



**Final Year Project Showcase Batch 2019
Year 2023**

Department: Architecture and Planning Programme: <i>Development Studies</i>	
1	<p>Project Idea</p> <p>The research project looked at the growing scarcity of water in the city of Karachi, and how people are coping with it. It also looked into how the coping mechanisms are impacting their socio-economic condition.</p> <p>Water scarcity and its detrimental environmental impacts have become critical concerns in Karachi. With declining water tables, land subsidence, and harmful mineral accumulation, innovative solutions are essential. This project proposes a sustainable approach – harnessing kitchen water recycling in apartment complexes. By encouraging collective action, responsible resource management, and environmental consciousness, this initiative strives to address water scarcity, reduce environmental impact, and foster a sense of community ownership.</p>
2	<p>Process</p> <p>The research process commences with the implementation of a dedicated kitchen greywater management system. This initial step involves the establishment of a distinct plumbing infrastructure to segregate kitchen wastewater from the conventional drainage system. Subsequently, the collected kitchen greywater is channeled into a storage reservoir, wherein it undergoes a multi-stage filtration process. This filtration process consists of three discrete compartments. The primary compartment is designed to eliminate solid waste and food particulates from the wastewater stream. Following this, the secondary compartment is responsible for the removal of oil and grease contaminants. Finally, the tertiary compartment employs phytoremediation techniques to extract phosphate compounds from the filtered water.</p> <p>The treated and filtered water is then redirected to the subterranean environment, contributing to the replenishment of groundwater tables. This comprehensive approach aligns with the overarching objective of sustainable water resource management and environmental preservation.</p>
3	<p>Outcome</p> <p>The research found that there is a difference between how Bangalow type formal housing areas are coping as compared to apartment housing projects, in that the apartment housing fares well as they combine their resources and develop mechanisms for conservation and management of water according to mutually agreed rules. While the non-gated bungalow-type housing proves to be resource-intensive and expensive.</p> <p>Based on our research findings, it has been determined that approximately 126 million gallons of groundwater are currently being withdrawn daily. Through the implementation of this project, we anticipate the potential to effectively recharge nearly 69 million gallons per day, which represents approximately half of the extracted groundwater volume. This strategic initiative aims to significantly mitigate the adverse impacts associated with the continuous extraction of groundwater resources.</p>
4	<p>Evidence (Theoretical Basis)</p> <p>The research commented on the theory “tragedy of the commons” in which they found that people do try to conserve common natural resources as found in gated apartment housing of</p>



	Karachi, however, they observed, it is the state policies and regulations that leads the people to use alternaive sources that are resource intensive and un-sustainable.	
5	Impact on Sustainability of Urban Regions or SDG-11 “Sustainable Cities and Communities” The research project has looked upon one of the chronic issues of urban dwells i.e., scarcity of water sources and the socio-economics of the community live in these selected Case Study Areas	
6	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	
	Attainment of any SDG (e.g. How it is achieved and why it is necessary for the region) This research project also focuses on the SDG#06 Clean Water and Sanitation: That holds paramount importance in the light of the global water crisis. According to the UN reports currently 2.4 billion population are under water stress around the world. Furthermore, a staggering 80% of Pakistan's population grapples with the challenges of inadequate water access. At present, a substantial 50% of the country's water requirements are met through groundwater extraction, exacerbating the strain on this critical resource. Specifically, focusing on Karachi City, the situation is dire. The city's population is increasing at a rapid rate, with an annual growth rate of 4 percent. Meanwhile, the available water supply is a mere 665 million gallons per day (MGD), while the demand ranges from 850 to 1200 MGD. Furthermore, a disconcerting 35% of the available water is lost due to damaged infrastructure and theft. This alarming confluence of factors paints a bleak picture, indicating an impending scenario where access to clean water, or any water at all, may become increasingly untenable for the residents of Karachi in the near future.	
8	Team Members (Names along with email address)	Maira Mumtaz (mairamumtaz029@gmail.com) Syed Muhammad Hussain Rizvi (hussainrizvi.ned@gmail.com) Muhammad Faez (muhmmadfaeez000@gmail.com) Syed Mujtaba Ali (Mujtaba.neduet1@gmail.com)
9	Supervisor Name (along with email address)	Associate Professor. Saeed Uddin Ahmed (architectsaeed@yahoo.com)

<p>10 Pictures (If any)</p>	<div data-bbox="500 205 722 451" data-label="Diagram"> </div> <div data-bbox="722 220 1193 451" data-label="Image"> </div> <div data-bbox="722 451 1161 483" data-label="Caption"> <p><i>on-going boring outside of a resident's house</i></p> </div> <div data-bbox="500 493 771 777" data-label="Image"> </div> <div data-bbox="844 514 1112 756" data-label="Image"> </div> <div data-bbox="487 850 738 1113" data-label="Image"> </div> <div data-bbox="487 1123 933 1753" data-label="Image"> </div> <div data-bbox="1006 871 1388 1417" data-label="Image"> </div>
	<p>Directorate of University Advancement & Financial Assistance</p>