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Policy Brief

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EVALUATING THE COMPREHENSIVE SOCIO-ECONOMIC IMPACT OF THE HMDC DUAL CARRIAGEWAY ON REGIONAL DEVELOPMENT THROUGH PPP INITIATIVES

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Introduction

This policy brief presents the findings of the first comprehensive study on the Hyderabad-Mirpurkhas Dual Carriageway (HMDC) project, which systematically estimates the direct and indirect benefits accruing to end users and communities through improved infrastructure. The study assessed the comprehensive socio-economic impacts of the Hyderabad-Mirpurkhas Dual Carriageway (HMDC) project on regional development through Public-Private Partnership (PPP) initiatives. As the first study of its kind, it systematically addressed research gaps, highlighting the lessons learned and challenges encountered throughout the HMDC project. The research, supported by the Pakistan Institute of Development Economics (PIDE), aims to fill a significant research gap by providing evidence on how such projects impact local economies, businesses, and communities under a Public-Private Partnership (PPP) model.

The HMDC Project, inaugurated with the significant objectives of mitigating traffic congestion and facilitating efficient connectivity between Hyderabad and Mirpurkhas, represents a monumental infrastructure endeavor spearheaded by the Works & Services Department Government of Sindh (GoS). This visionary initiative, conceived as a strategic response to the escalating demands for improved regional infrastructure, entails the extensive enhancement of the existing two-lane road, spanning a substantial 58.7 kilometers. The transformative upgrades were poised to yield significant enhancements in travel efficiency and safety, promising an elevated experience for all users along this vital corridor under the Public Private Partnership (PPP) initiative.

Commencing its trajectory in December 2008, the HMDC Project emerged as a response to the pressing infrastructural needs of the region. Deliberately adopting a Design, Build, Finance, Operate, Maintain, and Transfer (DBFOT) - Revenue model within a PPP framework, the project reflects a meticulously crafted strategy for execution and long-term sustainability. A pivotal milestone was achieved on November 11, 2009, marked by the execution of the Concession Agreement establishing the Special Purpose Vehicle (SPV), entrusted to the preferred bidder, Deokjae Connecting Roads (Private) Limited.

A robust financial framework supported the HMDC Project, with a blend of equity, bank loans, and subordinated debt. The 26.1% equity comprised 18.4% from the private partner and 7.7% from the GoS, indicating a collaborative financing approach. The 37.3% bank loan, 31.3% GoS subordinated debt, and 5.3% developer equity collectively underlined a well-structured financial model.

Beyond the tangible infrastructure outcomes, the HMDC Project envisioned a substantial social impact. Reduced travel time and enhanced safety were anticipated benefits, along with the creation of 5,000 direct and 22,000 indirect job opportunities. The project was poised to uplift land values, facilitate the major agricultural belt of Sindh, and provide local communities with opportunities for employment and businesses, contributing to improved law and order in the area.

The HMDC Project achieved substantial completion of construction works in August 2012. A noteworthy aspect was its reliance on local lenders, the National Bank of Pakistan (NBP) and Summit Bank, for project financing. The successful retirement of bank loans in December 2020 and the commencement of subordinated debt repayments to the GoS from March 2021 underscore the project's financial viability. The implementation of the Electronic Toll and Traffic Management (ETTMS) reflects a commitment to technological innovation in project execution.

The HMDC was the first-ever road dualization project initiated by government of Sindh under Public-Private Partnership. The research study on HMDC revealed significant socio-economic contributions in the region, i.e. road dualization has reduced the average travel time from 15-20 minutes for the majority of travelers which contributed to less fuel consumption and improved productivity of travelers which resulted in improved economic benefits for them by indirect savings of PKR 6553/- to 30584/- per year, estimated on their time to monetary saving calculation. In addition, the surge in private and agricultural land value from 3 to 4 million rupees per acre, signified the direct impact on regional economic development and overall provincial and national economic contribution through relevant tax collection based on improved property value. Moreover, this study underscored the expanded and improved reach of major markets for the business community from Mirpurkhas, Tando Allahyar, and Hyderabad to other parts of provinces with ease of transportation after the HMDC project, this improvement signifies a direct benefit to local growers, landowners, business community and increased economic contribution in the national and provincial economy through toll tax and other applicable tax collections as well. Weighbridges and hoardings were supportive in additional revenue generation models for this project alongside the toll tax collection for loan repayment of the HMDC project.

The research study on the HMDC project is the first of its kind in Sindh, focusing on a road dualization initiative developed under the Public-Private Partnership (PPP) model. As a pioneering study, it not only provides valuable evidence on the socio-economic impacts of road dualization projects but also fills a critical gap in the existing body of research. It establishes a foundation for future studies in this field by systematically analyzing the direct and indirect benefits of such infrastructure projects. The study opens up multiple avenues for further research, including comparative analyses of similar road dualization initiatives, in-depth investigations into their environmental impacts, and assessments of their contributions to social and business development.

This research serves as a vital reference for policymakers, researchers, and practitioners looking to understand and replicate the benefits of road infrastructure projects under the PPP framework.

METHODOLOGY

The research study on HMDC project employed a mixed-methods approach for data collection, integrating quantitative and qualitative techniques including the desk study. Quantitative data included surveys with 40 transport owners (20 public transport, 20 goods transport), 90 commuters/travelers, 90 from landowners, tenants, and farmers, 60 shopkeepers'/SME owners, and 20 project employees. Qualitative data involved five key informant interviews (KIIs), including two Deokjae project officials, one representative each from Sindh's Finance Department, Works & Services Department, and the PPP Unit, selected. Additionally, three focus group discussions (FGDs) with 60 community members provided diverse perspectives from farmers, tenants, social workers, businessmen, faculty, officials etc. The study utilized a combination of sampling techniques, including random, stratified random, and convenience sampling. Extensive questionnaires for surveys were developed, and interviews followed a question guide developed by the research team. Survey data was statistically analyzed on SPSS and semi-structured interviews were transcribed for thematic analysis on Atlas.ti. The sample represented 3 districts of Sindh, province i.e. Hyderabad, Tando Allahyar and Mirpurkhas.

This rigorous process allowed for a comprehensive understanding of the project's successes and shortcomings, providing a foundation for targeted policy recommendations.

KEY FINDINGS

The analysis of the HMDC project highlighted several key lessons, including the successful attraction of private investment, the dualization of the road to improve fuel efficiency and reduce travel time, enhanced regional connectivity, and a positive impact on agricultural growth. The inclusion of innovative technologies such as the Electronic Toll and Traffic Management System (ETTMS) and axle load management, along with the creation of employment opportunities for women, further underscored its value as a pioneering infrastructure initiative.

However, certain gaps limited the project's potential to fully serve as a model for sustainable and inclusive infrastructure development. These include insufficient safety measures, such as the absence of speed cameras and road studs, inadequate overhead bridges in populated areas, and challenges in protecting the Right of Way (ROW). Addressing these gaps is essential to maximize the project's long-term impact and serve as a benchmark for future initiatives.

1. A major shortfall in the HMDC project was the limited engagement of local communities during the planning and construction phases. As outlined in the PPP Policy 2017 (Section 11, Subpoint iv), the government is expected to provide the public with information about the roles and obligations of both the private sector and the government. However, this was not sufficiently practiced, leading to resistance against the toll tax during the construction phase and resulting in law-and-order issues. It became evident that the district local government had not been sufficiently involved in the early stages of the project. Although this gap was later addressed by including local government stakeholders, the lack of initial communication affected public acceptance.
2. Despite efforts to raise awareness, resistance to toll collection and unauthorized use of the road highlighted significant deficiencies in the outreach strategies. The absence of a toll gate at Tando Allahyar resulted in many people using the road without paying the toll. Furthermore, a majority of the study participants considered the toll tax to be expensive. The exclusion of these groups from the planning process worsened the situation, reducing public acceptance and ownership of the project. This finding reveals a gap against the PPP Policy 2017 (Section 11, Subpoint v), which mandates that tolls and charges be set at an affordable level.
3. While the project has resulted in safer travel with reduced travel time, improved fuel efficiency, and a better law and order situation, the number of road accidents has increased. These accidents have led to severe injuries and fatalities, particularly to livestock and people crossing the road. This finding reveals a gap against the PPP Policy 2017 (Section 11, Subpoint ii), which ensures the health and safety of the public.
4. The HMDC project made some progress in terms of sustainability, such as the adoption of solar energy; however, these efforts were limited in scope. There was a lack of a comprehensive ecological impact assessment and the integration of broader green infrastructure principles. Although a green belt and a small park were established, the majority of the trees planted were non-native species (e.g., Conocarpus), and the number of trees planted was fewer than the trees that were removed during the project.
5. While the HMDC project created employment opportunities for women toll gate operators, the number of positions available was limited. This was a notable achievement as it marked the first road project where female operators were appointed. However, the study could not find reliable data on the total number of jobs created under the project, such as the anticipated 5,000 direct jobs.
6. The research study highlighted a significant issue of traffic congestion during peak hours, a concern reported by the majority of research participants. This congestion impacts the efficiency of the road, causing delays and reducing the overall benefits of the project.
7. The project revealed a significant gap in infrastructure, particularly the lack of overhead bridges in populated areas (e.g., Khuwaja stop). Furthermore, the presence of jersey barriers disrupted connectivity between families and communities living on both sides of the HMDC, leading to reduced visibility and contributing to fatal road accidents.

8. A significant gap identified in the project was the challenge of protecting the Right of Way (ROW), as the road passes through densely populated cities and villages. Research participants reported limited support from the local government in maintaining and securing the ROW, leading to encroachments and challenges in ensuring the integrity of the road corridor.
9. The governance within the PPP framework demonstrated strengths the implementation of the Electronic Toll and Traffic Management System (ETTMS) significantly improved transparency, accountability, and real-time monitoring in the revenue-sharing process for the HMDC project.
10. The HMDC project significantly contributed to socioeconomic development by increasing agricultural and property land values and stimulating regional economic activity. The establishment of new small and medium enterprises (SMEs) and the creation of indirect employment opportunities further bolstered local economic growth. Improved access to markets, healthcare, and educational services enabled individuals to pursue new ventures, driving prosperity and enhancing the overall quality of life in the region.

POLICY RECOMMENDATIONS/POLICY IMPLICATIONS

To address these gaps and align future infrastructure projects the following recommendations are proposed:

I. It is recommended for the concerned department for all PPP projects that local communities be engaged from the planning stages to avoid any unwanted situations. This includes ensuring that stakeholders such as district local governments are actively involved from the outset, and that communication about the roles and responsibilities of all parties is transparent and widespread. Additionally, government and private sector obligations should be clearly communicated to the public for trust building and mitigating resistance to key project elements such as toll taxes.

II. Private partners must install AI-driven cameras at toll gates to gather real-time data on traffic flow, commuter headcount, and vehicle movement. This will help assess the economic benefits and operational efficiency of road projects.

III. The Electronic Toll and Traffic Management Systems (ETTMS) enhanced revenue collection and reduced operational inefficiencies in HMDC project. The ETTMS should be incorporated in the PPP policy for similar road dualization projects to optimize operational efficiency, enhance financial transparency and enable data-driven decision-making.

IV. PPP must thorough review toll tariffs to ensure affordability for all end users and align it with principles of PPP policy 2017. It is recommended that strategic location must be envisioned for installation of toll gates to collect toll tax in just way. Install toll gates at strategic locations, (such as Tando Allahyar in HMDC project), to prevent unauthorized road use and revenue loss.

V. It is recommended the concerned line department and private partners must incorporate pedestrian-friendly infrastructure including a maximum number of overhead bridges, road

studs, clear road signages, in project plan and install speed cameras, to ensure the safety of pedestrians, eliminate the risk of fatal road accidents and ensure road safety.

VI. Minimum Revenue Guarantee model of HMDC project should be adopted for future projects to eliminate financial risks and maintain fiscal sustainability during crises.

VII. Weighbridges must be included in road dualization initiatives to ensure and monitor axle loads to prevent roads damage and safeguarding long-term build quality. As HMDC project proven the model as successful as initial overlay after 10 years was extended for 2-3 years.

VIII. Concerned government line department must establish clear guidelines and enforcement mechanisms to protect the ROW, especially in populated areas. Foster collaboration between local governments and project stakeholders to ensure timely support in addressing encroachments and maintaining the integrity of the road corridor in future projects.

IX. PPP must develop stakeholder mapping frameworks and comprehensive communication plans to ensure effective communication among departments, private partners, and local authorities, thereby addressing risks proactively.

X. Expand the road network like HMDC, to promote regional development, reduce travel time, improve fuel efficiency, and enhance economic growth at the local level which will contribute to boosting the national economy.

Implementing the proposed recommendations will enhance project outcomes and align them with international best practices. Pakistan can pave the way for equitable growth and sustainable development, ensuring that future projects deliver long-term benefits for all by embedding resilience, inclusivity, and transparency into the core of infrastructure planning and execution.