

## Developing a conceptual framework for the feasibility check of public private partnership (PPP) model in urban infrastructure system for tier 2 cities in India.

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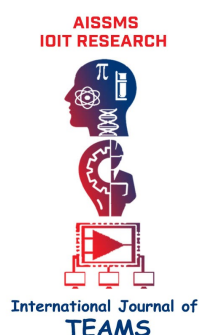
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### Article Information

### ABSTRACT

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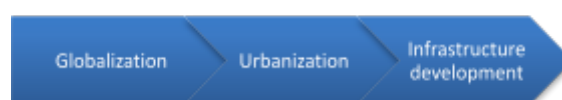
India's rapid urbanization has put tremendous pressure on Indian cities to provide basic infrastructure such as water supply, sanitation, transport, and housing. The government alone cannot meet these demands, given its limited financial resources and bureaucratic constraints. PPPs provide an alternative model for developing infrastructure by leveraging the strengths of both the public and private sectors. Public-private partnerships (PPPs) have emerged as a popular model for developing urban infrastructure in India. PPPs offer several advantages over traditional procurement methods. They provide access to private sector expertise, technology, and financing, which can improve the quality and efficiency of infrastructure services. They also share the risks and rewards of projects between public and private partners, which aligns their incentives and reduces the likelihood of cost overruns and delays. However, PPPs also have their challenges, including potential conflicts of interest between public and private sector partners, difficulty in evaluating the value for money, and limited public oversight. Therefore, a careful assessment of the benefits and risks of PPPs is necessary before embarking on such projects.

This research paper examines the benefits and challenges of PPPs in the context of tier -2 Indian cities. The paper analyses case studies of successful PPP projects and identifies the key factors that contribute to their success. It also discusses the potential risks and drawbacks of PPPs and recommends strategies for mitigating them.

**KEYWORDS:** Urban infrastructure, Public private partnership, Project scheduling and management.

## 1. INTRODUCTION

The process of globalization go along with the phenomena of urbanization and this combine results in infrastructural development of any urban area. The synchronization between the rate of urbanization and infrastructural development should be unrestrictedly



parallel although in most of the developing countries the urban system does not follow the parallel

Fig. 1. Flow of development (Source: Author)

development method due to various physical and social constrain.

India is a rapidly urbanizing country, with over 34% of its population living in urban areas. As cities grow, there is an increasing demand for urban infrastructure to support the needs of a growing population. However, despite this need, India is facing developmental challenges due to its large population shift towards urban areas. There could be various reasons for urban migration such as legislative, regulatory, bureaucratic etc.

State of Urban Infrastructure in India: The state of urban infrastructure in India varies greatly between cities. While some cities have made significant progress in developing infrastructure, others are struggling to keep up with the growing demand. Some of the key challenges facing urban infrastructure development in India include:-

- **Lack of Planning:** Many Indian cities lack a comprehensive urban planning framework, leading to haphazard development and poor infrastructure.
- **Limited Resources:** Many Indian cities lack the financial resources to invest in infrastructure development, leading to a lack of basic services such as water and sanitation.
- **Rapid Urbanization:** The rapid pace of urbanization in India has put significant strain on existing infrastructure, leading to overcrowding, traffic congestion, and other issues.
- **Poor Maintenance:** Even where infrastructure exists, poor maintenance has resulted in the deterioration of facilities such as roads, bridges, and public transportation systems.

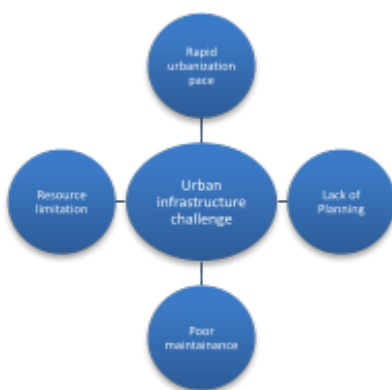


Fig. 2. Infrastructure challenges (Source: Author)

Potential Solutions: Public-Private Partnerships: One way to address the financial challenges facing urban infrastructure development is through public-private partnerships. These partnerships can bring private

sector expertise and financing to the development of infrastructure projects.

### 1.1 Tier-2 cities in India

India has a more than 100 tier 2 cities. These cities are defined as those with populations between 50,000 to 99,999.

They are considered to be the second tier of cities after the major metropolitan cities.

Ahmedabad, Gujarat, Allahabad, Uttar Pradesh, Lucknow, and Uttar Pradesh are some of the examples of tier-2 cities in India. The infrastructure of Tier 2 cities in India has improved significantly in recent years. With the growing population and the need to support economic growth, there has been a renewed focus on developing infrastructure in these cities. Many Tier 2 cities in India have developed good road networks and highways, connecting them to other cities and towns. Some cities have also developed ring roads and bypasses to ease traffic congestion.

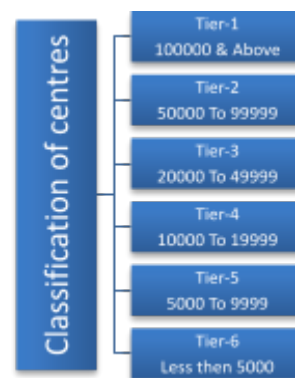


Fig. 3. Classification of centers (Source: census 2001)

Tier 2 cities now have airports that offer both domestic and international flights.

For example, cities like Lucknow, Jaipur, and Kochi have upgraded their airports in recent years to provide better connectivity. Railways remain an important mode of transportation in India, and many Tier 2 cities have good railway connectivity. In fact, some cities like Nagpur and Bhopal are emerging as important railway hubs. Some Tier 2 cities have also developed metro systems and other public transport options like bus rapid transit (BRT) systems. For example, cities like Ahmedabad, Jaipur, and Lucknow have operational metro systems, while others like Bhopal and Indore are developing their own metro projects. Tier 2 cities in India are also investing in digital infrastructure, such as high-speed internet connectivity and smart city solutions. Some cities are also implementing e-governance initiatives to provide better services to citizens. Overall, while there is still much room for improvement, the infrastructure of Tier

Tier 2 cities in India has come a long way in recent years. These cities are becoming increasingly important for economic growth and are poised to play a bigger role in India's development in the coming years. While there has been significant improvement in infrastructure in Tier 2 cities in India, there are still some challenges and areas that need further attention. Here are some examples of the lack of infrastructure in Tier 2 cities,

- Agra
- Lucknow
- Varanasi
- Patna
- Jaipur
- Jodhpur

### 1.2 Typical issues with tier-2 cities in India

While some Tier 2 cities have developed metro systems and other public transport options, many others still lack reliable and efficient public transportation. This can make commuting within the city a challenge, and can also impact economic growth by limiting mobility for workers. Tier 2 cities often lack adequate healthcare facilities, such as hospitals and clinics. This can be a major issue, especially during a public health crisis like the COVID-19 pandemic. Residents may have to travel long distances to access medical care, which can be a major barrier, especially for those with limited financial resources. Some Tier 2 cities face challenges with water supply and sanitation. This can impact the health and well-being of residents, as well as limit the city's ability to attract new businesses and investment. Waste management is another challenge faced by many Tier 2 cities in India. Inadequate waste disposal systems can lead to environmental pollution and pose health risks for residents. Waste management is another challenge faced by many Tier 2 cities in India. Inadequate waste disposal systems can lead to environmental pollution and pose health risks for residents. Power supply: While power supply has improved in recent years, many Tier 2 cities still experience frequent power outages, which can impact economic productivity and quality of life for residents. Overall, addressing these infrastructure challenges is essential for ensuring the continued development and growth of Tier 2 cities in India. Gone are the days when start-ups and entrepreneurship were restricted to metro cities. Today, approximately 50% of the recognized start-ups in India are based out of Tier 2 and Tier 3 cities. The ongoing tech revolution witnessed in Tier 2 and Tier 3 cities are fuelling the country's economic growth and driving socioeconomic transformation on a global scale. Additionally, tier 2 cities such as Jaipur, Ahmedabad, Indore, and Surat have recorded an economic growth rate of over 40% reasoning that larger spaces are available at low and affordable costs, enabling startups to operate at a larger scale, he added.

Governments and private sector entities can work together to invest in improving infrastructure and addressing the needs of these cities.

## 2. PUBLIC PRIVATE PARTNERSHIP- A FEASIBLE TOOL FOR URBAN INFRASTRUCTURE

Public-Private Partnerships (PPPs) have become increasingly popular in recent years as a way to finance and manage urban infrastructure projects. PPPs involve collaboration between the public and private sectors to jointly develop, finance, and operate infrastructure projects.

### 2.1 Benefits of PPP Model

Here are some of the benefits of PPPs for urban infrastructure projects:

**Access to private sector expertise and resources:** PPPs enable the public sector to access the expertise, technology, and resources of the private sector, which can help to improve the quality and efficiency of infrastructure projects.

**Risk-sharing:** PPPs allow for the sharing of risks between the public and private sectors, which can help to reduce the financial burden on the government and make infrastructure projects more financially viable.

**Increased efficiency:** PPPs can improve the efficiency



of infrastructure projects by introducing market discipline and competition, which can help to drive down costs and improve project delivery times.

**Fig. 4.** Benefits of PPP (Source: Author)

**Innovation:** PPPs can encourage innovation in infrastructure development by bringing together different perspectives and expertise from both the public and private sectors.

**Improved accountability and transparency:** PPPs can help to improve accountability and transparency by establishing clear roles and responsibilities for both the public and private sectors, and by requiring regular reporting and monitoring of project progress. Overall, PPPs can be an effective way to finance and manage urban infrastructure projects and can help to address the challenges of limited public resources and increasing demand for infrastructure services in urban areas. However, it is important to carefully design and implement PPPs to ensure that they are structured appropriately and that risks are effectively managed.

## 2.2 Framework for the project feasibility

When considering the feasibility of a project, there are several key aspects that should be evaluated to determine whether the project is viable and likely to succeed. These aspects include market demand which is important to assess whether there is a market demand for the product or service that the project will offer. This involves researching the target market, understanding consumer needs and preferences, and evaluating the competitive landscape. The project's financial feasibility should be evaluated to determine whether it is likely to generate sufficient revenue to cover its costs and generate a profit. This involves developing a detailed financial plan that includes revenue projections, cost estimates, and cash flow analysis.



**Fig. 5.** Project feasibility framework (Source: Author)

Apart from the financial the technical feasibility should be assessed to ensure that it can be successfully implemented with the available resources and technology. This involves evaluating the project's technical requirements, identifying any potential technical challenges or constraints, and developing a plan to address them. The project's legal and regulatory feasibility should be evaluated to ensure that it complies with all applicable laws and regulations. This involves researching and understanding the relevant laws and regulations, obtaining any necessary permits or licenses, and ensuring that the project's operations are in compliance with all legal requirements. The project's operational feasibility should be assessed to determine whether it can be efficiently and effectively implemented and managed. This involves evaluating the project's operational requirements, identifying any potential operational challenges or constraints, and developing a plan to address them. Evaluating these aspects can help determine whether a project is feasible and likely to succeed. It is important to conduct a thorough analysis of each aspect to ensure that all potential risks and challenges are identified and addressed.

## 2.3 Framework for the financial feasibility

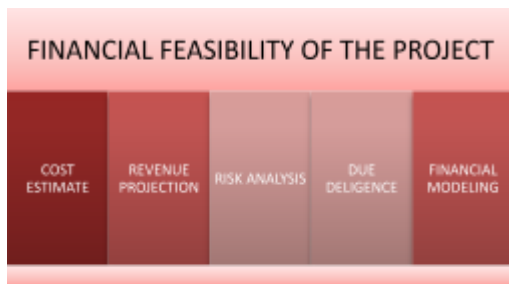
Public-Private Partnership (PPP) projects are typically long-term infrastructure projects where the government works with private sector partners to finance, design, build, and operate public infrastructure or services. Checking the financial feasibility of PPP projects is a critical step to ensure that they are viable and sustainable in the long term. Here are some key steps to check the financial feasibility of PPP projects:

**Cost estimates:** The first step in checking financial feasibility is to prepare detailed cost estimates for the project. This involves estimating the capital costs of the project, including design, construction, equipment, and financing costs. Operating costs, such as maintenance and repairs, should also be included.

**Revenue projections:** The next step is to estimate the project's revenue potential. This involves identifying the sources of revenue, such as user fees or government subsidies, and estimating the amount of revenue that can be generated over the life of the project.

**Risk analysis:** PPP projects are typically subject to a range of risks, including construction delays, cost overruns, and revenue shortfalls. A comprehensive risk analysis should be conducted to identify potential risks and develop strategies to mitigate them.

**Financial modeling:** Once the cost estimates, revenue projections, and risk analysis have been completed, financial models can be developed to



**Fig. 6.** Financial feasibility framework (Source: Author)

evaluate the financial feasibility of the project. These models can be used to assess the financial viability of the project over the life of the contract, and to identify potential financial risks and opportunities.

**Due diligence:** Before entering into a PPP agreement, it is important to conduct thorough due diligence on the private sector partner. This includes reviewing the partner's financial stability, experience with similar projects, and reputation in the industry.

Checking the financial feasibility of PPP projects requires a comprehensive and detailed analysis of the project's costs, revenues, risks, and financial projections. By conducting a thorough analysis, governments and private sector partners can ensure that PPP projects are financially viable and sustainable in the long-term.

### 3. CONCLUSION

Public-private partnerships have the potential to significantly contribute to the development and growth of tier-2 cities in India. These partnerships allow us to pool private sector expertise, resources, and innovation to meet the infrastructure needs of these cities while leveraging government regulatory and policy frameworks. By sharing risks, responsibilities, and costs, PPPs can increase the efficiency and effectiveness of infrastructure projects in Tier 2 cities. Benefits of PPPs include improved access to private sector capital, faster project completion times, and improved service quality. In addition, PPPs can foster innovation, create job opportunities, and boost economic growth in Tier 2 cities. However, several challenges must be overcome for a successful PPP deployment. These challenges include ensuring transparency and accountability, aligning public and private sector interests, and building a robust legal and regulatory framework. Effective risk sharing, feasibility assessment of suitable projects, and ensuring affordability and access to services are also important considerations. To overcome these challenges, policymakers, city planners and

stakeholders will need to work together to create an enabling environment for his PPPs in Tier 2 cities. This includes establishing clear policies and mechanisms for project selection, oversight, and dispute resolution. In addition, capacity-building efforts and knowledge-sharing among various stakeholders will facilitate the successful implementation of PPPs. PPP has great potential, but it's not a panacea. Each project should be carefully evaluated considering the specific circumstances and needs of each Tier 2 city. A balanced approach that incorporates the principles of transparency, accountability, and sustainability is essential to realizing the full potential of his PPPs in India's Tier 2 cities. Overall, with proper planning, coordination, and stakeholder engagement, PPP will play a key role in meeting infrastructure demands in Tier 2 cities, driving economic growth, and improving the quality of life of its residents. can do. Further research and case studies are needed to better understand the nuances and best practices in deploying PPPs in India's Tier 2 cities.

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