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Socioeconomic Condition of Sindh, Pakistan: Case Study of Lbod Area Mirpurkhas District

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Abstract
This study examines the socioeconomic conditions in the Left Bank Outfall Drain (LBOD) area of Mirpurkhas district, Sindh, Pakistan. The LBOD, intended to address waterlogging and salinity, has significantly affected local agriculture and livelihoods. Using qualitative methods, data were collected through focus group discussions and interviews in five villages. The findings show that 46.8% of the population relies on daily wage labor and 37.5% on farming, both highly vulnerable to environmental risks from the LBOD. Limited economic diversification (15.5%) further exacerbates these challenges. The study recommends infrastructure improvements and policy interventions to strengthen the region's resilience to environmental and economic instability.

Keywords: LBOD, Mirpurkhas District, Socioeconomics Development, Sindh Pakistan

Introduction

The socioeconomic conditions of Sindh, Pakistan, are intricately tied to its agrarian economy, which forms the backbone of livelihoods for millions of people, particularly in rural areas like the Mirpurkhas district. One of the most significant infrastructural projects affecting this region is the Left Bank Outfall Drain (LBOD), a drainage system constructed in the 1990s to manage excess water and effluents from the Indus Basin and redirect them to the Arabian Sea. Despite its intended purpose of mitigating waterlogging and salinity problems that plagued agricultural productivity, the LBOD has had mixed results, with both positive and negative socio-economic implications for the people living along its course (Magsi et al., 2015; Mustafa & Wrathall, 2011). In the LBOD area of Mirpurkhas, the population predominantly relies on agriculture for their livelihoods. The fertile lands, irrigated by the Indus River, support the cultivation of key crops like rice, wheat, cotton, and sugarcane (Raza & Chandio, 2009). However, the region continues to face challenges such as poverty, limited access to essential services, and inadequate infrastructure. Moreover, the area is home to a diverse population, including Sindhis, Indian immigrants, and Hindu minorities, with cultural and socioeconomic differences influencing access to resources and opportunities (Shaikh, 2010). The LBOD project was conceived as a solution to long-standing environmental problems caused by poor drainage systems. However, while it has brought some improvements, the project has also exacerbated other issues, particularly in terms of environmental degradation, water scarcity, and the displacement of communities (World Bank, 2006; Mirjat et al., 2011; Farazi, 2024). Problems such as salinity and waterlogging continue to affect agricultural productivity and livelihoods, making the area vulnerable to food insecurity and economic instability (Khan et al., 2014). The socioeconomic challenges of the LBOD area in Mirpurkhas are further compounded by gender

disparities. Women, who are primarily involved in domestic work, handicrafts, and agricultural labor, face restricted access to education, healthcare, and economic opportunities, which limits their ability to contribute fully to the household economy (Shaikh, 2010). Additionally, environmental risks such as floods and droughts have disproportionately impacted the most vulnerable segments of society, particularly women, children, and minority groups (Saeed et al., 2016). This case study seeks to explore the various socioeconomic factors affecting the LBOD area of Mirpurkhas district in Sindh, including the role of infrastructure, environmental challenges, and demographic diversity, while highlighting the area's vulnerabilities and potential for resilience. By understanding these dynamics, policymakers and development agencies can better address the underlying issues that affect the livelihoods of the people in this region.

Methodology

This section indicates the methodology used for this study, including the sampling procedure as well as fulfilling the objectives which were designed for this research.

Study Area

The Mirpurkhas district of Sindh, Pakistan, Mirpur Khas is a city in Sindh province, Pakistan. The city was built by Talpur rulers of Mankani branch. According to the 2017 concern of Pakistan, its population is 205913. The Left Bank Outfall Drain (LBOD) located in Mirpurkhas, Sindh, Pakistan. LBOD is part of a significant drainage infrastructure project designed to manage waterlogging and salinity issues in the region. The LBOD system, constructed primarily in the 1980s and 1990s, was intended to drain excess water from agricultural lands, particularly during the monsoon season, and direct it towards the Arabian Sea.

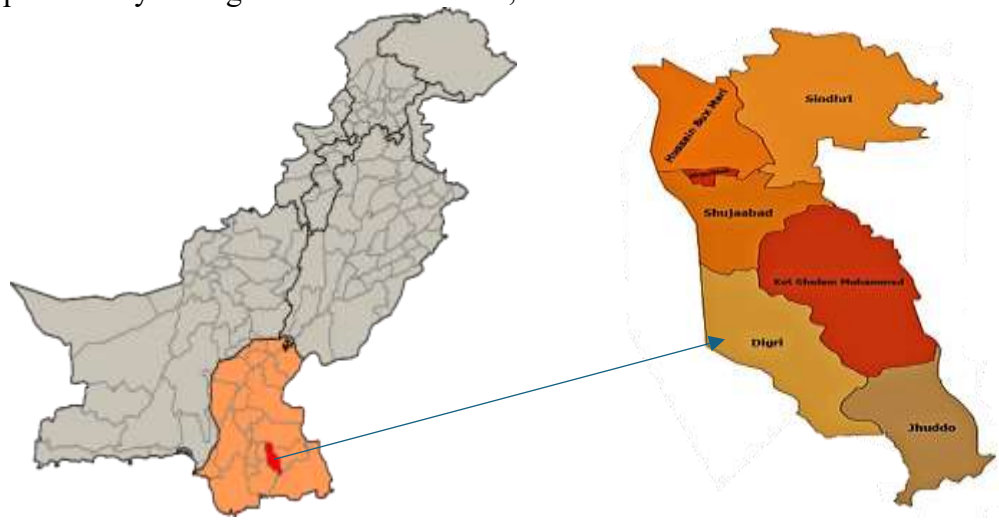


Figure 1: Map of Mirpurkhas district of Sindh, Pakistan

Sampling procedure and data collection

This study was carried out through descriptive research method in which 5 villages of district Mirpurkhas were selected, where researcher used random (convinced) sampling method for collection of data. A detailed questionnaire was designed to gather information on population characteristics, literacy rates, economic activities, and impact of LBOD. Data was collected through the FDGs and face-to-face interviews and presented in Sindhi. The questionnaire was administered in English, with minor corrections made for accuracy. The interview schedule was used for primary data collection.

Data Analytical Measure

Analytical processing was a crucial stage in transforming research data into a meaningful and sufficient format. For presenting the compiled data, a tabulation plan was created. With the use of Microsoft Excel software, preliminary data analysis including frequency distribution, descriptive

statistics, and exploratory analysis was performed to complete the tabulation plan. The results are explained in the next section.

Result and Discussions

In this chapter the findings of present research, regarding the socioeconomic of the respondents from Mirpurkhas District have been provided. Where, the socioeconomic of respondents, including their age, education, source of income, land holding households', development have been documented after analysing the collected data from the study area.

Socioeconomic description of the respondents

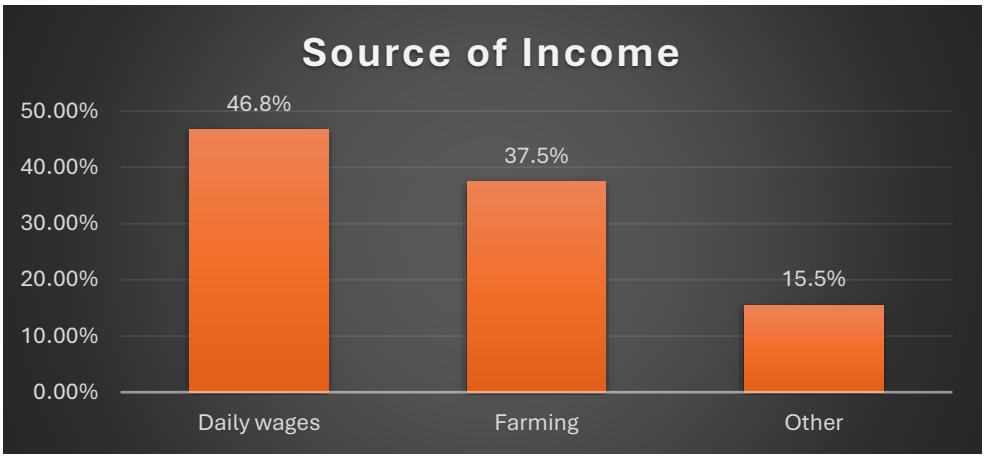
In this section the results regarding the socioeconomic condition (age, school, etc.) are given.

Table-1. Household characteristics

Description	Statistics
Total respondents	32
Age of the respondents (Year) (Average)	31.7
Family Size (Average)	7.1
Literacy rate	37.50
Illiterates	62.50
Average Rooms per household	2.2

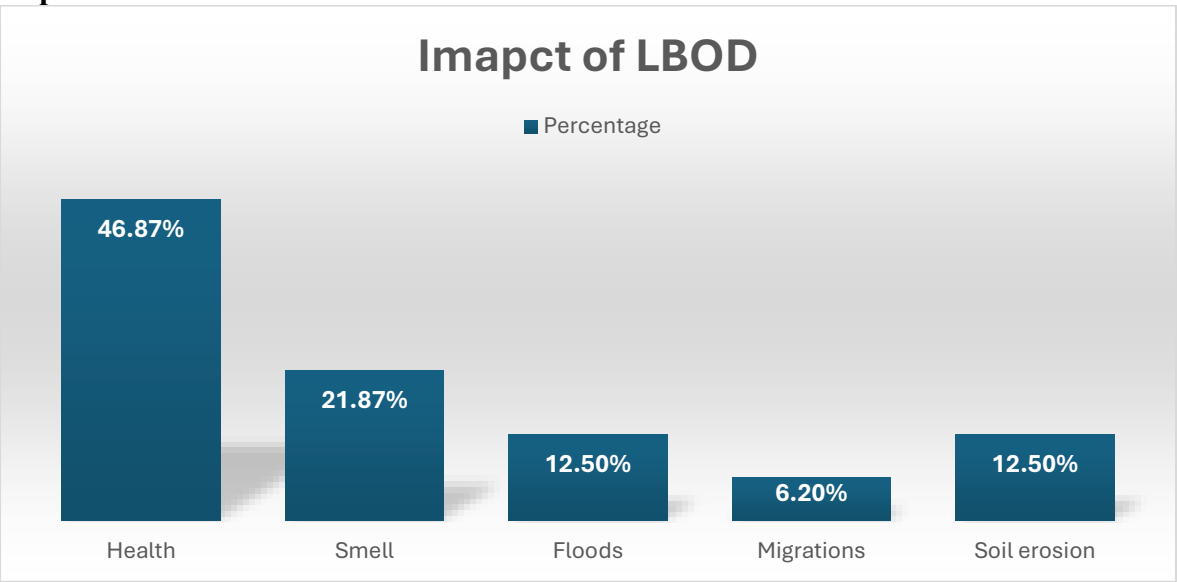
The household characteristics shown in Table 1 provided valuable insights into the socioeconomic conditions of the LBOD region in Mirpurkhas. The average family size of 7.1 members and the average age of 31.7 years were consistent with typical rural family structures in Sindh, where large family sizes were driven by economic and cultural factors. Large families were often seen as an asset for agricultural labor but could lead to economic strain due to the division of limited resources (Ahmed et al., 2020). The results showed that the literacy rate of 37.5% highlighted a significant educational gap in the region, which limited the community's access to employment and development opportunities. Education levels directly impacted socioeconomic mobility and disaster preparedness, as higher literacy improved access to information and adaptation strategies (Khan & Qureshi, 2021). The 62.5% illiteracy rate also reinforced the need for targeted education initiatives to improve resilience and economic prospects in the area. The results showed that all houses were kacha, and an average of 2.2 rooms per household, when compared to the large family size, indicated overcrowded living conditions, which could affect health and quality of life. Crowded households were often associated with poor ventilation, sanitation issues, and an increased risk of disease transmission, further exacerbating the challenges faced by these communities (Ali et al., 2019).

Primary sources of income



This chart shows that the economic structure in the LBOD region of Mirpurkhas, Sindh. 46.8% of the population relies on daily wages, reflecting heavy dependence on informal and unstable labour, making them vulnerable to economic fluctuations. 37.5% are engaged in farming, which exposes them to environmental risks like waterlogging and soil salinity due to the LBOD. A smaller portion, 15.5%, earns through other sources, suggesting limited economic diversification, which increases vulnerability to both environmental and market-related challenges (Hassan, & Magsi 2014).

Impacts of LBOD on environment



This chart shows that the environmental and social consequences of the Left Bank Outfall Drain (LBOD) in the study area. The most significant impact, affecting 46.87% of respondents, is on health, which aligns with previous research indicating that drainage systems often lead to water contamination and increased disease risk in nearby populations (Ahmed et al., 2020). 21.87% of respondents report issues related to smell, likely due to improper waste disposal and stagnant water, a known issue in drainage-affected areas (Hassan, 2018). Other notable impacts include flooding and soil erosion (each at 12.50%), highlighting the LBOD's role in environmental degradation, as drainage systems can often exacerbate land instability and water flow issues (Khan & Ali, 2019). Lastly, 6.20% of respondents report migration as a consequence, indicating that some households have been displaced due to these adverse conditions, which is consistent with the migration patterns observed in environmentally stressed areas (Memon & Sahito, 2021; Elhag et al., 2024).

Conclusion & Suggestions

The socioeconomic conditions in the LBOD area of Mirpurkhas are significantly affected by challenges such as waterlogging, salinity, and drainage issues, which have caused health problems, environmental degradation, and population displacement. Economic vulnerability is prevalent, with 46.8% of residents dependent on unstable daily wages and 37.5% on farming, further compounded by low literacy rates (37.5%) and limited economic opportunities. Poor housing conditions exacerbate the hardships faced by local communities. Although the LBOD system was designed to manage excess water, it has created severe environmental and social repercussions. Addressing these issues requires improved infrastructure to prevent flooding and mitigate environmental harm, alongside policies that foster economic diversification, enhance literacy, and promote gender inclusivity. Engaging local communities, adopting sustainable farming methods, and expanding access to healthcare are vital steps to build resilience and improve livelihoods. Collaboration between policymakers, development organizations, and

communities is essential to ensure sustainable development and long-term stability in the region.

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