to make a simple argument of apartment living being either 'good' or 'bad' to Pakistani families. It's actually changing the household structure, encouraging households to become more nuclear and producing new kinds of conflict, especially in regard to privacy for women and adolescents, that few courtyard houses had to deal with to the same degree. However, it would be a mistake to attribute these changes entirely to vertical housing as the literature in the field of sociology clearly shows that urbanization, escalating living costs, and shifting gender roles are contributing factors to re-shaping the structure of Pakistani families irrespective of the type of housing and apartment living may be regarded as one of the main factors among others.

Of the three, the environmental evidence is the most sobering yet challenging. The theoretical efficiency case, utilizing less land per household, shorter service runs, and more potential for shared infrastructure, is real but has yet to be realized on a scale that is energy efficient, water conscious and surrounded by green infrastructure, in Pakistani cities. Consequently, the built environment gains less of the theoretical environmental benefits of vertical density whilst retaining significant heat-island effects, high levels of embodied and operational carbon and significant green-space gaps that are below international health-based thresholds. None of this is inevitable; as noted above, the climate-smart materials research and the life-cycle assessment results highlight ways to achieve meaningfully better outcomes, which are

technically possible and have been piloted within Pakistan. What seems to be lacking is not knowledge and technical skills, but the financing mechanisms, incentives and enforcement mechanisms that would allow these to be adopted from isolated pilot projects to become standard building practice.

Recommendations

This review suggests several practical implications that target the actors who, though different and interdependent, influence the emergence of midrise housing in Pakistani cities.

The priority as indicated by this evidence is institutional, not technical, for municipal and provincial building-control authorities, meaning that they need to focus on improving their inspection capacity, eliminating jurisdictional duplication between competing authorities, and preventing the financial benefits of illegal construction from being a low-risk, high-reward proposition for builders who have access to weak enforcement. The frequency of collapses and unauthorized extensions on buildings recorded above indicates that new legislation will have little impact without an equal and continuous effort of building the capacity to implement the existing legislation, of which there is reasonably good in Pakistan.

Reviewed results indicate that for architects and developers, the following interventions are potential design solutions if their concepts can be adapted to achieve the thermal-comfort benefits and life-cycle assessment results obtained: thermal-comfort and life-cycle assessment interventions; realistic plans for waste-management infrastructure; genuine cross-ventilation and daylighting features integrated into the unit layouts rather than added on post design; and systems that allow for greywater reuse. What is found in the privacy research mentioned above is also that the layout of an apartment should include a deliberate separation of the private area of the house from the common circulation spaces (stair halls, balconies etc.) and it is truly usable outdoor space with balconies that does not come as an architectural afterthought.

In the eyes of housing policymakers, the size of the national housing shortage necessitates that any serious solution will need to incorporate

some form of vertical construction, and the more important question is how to ensure that the buildings that are built in response to the push will have a minimum level of environmental performance and habitability. This will probably also need to make the process of approval more directly tied to the actual implementation of climate responsive design and green building codes, along with an ongoing increase in the supply and improved distribution of urban green space, as conditions in these cities have been well documented to exacerbate the very discomfort they experience as residents of individual midrise buildings.

Lastly, for researchers, a limited yet useful and somewhat small set of Pakistan specific empirical studies has been used to write this review, many of which are single-building case studies. Stronger evidence base, for both policy makers and developers, to design effectively for the realities of Pakistani urban life, would be provided by larger and more comparable multi-city studies of resident experience across a broader spectrum of midrise building types, income levels and climate zones.

Conclusion

Vertical construction of midrise apartments has become a common occurrence in urban areas of Pakistan without being imposed as a form of housing by planners; it's just become a necessity due to the rapid rate of population growth, the lack of formal houses, and the scarcity of land in urban areas. The evidence collected for this

review indicates that, considered as a whole, the resulting buildings provide a more or less genuine mixed quality of life, for certain concrete aspects it is functional, acoustically and structurally it is adequate for many inhabitants, but it is often lacking in respect to ventilation, natural light and climate responsive design, and is often designed or modified without any regard for the regulatory framework designed to ensure it remains safe for its inhabitants. The shift to apartment living is also altering a domestic culture that has been organized around the extended, multigenerational household, and that is being further redefined by other economic and social changes, which are also moving in the same direction. The environmental vision of vertical density – one which, for the most part, has yet to materialize despite being technically possible – is not a result of the building materials, energy systems, and urban green infrastructure failing to keep up with the vertical development, but of their not catching up with it. No single intervention will tackle the problem of improving the quality of midrise living in Pakistani cities. It will take building-control authorities that can enforce the rules that are already in place, architects and developers who are willing to design for the climate and culture that their tenants and neighbors will actually inhabit, and a policy environment that values what buildings do, namely providing living environments and space for people to work, play, and rest, rather than merely the number of units that can be constructed.

Conflict of Interest

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