



Masters Dissertation Showcase
Year 2023

<p>Department: Environmental Engineering Programme: Masters in Engineering Specialization: Environmental Engineering</p>	
1	<p>Title of the Thesis</p> <p>Effect of socio-economic status and seasonal variation on municipal solid waste composition of Karachi and Shikarpur</p>
2	<p>Abstract</p> <p>Solid waste issue is increasing now a days. It increases due to population growth, lack of proper management. Pakistan is also facing solid waste management challenges due to various reasons. Mismanagement is one the major cause of solid waste problem in our country. This objective of this research to determine the precise composition of solid waste in both cities (Karachi & Shikarpur) according to socio-economic category and seasonal variation and to suggest the appropriate solid waste treatment technology. This research is based on some laboratory experiments which include solid waste segregation and calculation of moisture content. Questionnaire survey has been conducted in both study areas. Samples are collected from both study areas in four season winter, spring, summer and monsoon to see the seasonal effect on solid waste composition in both cities. Solid waste composition is almost same in four seasons but it varies due to socio-economic factors. Solid waste generation rate was maximum in high income group in four seasons followed by middle-income and low-income in both the study areas. Average solid waste generation rate kg/cap/day in all income groups is higher in monsoon (0.97) season followed by winter (0.75) as compare to summer (0.51) and spring season (0.47) in Karachi, while average solid waste generation rate kg/cap/day is higher in summer (1) season followed by monsoon (0.6), winter (0.19) and spring (0.16) season in Shikarpur. Average moisture content in (%) is higher in summer season (39.5) in all income groups followed by spring season (38.3), monsoon season (24) and winter season (14.4) in Karachi. Average moisture content in (%) of Shikarpur in summer season (69.3) followed by monsoon season (68.9), winter season (17.5) and spring season (15) in all income groups. Organic waste is found to be more in high income in both study areas, Plastic waste is higher in high income group in Shikarpur while in Karachi it is higher in middle income group. Paper waste is higher in high-income and middle-income in Shikarpur while in Karachi it is higher in only high-income group.</p>
3	<p>Impact on Sustainability of Urban Regions or SDG-11 “Sustainable Cities and Communities” (min 400 words)</p> <p>The project is related to SDG-11 and target 11.6 which involves reduction of the per capita environmental impact through solid waste management. Based on the composition of solid waste analyzed in both cities, methods of treatment were recommended in this study. Data about the solid waste collection facilities in both cities were collected and solid waste management strategies were suggested to reduce the impact of solid waste in these cities.</p> <p>Large cities are facing the problem of solid waste management. Due to population, a large amount of solid waste has been generated in megacities and needs to be treated within a certain time limit. Karachi is one of the largest cities of the world having a population of more than 1.7 million and generating a huge amount of solid waste. The management facilities are limited and not available in all areas. This research was focused on the study of available waste management facilities in both big and small cities for the recommendation of suitable and economical methods for solid waste management. Food and organic waste are the major portion of municipal solid waste generated in cities and they can be treated with biocomposting. The research will help in the solid waste management in small and big cities.</p>
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