



### Final Year Project Showcase Batch 2020 Year 2024

<b>Department: Architecture and planning</b> <b>Programme: Bachelor of Architecture</b>	
1	<b>Project Title</b> Social Integration and Ecological Reclamation through Nature-Inspired Architectural Design in Urban Karachi
2	<b>Project Idea</b> This project proposes a sustainable architectural design for Ghazi Dawood Goth, Malir, Karachi, focusing on reconnecting people with nature in urban environments. By integrating nature-based strategies like passive cooling, green courtyards, recycled materials, and water purification through algae ponds, the project aims to reduce urban heat, restore ecological balance, and provide inclusive social spaces for local communities.
3	<b>Process</b> <ul style="list-style-type: none"> <li>• Identification of key urban issues: heat islands, pollution, lack of social spaces</li> <li>• Literature review of Nature, biophilic design, and climate-responsive architecture</li> <li>• Interviews with architects and analysis of global and local case studies</li> <li>• Site selection and environmental/social analysis</li> <li>• Design proposal using sustainable materials and passive techniques</li> <li>• Development of plans, sections, 3D views, and algae-based water cleaning strategies</li> </ul>
4	<b>Outcome</b> The project presents a climate-responsive architectural design that aims to improve the quality of life in densely populated urban areas. It proposes the development of a socially inclusive community space in Ghazi Dawood Goth, Malir, integrating nature-based strategies for sustainability and ecological restoration. Key features of the design include a multipurpose hall for community gatherings and events, a tea stall (Chai Dhabba) to serve as an informal social hub, market areas and workshops to support local economic activities, and green open spaces that encourage outdoor interaction and community bonding. In addition, algae ponds and native plantations have been incorporated to naturally purify contaminated water from the nearby nala, showcasing a low-cost, eco-friendly water treatment method. This outcome not only enhances environmental sustainability but also promotes social integration, well-being, and resilience in the face of urban and climatic challenges.
5	<b>Evidence (Theoretical Basis)</b> This final year project is rooted in the theoretical frameworks of Nature in design, sustainable architecture, and ecosystem restoration. It explores how natural systems and principles can be applied to architectural design to address the challenges faced by urban areas like Karachi, including rising temperatures, pollution, and the lack of accessible social spaces. The design approach draws inspiration from international case studies such as the Sharanam Centre in India and Zaryadye Park in Russia, which demonstrate the effectiveness of passive cooling, natural ventilation, and ecological integration. Locally, the Zero Carbon Center in Makli serves as an example of low-tech, community-driven, and environmentally responsive design. By combining these global and regional insights, the project develops a context-sensitive architectural solution that merges sustainability with social inclusivity, demonstrating how nature-inspired strategies can be effectively adapted to Karachi's climate and urban needs.
6	<b>Impact on Sustainability of Urban Regions or SDG-11 "Sustainable Cities and Communities"</b>



	<p>This project directly addresses <b>SDG-11</b> by:</p> <ul style="list-style-type: none"> <li>• Creating inclusive public spaces</li> <li>• Reducing heat through passive strategies</li> <li>• Promoting ecological restoration (algae ponds, native plants)</li> <li>• Supporting local economies (workshops and markets)</li> <li>• Reducing energy consumption and improving well-being</li> </ul>
<b>7</b>	<b>Competitive Advantage or Unique Selling Proposition</b>
<b>a</b>	<p><b>Attainment of any SDG</b></p> <p>The project contributes directly to SDG-11 by promoting sustainable urban development in Karachi. It addresses critical challenges such as urban heat, lack of social infrastructure, and environmental degradation by introducing community-focused, nature-based design strategies. This is necessary for the region due to increasing climate stress, dense populations, and the absence of accessible green spaces.</p>
<b>b</b>	<p><b>Environmental Aspect</b></p> <p>The design incorporates multiple eco-friendly features including green roofs, passive cooling systems, solar panels, and the use of recycled and locally available materials like plastic bricks and bamboo. These interventions collectively reduce the carbon footprint, improve microclimate conditions, and lower energy consumption, making the design both environmentally and economically efficient.</p>
<b>c</b>	<p><b>Cost Reduction of Existing Product</b></p> <p>Although the project does not involve a specific existing product, it promotes cost reduction in construction by encouraging the use of low-cost, locally available materials such as recycled plastic bricks, bamboo, and fly ash. These alternatives reduce dependency on expensive conventional materials and make sustainable design more accessible for low-income urban communities.</p>
<b>d</b>	<p><b>Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process</b></p> <p>The project introduces a more effective and sustainable approach to urban development by integrating natural systems like algae ponds for water purification and vegetation for microclimate control into the architectural process. This improves upon conventional planning methods, which often neglect environmental and social factors, and makes the urban design more adaptive and resilient.</p>
<b>e</b>	<p><b>Expanding of Market share</b></p> <p>NA</p>
<b>f</b>	<p><b>Capture New Market</b></p> <p>The project targets marginalized and underserved urban populations, particularly in informal settlements where public infrastructure is lacking. By offering low-cost, nature-integrated, socially inclusive spaces, the design opens opportunities for implementation in similar communities across Pakistan and other developing regions, creating a new niche in urban sustainability architecture.</p>
<b>g</b>	<p><b>Integration of Algae-Based Water Purification in Architecture</b></p> <p>This project uniquely incorporates algae-based water purification into its architectural proposal. This innovative solution not only cleans polluted water from nearby nallas using natural methods but also contributes to public health and environmental restoration. It is a dual-benefit feature—offering both social and ecological value—rarely seen in typical architectural designs, making it a standout innovation.</p>



8	<p><b>Target Market</b></p> <p><b>Urban Communities</b></p> <ul style="list-style-type: none"> <li>Especially in heat-affected and underserved areas like Ghazi Dawood Goth, Malir</li> <li>End-users of the social spaces, benefiting from improved environment and community infrastructure</li> <li></li> </ul> <p><b>Government Bodies</b></p> <ul style="list-style-type: none"> <li>Karachi Metropolitan Corporation (KMC)</li> <li>Sindh Building Control Authority (SBCA)</li> <li>Planning &amp; Development Department (P&amp;D)</li> <li>Potential implementers and supporters for large-scale application</li> </ul> <p><b>Architectural &amp; Urban Design Firms:</b> Can adopt nature-based strategies in future sustainable projects.</p> <p><b>Environmental NGOs:</b> Interested in ecological restoration, community development, and water purification methods</p> <p><b>Social Housing Developers:</b> Seeking innovative, low-cost, and sustainable design solutions</p> <p><b>Academic &amp; Research Institutions:</b> For further study, teaching, and replication of sustainable urban design models</p>
9	<p><b>Team Members</b></p> <p>Mahnoor shabbir Kmaha7864@gmail.com</p>
10	<p><b>Supervisor Name</b></p> <p>Dr. Masooma Mohib Shakir Ms. Saadia Bano <a href="mailto:saadia.bano.7@cloud.neduet.edu.pk">saadia.bano.7@cloud.neduet.edu.pk</a></p>
11	<p><b>Video (If any)</b></p> <p><a href="https://drive.google.com/file/d/1Mvr1Gcuyq6bXfGjqrkMLJR9EA1VIH7g/view?usp=sharing">https://drive.google.com/file/d/1Mvr1Gcuyq6bXfGjqrkMLJR9EA1VIH7g/view?usp=sharing</a></p>

**Pictures (If any)**

<https://drive.google.com/file/d/16qI8VpAOE6XwurkkxINee1hVaE5raiem/view?usp=sharing>