



Final Year Project Showcase Batch 2021 Year 2024

Department: Architecture and Planning Programme: <i>Development Studies</i>	
1	Project Title "Informal Highrise Housing in Karachi; Vertical Movement Challenges and its Impacts on the Lives of the Users"
2	Project Idea This study analyzes the vertical movement challenges and their impacts within informal high-rise buildings on residents and service providers in Karachi. This includes documenting and analyzing the physical, social, and economic impacts of limited accessibility within high-rise buildings on its users. The proposed project aims to provide low-cost, makeshift mechanism to improve daily vertical access and emergency response for high rise users.
3	Process <ul style="list-style-type: none"> Collected existing literature review on global and regional level of informal high rises, found gaps, and determined our research objectives Established case study criteria based on high-rise density, unregulated development, and vertical movement struggles Selected 4 area from three district of the city; Liaquatabad, Lyari, Delhi Colony, Johar. Conduct 60 qualitative and 160 quantitative interviews from residents based on purposive sampling 30 Qualitative Interviews from service workers (i.e. daily and emergency), health experts, and urban planners to assess present experiences and its impact, current mechanism and future needs. Data Findings and analysis Conclusion and Project Recommendations
4	Outcome Key findings include: <ul style="list-style-type: none"> 77% of residents experience fatigue and physical discomfort after stair use, with breathing difficulties and musculoskeletal pain being most common. 54% of respondents reported injuries from staircase use, with unsafe stair design (e.g., poor lighting, broken steps, lack of railings) cited as a major cause. Women are disproportionately affected, with 70 out of 83 reporting weakness after stair use and a significant number citing safety fears and restricted mobility during pregnancy. 55% of households stated that elderly members have stopped going outside due to inaccessible stairs, highlighting the impact on mobility and social isolation. Emergency preparedness is critically lacking—83% of buildings are unequipped for fire or disaster response, and the majority of residents lack basic evacuation knowledge. Daily activities like shifting household items, carrying water gallons, and accessing healthcare during pregnancy are made more difficult, increasing health risks and social exclusion.

5	<p>Evidence (Theoretical Basis)</p> <p>This study investigates the unique challenges posed by informal high-rise buildings in Karachi, particularly focusing on the limitations of vertical mobility and their impact on low-income and vulnerable residents. By examining the physical effects of restricted accessibility, this research sheds light on how these limitations compromise the safety, security, physical health and overall well-being of the affected populations. The study also aims to formulate recommendations that enhance safety, mobility, and accessibility in these high-rise settings.</p> <p>Our focus remains sharply on accessibility, mobility challenges, and the policy solutions that can address them. Importantly, we have narrowed our research scope to exclude architectural redesigns or structural modifications, centering instead on informal high-density buildings in Karachi. By specifically examining the experiences of low-income, middle income and vulnerable residents, the study avoids broader infrastructure challenges or higher-income urban residences, ensuring a focused and impactful analysis on the populations most affected by these mobility issues.</p> <p>The findings from this research will contribute to a foundational framework for addressing similar mobility challenges in other densely populated cities. By identifying critical issues and assessing their environmental, health, and infrastructural impacts, this study offers valuable insights for urban planners and policymakers on the consequences of unregulated vertical expansion. The recommendations serve as a pilot model, providing NGOs, local governments, and private entities with actionable strategies to mitigate the adverse effects of informal high-rise growth and lay the groundwork for sustainable urban development in Karachi and beyond.</p>
6	<p>Impact on Sustainability of Urban Regions or SDG-11 “Sustainable Cities and Communities”</p> <p>This research directly contributes to Goal 11 of the SDG, which emphasizes inclusive, safe, resilient, and sustainable urban settlements.</p> <p>The study reveals that most residents in informal high-rises live without elevators, emergency exits, or reliable access to basic services like water, healthcare, and safe staircases. Unregulated high-rise construction has increased population density in already vulnerable neighborhoods without parallel investments in infrastructure or safety.</p>
7	<p>Competitive Advantage or Unique Selling Proposition (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over a competitor. In summary, any striking aspect of the project that compels the industry to invest in FYP or purchase it. Some detailed description is required in terms of how, why when what. You can select one or more from the following dropdown and delete the rest of them). Please keep relevant options, delete the rest of them, and correct the sequence</p>
a	<p>Attainment of any SDG (e.g. How it is achieved and why it is necessary for the region)</p> <p>This project directly advances SDG 11 — Sustainable Cities and Communities — by addressing vertical mobility in unregulated, informal high-rises. It ensures safer, more inclusive housing for vulnerable populations such as the elderly, pregnant women, disabled individuals, and low-income families.</p> <p>How:</p> <p>By introducing a low-cost, community-managed pulley-based lift system, the project solves a critical infrastructural gap in mobility and emergency response. These lifts aid access to health care, improve everyday living conditions, and support dignity in mobility — areas often ignored in informal settlements.</p> <p>Why:</p> <p>In cities like Karachi, where over 60% of the population lives in informal settlements and over</p>



	<p>50% of high-rises are unregulated, safe vertical access is not just a convenience but a life-sustaining need. This solution is designed to be inclusive, replicable, and affordable, aligned with both global urban sustainability agendas and local public health priorities.</p> <p>When & What:</p> <p>Can be piloted in Liaquatabad Block 10 (a 7-storey unregulated high-rise zone), the project includes scalable technical design, community awareness sessions, and a funding roadmap for expansion into other informal high-rise areas.</p>
	<p>Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process (e.g. What is the issue in current process and what improvement you suggest)</p> <p>The current "process" in informal high-rises relies on unsafe staircases, human labor (especially women, children, and delivery workers), and zero emergency planning. This solution introduces a safer, manual-mechanical lift system at a fraction of the cost of formal elevators.</p> <p>What is the issue in the current process?</p> <ul style="list-style-type: none"> • No elevators; steep, narrow, unsafe staircases • High physical strain on vulnerable groups • Emergency evacuation is almost impossible • High-rise delivery and daily utility costs increase due to vertical inaccessibility <p>b What improvement do we suggest?</p> <ul style="list-style-type: none"> • Rail-guided iron shelf (up to 300 kg capacity) operated via rooftop pulley • Electric motor with solar compatibility + manual backup • Community-trained youth for installation, operation, and upkeep • Standardized lift modules adaptable to building types and widths <p>Results in:</p> <ul style="list-style-type: none"> • Reduction in vertical movement-related injuries • Emergency readiness (evacuation capability) • Lower delivery effort and associated costs • Healthier, more inclusive housing environment
	<p>Capture New Market (e.g. Niche market or unaddressed segment)</p> <p>This product uniquely targets an unaddressed yet rapidly growing urban segment: residents of informal high-rises in dense, low-income areas with no elevator infrastructure.</p> <p>How it expands:</p> <ul style="list-style-type: none"> • The market includes over 700 informal settlements in Karachi alone, with 30% of the city covered by unregulated high-rises • No formal elevator manufacturers or service providers cater to this "bottom-of-pyramid vertical movement" market • By offering a safe, modular, low-tech, and community-owned system, the project captures a niche with high need but zero existing competition <p>c Why it's unique:</p> <ul style="list-style-type: none"> • This is not just a product, it is a process embedded in advocacy, community training, and participatory ownership • The lift is designed for informal conditions: narrow streets, unreliable power, unreinforced structures • First-mover advantage in community-based vertical mobility solutions
d	Any Other Aspect (Please tag it like above options)



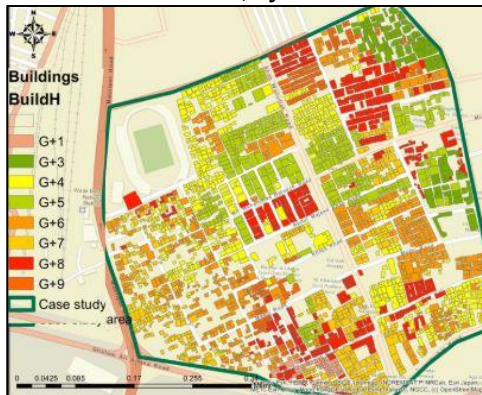
	<p>This project doesn't just install infrastructure it builds local capacity. It trains unemployed youth and local vendors in lift repair, basic welding, and logging usage, creating livelihood pathways within the community.</p> <p>How it works:</p> <ul style="list-style-type: none"> • Partner with local NGOs or vocational schools for certified training • "Elevator Fellows" program to replicate and install systems in other neighborhoods • Maintenance teams emerge from within the settlement, ensuring ownership, affordability, and sustainability <p>Why it matters:</p> <ul style="list-style-type: none"> • Reduces dependency on external technicians • Builds technical confidence within marginalized communities • Increases community trust in urban innovation • Promotes long-term sustainability through localized repair economies
8	<p>Target Market (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about the end-user of the product, process, or service</p> <ol style="list-style-type: none"> Families Living in Informal High-Rises <ul style="list-style-type: none"> • Elderly residents • Pregnant women • People with disabilities • Households with young children • Chronically ill patients Service Workers & Laborers <ul style="list-style-type: none"> • Water and food delivery workers (RO water, tandoor, groceries) • Healthcare workers (polio workers, midwives, emergency responders) • Moving/shifting laborers • Couriers (TCS, riders) Youth, Technical Trainees, and Vocational Institutes <ul style="list-style-type: none"> • Local unemployed youth trained in pulley operation, welding, and maintenance • Vocational schools offering mechanical or community development programs <p>They benefit through employment, skill development, and certification linked to a real-world need.</p> NGOs, Civil Society, and Community-Based Organizations (CBOs) <ul style="list-style-type: none"> • Organizations working in urban housing, disability inclusion, and emergency response • Local CBOs who want replicable, low-cost infrastructure solutions <p>They can use this model as part of community upgrading and inclusion programs.</p>
9	<p>Team Members (Names along with email address)</p> <p>Zunaira Noor (DS-002): zunairanoor374@gmail.com Saba Naveed (DS-013): sabanaveed637@gmail.com Fiza Begga (DS-015): fizza.bega@gmail.com Hurrair Feroze (DS-022): hooriattaria26@gmail.com</p>

10	Supervisor Name (along with email address)	Saeed Udding Ahmed : saeed.ned@neduet.edu.pk
11	Video (If any)	FYP Documentary https://drive.google.com/file/d/1J_he10rVZzOCVbbXUXz7I7p0pZND9yIn/view?usp=sharing

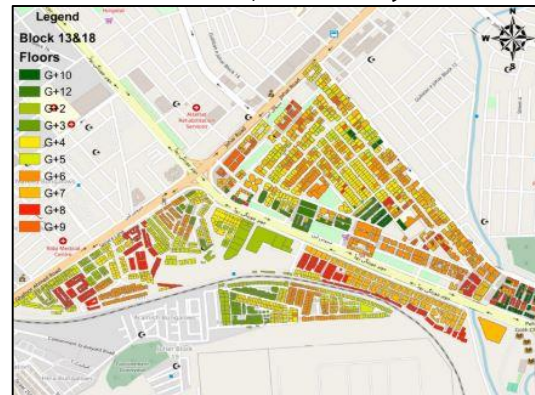
Pictures (If any)

Mapping Documentation

Khaddah, Lyari



Block 13 & 18, Gulistan e Jauhar



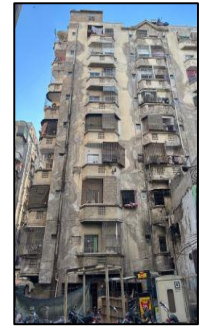
Block 1, 2 & 4, Liaquatabad



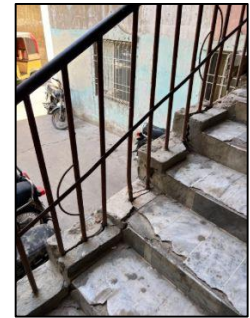
Delhi Colony 2



Informal High rises



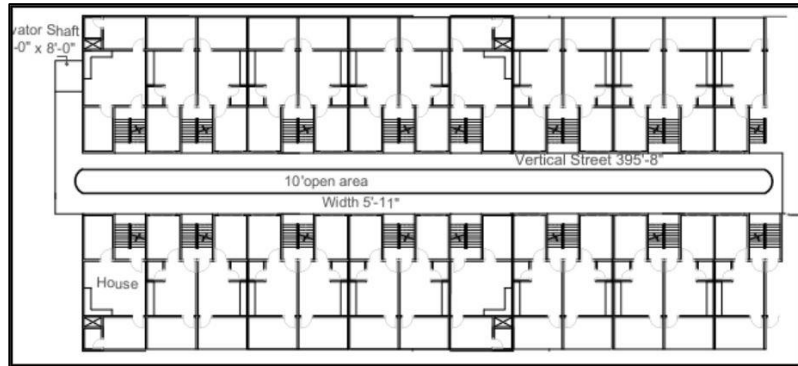
Unsafe Staircases



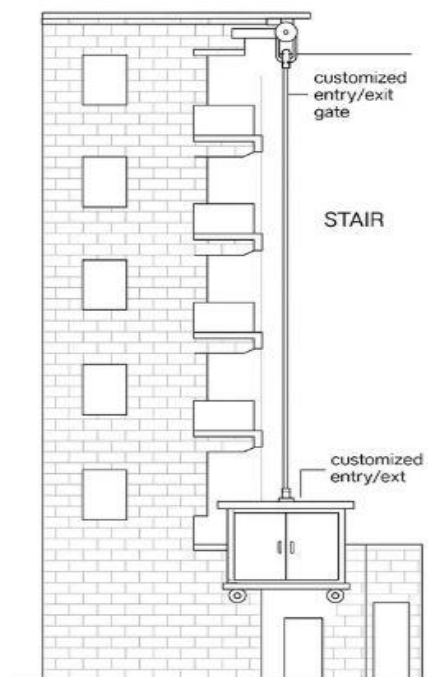
Residents and service providers



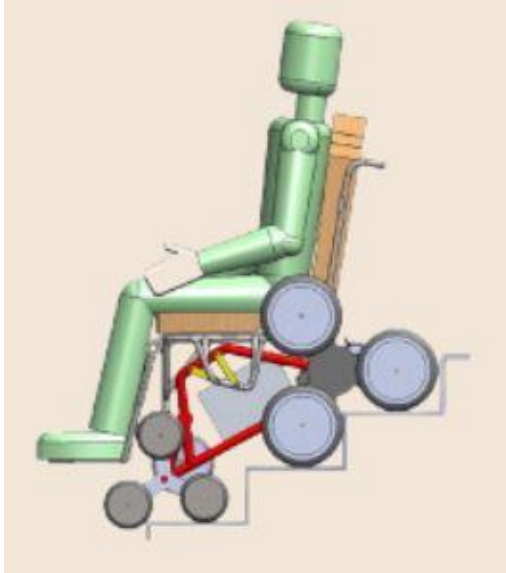
Proposed Projects and Plans



Plan for Shared Vertical Mobility System



Plan for Pulley-Based Cargo Lift



Stair Climbing Wheel Chair



Glide Rail Ramp System (GRRS)